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TECHNICAL REPORT

INTERNATIONAL WORKSHOP ON

# SUSTAINABILITY SCIENCE 2015



SUSTAINABILITY SCIENCE FOR SUSTAINABLE DEVELOPMENT GOALS (SDGs)

4-5 March 2015 Kuala Lumpur Convention Centre (KLCC) Kuala Lumpur, Malaysia

Funded by:







### **TECHNICAL REPORT**

INTERNATIONAL WORKSHOP
SUSTAINABILITY SCIENCE
FOR SUSTAINABLE DEVELOPMENT
GOALS (SDGS)

4-5 March 2015 Kuala Lumpur Convention Centre (KLCC), Kuala Lumpur, Malaysia

Prepared by Institute for Environment and Development (LESTARI) Universiti Kebangsaan Malaysia

Submitted to
UNESCO Office Jakarta
UNESCO Regional Science Bureau for Asia and the Pacific

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The report has six main part. The first part is an executive summary of the International Workshop on Sustainability Science. The second part is an introduction of the workshop which consists of the workshop background and rationale, UNESCO Sustainability Science initiative, and detail approach of the Sustainability Science International Workshop. The third part is about target group and participants of the workshop. The fourth part is a workshop session summary which consists of workshop activities from day 1 on 4 March 2015 to day 2 on 5 March 2015. The fifth part is a conclusion and way forward. The sixth part is annexes which consist of participant list, woskhop programme, organisers and organising committee of the workshop.

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# 01

## **EXECUTIVE SUMMARY**



### **EXECUTIVE SUMMARY**

The International Workshop on "Sustainability Science for Sustainable Development Goals (SDGs)" was held on 4-5 March 2015 at Kuala Lumpur Convention Centre (KLCC), Kuala Lumpur, Malaysia. It has successfully organized by the Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM) in partnership with the United Nations Educational, Science and Cultural Organization (UNESCO), with the support of Malaysian Funds-in-Trust (MFIT) and Japan Funds-in-Trust (JFIT), and in collaboration with the International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC), Regional Humid Tropics Hydrology and Water Resources Centre for South-East Asia and the Pacific (HTC) Kuala Lumpur, UNESCO-IHP Malaysia, Ministry of Education Malaysia (MOE), Malaysian National Commission for UNESCO (MNCU) and National Council of Professors (MPN).

The main objectives of this workshop were to contribute to the Post-2015 Development Agenda through the Sustainability Science approach; to develop and strengthen science to policy interfaces; to institute a high-level dialogue on the role of Science to address challenges to the Post-2015 Development Agenda in the region; to develop a regional framework and tools to implement sustainability science within the framework of UNESCO-ASEAN MOU; and also to initiate a dialogue on a policy paper and strategy on Environmental Sustainability in the ASEAN to introduce it to the next ASEAN Plan of Action on Science and Technology 2016-2020. It will be strategically developed based on the seven priority areas in the ASEAN-UNESCO FAC in narrowing development gaps as well as addressing the threats.

This workshop is part of follow up initiatives of the "International Workshop on Sustainability Science: A Science Based Approach to Realize the Future We Want for All" held on 4-5 April 2013 at Istana Hotel, Kuala Lumpur, Malaysia which was organized in close collaboration by the above mentioned organizations. This sustainability science workshop has constituted of a 'sustainable science-policy interface' sessions to design the road map for implementing Sustainability Science in Asia-Pacific, linking with Africa to promote South-South cooperation. The best practices were synthesized, with a focus on environmental sustainability, from the demonstrations pilot sites established across the region. This

workshop has also addressed sustainable solutions to natural resources management and elaborate recommendations on how the interface between science and policy can contribute to a meaningful delivery of the Post-2015 Development Agenda in the Asia-Pacific region.

The workshop has brought together key stakeholders and scientists to discuss the current status of sustainability science, globally, and in the Asia-Pacific region including challenges of Post-2015 Development Agenda, Environmental Sustainability in the ASEAN, and experiences in implementing Sustainable Science policies. It was attended by 143 participants from 23 countries (Malaysia, Indonesia, Japan, Australia, Philippines, China, Vietnam, Pakistan, India, Uzbekistan, Kazakhstan, Cambodia, Samoa, Cook Islands, Solomon Islands, Fiji, Timor Leste, Brunei Darussalam, France, England, Iran, Zimbabwe, Benin), 85 male dan 58 female out of 43 international participants and 100 local participants consist of 30 International Organizations (such as UNESCO, ASEAN, UNDP, UNSGAB, ICHARM, RCUWM, ISTIC & HTC), 27 government sectors (ministries and agencies), 69 from universities (local and international), 2 private sectors, 8 NGOs and 8 Media representatives.

UKM Vice Chancellor i.e Prof Datuk Dr. Noor Azlan Ghazali has delivered his opening remark at this workshop, followed by Mr. Takao Noda, the Assistant Secretary General of Ministry of Education, Science and Culture (MEXT) Japan, then by Dr Alexander A. Lim of ASEAN Socio Cultural Community (ASCC) Science and Technology Division Head, and Prof Dr Shahbaz Khan of UNESCO Jakarta Officer-in-Charge. The high-level science policy dialogue during this workshop has participated by experts including Prof. Tan Sri Dr. Zakri Abdul Hamid, Science Advisor to Malaysian Prime Minister, Prof. Kazuhiko Takeuchi the United Nations University (UNU) Senior Vice-Rector, Prof. Kuniyoshi Takeuchi, Advisor of The International Centre for Water Hazard (ICHARM) and many others. The sharing of insights, information and understanding between these high level experts and policy makers has made this workshop as a big step in contributing to the Post-2015 Development Agenda through the Sustainability Science Approach.

# 02

# ABOUT SUSTAINABILITY SCIENCE WORKSHOP



### INTRODUCTION

The 'International Workshop on Sustainability Science for Sustainable Development Goals (SDGs)' is part of follow up initiatives of the 'International Workshop on Sustainability Science: A Science Based Approach to Realize the Future We Want for All' held on 4-5 April 2013 in Kuala Lumpur, Malaysia. This first initiative objectives' were to develop a common understanding of the concrete concept of 'Sustainability Science', to raise awareness about sustainability science among policymakers in the Asia and the Pacific Region and to position this as part of the national and regional science and technology policy. According to this aim, the UNESCO Jakarta is currently implementing the SHARP and STAR projects according to UNESCO's medium term strategy 37C/4 (2014-21).

SHARP (Science Harnessed for ASEAN Regional Policy) supported by Malaysian Funds-in-Trust aims to foster the attainment of the Internationally Agreed Development Goals, including the MGDs, by addressing the impacts of climate change on natural resources in the ASEAN. Through demonstration projects in the ASEAN member countries, it promotes the best environmental management principles and practices with a clear pathway to regional science policy.

On a broader scale, STAR (Sustainability Transformation Across the Region), funded by Japanese Funds-in-Trust, aims to deliver a clear understanding of sustainability science outcomes at the regional policy levels through establishment of a platform as a depository of sustainability science best practices and development of a regional strategy and tools. STAR develops three pilot projects to showcase sustainability science principles and applications

These projects are aligned with the UNESCO Regional Bureau's Science Support Strategy, which identifies four Strategic Themes: Water for People and the Environment; Climate Change and Environmental Resources; Science Policy, Innovation and Capacity Building; and Disaster Preparedness and Mitigation, as the focus science areas towards a sustainable society.

### **UNESCO SUSTAINABILITY SCIENCE INITIATIVE**

In the above context, UNESCO Jakarta with the support of Malaysian Funds-in-Trust (MFIT) and Japanese Funds- in-Trust (JFIT), and in collaboration with the National University of Malaysia, especially with the Institute for Environment and Development (LESTARI) and other institutions such as International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC), Regional Humid Tropic Hydrology and Water Resources Centre for South-East Asia and the Pacific (HTC) Kuala Lumpur, UNESCO-IHP Malaysia, Ministry of Education Malaysia (MOE), Malaysian National Commission for UNESCO (MNCU) and National Council of Professors (MPN) has organized an International Workshop on Sustainability Science for Sustainable Development Goals (SDGs), 4-5 March 2015 in Kuala Lumpur, Malaysia. It brought together key stakeholders and scientists to discuss the current status of sustainability science, globally, and in the Asia-Pacific region with regard to already established networks of experts, their approaches and methodologies. They have elaborated recommendations on how to implement the solutions science offers to key challenges to Post-2015 Development Agenda. On this basis, the High Level Science Policy Dialogue has conducted during the workshop to discuss policy guidelines and a strategy for cooperation on Sustainability Science.

The workshop was also offered a focus on Environmental Sustainability in the ASEAN. The strategies implemented by ASEAN members were presented in sessions attended by ASEAN-UNESCO Committees, Science and Technology Division of ASEAN Socio-Cultural Community Department, and ASEAN key stakeholders. A special focus on Climate Change session was also conducted during this workshop, as well as Sustainability Science Initiative learning from Pilots and models presented by scientists on ASEAN experience in implementing Sustainability Science policies, then followed by UNESCO focus on Sustainability Science presented by UNESCO Field Offices in Asia Pacific countries. The outcome of this workshop is to initiate a dialogue on a policy paper that should identify at least five national science policy interventions focusing on demonstration pilot projects for environmental sustainability for the integration of social and environmental aspects in the ASEAN Plan of Action on Science and Technology – Implementation Framework 2016- 2020.

### **WORKSHOP OBJECTIVES**



The objectives of the workshop were:

- 1. To contribute to the Post-2015 Development Agenda through the Sustainability Science approach;
- 2. To develop and strengthen science to policy interfaces;
- 3. To institute a high-level dialogue on the role of Science to address challenges to the Post-2015 Development Agenda in the region;
- 4. To develop a regional framework and tools to implement sustainability science within the framework of UNESCO-ASEAN MOU;
- 5. To initiate a dialogue on a policy paper and strategy on Environmental Sustainability in the ASEAN to introduce it to the next ASEAN Plan of Action on Science and Technology 2016-2020. It will be strategically developed based on the seven priority areas in the ASEAN-UNESCO FAC in narrowing development gaps as well as addressing the threats.



## **WORKSHOP OUTPUT**



The key outputs from the workshop are:

- 1. Gain input from networks of experts on approaches, methodologies and best practices to implement sustainability science globally and the Asia-Pacific region;
- Development of science strategies for the attainment of the Internationally Agreed
   Development Goals and responding to the challenges addressed under the emerging

   Post-2015 Development Agenda;
- 3. Review current situation and gap analysis between existing science policy and the needs of the ASEAN communities for realizing ASEAN Vision 2020;
- 4. Initiate a dialogue on a policy paper to integrate social and environmental aspects in the ASEAN Plan of Action on Science and Technology 2016-2020;
- 5. Provision of a policy basis for future cooperation on environmental sustainability among ASEAN countries and UNESCO's network.



### **WORKSHOP APPROACH**

The International Workshop on "Sustainability Science for Sustainable Development Goals (SDGs)" was organized over 2 days from 4th - 5<sup>th</sup> of March 2015 at Kuala Lumpur Convention Centre (KLCC), Kuala Lumpur, Malaysia, and consists of an opening, presentations, discussions, reporting, conclusions and closing.

The first day of the workshop focused on SHARP and STAR Projects inception and discussion on approaches, methodologies and best practices at the field level. It brought together scientists to discuss Sustainability Science and the Post-2015 Agendas, through multidisciplinary approaches and frameworks and offer recommendations. The second day consists of a high level Science Policy and the Post-2015 Agenda in the ASEAN, drawing from the recommendations and strategies elaborated during the first and second days, to discuss on a policy paper.



# 03

# TARGET GROUP AND PARTICIPANTS





### TARGET GROUP AND PARTICIPANTS



The International Workshop on Sustainability Science for Sustainable Development Goals (SDGs) which was held on 4-5 March 2015 at Kuala Lumpur Convention Centre (KLCC), Kuala Lumpur, Malaysia brought together a group of international experts and regional stakeholders in the Asia-Pacific region to discuss and develop a common understanding of sustainability science and its role in addressing and solving key global challenges.

The audience of this workshop were a mix of academics, scientists, engineers, governments' representatives and National Commissions for UNESCO, national and international organisations, NGOs, private sectors and UN agencies.

The workshop has brought together key stakeholders and scientists to discuss the current status of sustainability science, globally, and in the Asia-Pacific region including challenges of Post-2015 Development Agenda, Environmental Sustainability in the ASEAN, and experiences in implementing Sustainable Science policies. It was attended by 143 participants (43 international participants and 100 local participants) which consist of 30 International Organizations (such as UNESCO, ASEAN, UNDP, UNSGAB, ICHARM, RCUWM, ISTIC & HTC), 27 government sectors (ministries and agencies), 69 from universities (local and international), 2 private sectors, 8 NGOs and 8 Media representatives. There are also 7 participants that were attended virtually via Video Conference (from UNESCO Harare in Zimbabwe) and made the total of participants up to 150. Participants came from 23 different countries i.e Malaysia, Indonesia, Japan, Australia, Philippines, China, Vietnam, Pakistan, India, Uzbekistan, Kazakhstan, Cambodia, Samoa, Cook Islands, Solomon Islands, Fiji, Timor Leste, Brunei Darussalam, France, England, Iran, Zimbabwe and Benin. There are 85 male dan 58 female participate in this workshop. The distribution of participants are listed below:

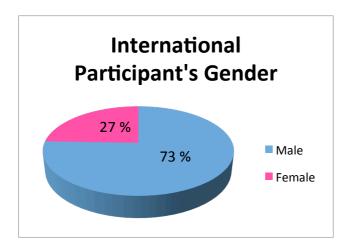


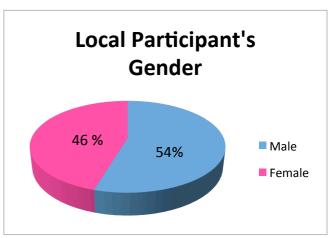
Country	Male	Female	Total	
Malaysia	54	46	100	
Indonesia	8	4	12	
Japan	6	-	6	
Australia	2	-	2	
Philippines	-	2	2	
China	2	-	2	
Vietnam	-	1	1	
Pakistan	1	-	1	
India	1	-	1	
Uzbekistan	-	1	1	
Kazakhstan	-	1	1	
Cambodia	1	1	2	
Samoa	2	-	2	
Cook Islands	1	-	1	
Solomon Islands	1	-	1	
Fiji	1	-	1	
Timor Leste	1	-	1	
Brunei Darussalam	-	2	2	
France	1	-	1	
England	1	-	1	
Iran	1	-	1	
Benin	1	-	1	
Zimbabwe*	7	-	7	
Total	86	58	150	

<sup>\*</sup> Attended virtually via Video Conference

Table 2. Participant's Gender (86 Male & 58 Female)

	Male	Female	Total
International	31	12	43
Participants			
Local Participants	54	46	100
Total	85	58	143





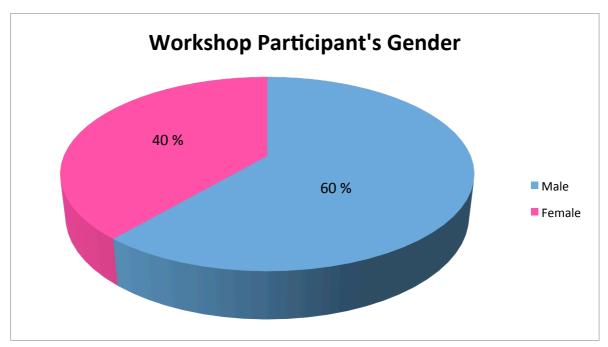


Chart 1,2 & 3: Distribution of Workshop Participant's Gender

Table 3. Participant's Agency/Organisation

	International	Malaysian	Total
	Participant	Participant	
International Organisation (UNESCO/ASEAN/	24	5	
UNDP/UNSGAB/ICHARM/RCUWM/ISTIC/HTC)	24	3	29
Government Sector (Ministry/Agency)	10	17	27
Private Sector	-	2	2
University	9	60	69
NGOs	-	8	8
Media	-	8	8
Total	44	100	143

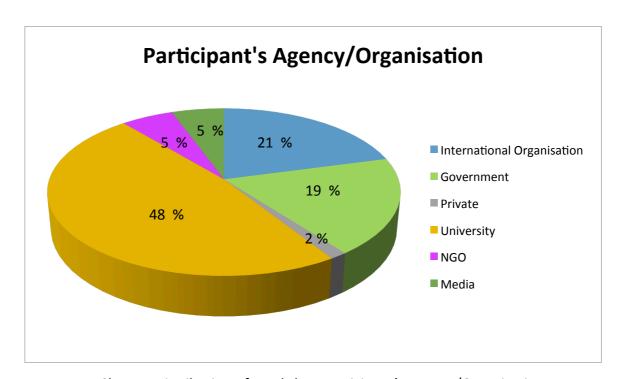


Chart 4: Distribution of Workshop Participant's Agency/Organisation

# 04

# SUMMARY OF THE WORKSHOP SESSIONS





### DAY 1: WEDNESDAY, 4 MARCH 2015





### **OPENING SESSION**

#### **OPENING REMARKS AND INTRODUCTION TO THE MEETING**

### PROF. DATUK DR. NOOR AZLAN GHAZALI, UKM VICE CHANCELLOR

Prof Datuk. Dr. Noor Azlan Ghazali welcomed the entire distinguished guess, participants and everyone who were attended the workshop. He also conveyed his appreciation to Institute for Environment and Development (LESTARI) of Universiti Kebangsaan Malaysia (UKM) for organizing the International Workshop on Sustainability Science for Sustainable Development Goals (SDGs) 2015 with the theme to support the Post-2015 Development Agenda in partnership with the United Nation Educational, Scientific and Cultural Organization (UNESCO) with the support of Malaysian Funds-in-Trust (MFIT) and Japanese Funds-in-Trust (JFIT), and in closed collaboration with the International Science, Technology and Innovation Centre for the South-South Cooperation under the Auspices of UNESCO (ISTIC), Regional Humid Tropic Hydrology and Water Resources Centre for South-East Asia and the Pacific (HTC) Kuala Lumpur, UNESCO-IHP Malaysia, Ministry of Education Malaysia (MOE), Malaysian National Commission for UNESCO (MNCU) and National Council of Professors (MPN). He is delighted to organise this event and he welcomed all the international participant to Malaysia and wished everyone to have a fruitful two days workshop. He also mentioned that this event is part of follow up initiatives of the International Workshop on Sustainability Science "A Science Based Approach to Realize the Future We Want for All" held on 4 and 5 April 2013 in Kuala Lumpur, Malaysia. Through the

workshop, first step to raise awareness about sustainability science among the policy makers in Asia and the Pacific Region with the view to position this as a part of national and regional science and technology policy was reached. The Workshop has also produced the Kuala Lumpur statement which highlighting the Sustainability Science as an important tool, methodology to be used in addressing and solving key global challenge in future. LESTARI of UKM has been working on this sustainability science since its establishment in the 1<sup>st</sup> October 1994. LESTARI fulfil the aspiration of UKM as envisioned by the United Nation Conference on Environment and Development in Rio de Genero, Brazil in 1992 to realize the goal of sustainable development through research and capacity development. LESTARI is a multidisciplinary discipline research institute that was established within the sustainable development concept and mark another step forward in the national progress towards the sustainability in development. Sustainability science promotes as such crossed disciplinary coordination and requires global cooperative effort to advance understanding of the dynamic of human-environment system. In line with the government's agenda, research at our university, UKM, has centred around 12 niches. In each niche, several research group exist to conduct focussed and multidisciplinary research. Among this is a regional sustainable development which includes heritage and conservation, sustainability science and governance, environmental safety and disaster management, sustainable natural resources management, and sustainable campus research cluster. We are pushing hard now, and my vision is that, in every aspect of university, discipline that we have on our campus, sustainability could be a theme for that. He explained that he as an economics will try to embed the topic of sustainability in the delivery of MBA courses. Solutions probably come from the forum, but the causes are coming from the other form. So, we have to make sure that the otherside of the discipline whom will probably will be very far distance from the topic of the sustainability and green economy has also need to be fully alerted and embed in their curriculum. UKM had been putting sustainability science in practice through multidisciplinary approach to address mutual needs. Sustainability science in UKM were applied through UKM's living labs. He informed that UKM have quite a number of living labs which is the unique part of this university such as Langkawi Geopark Research Station in Langkawi, Mersing Marine Ecosystem Research Station, Fraser Hills Mountain Research Station, Chini Lake Research Station, Lata Jarum Freshwater Recreational Forest Research Station as well as our main campus UKM Bangi, permanent forest reserve. We are really practicing sustainability science on our campus and we are harmonizing our environment on the campus as we are now the only forest area surrounded by housing development which is challenging environment indeed. LESTARI has been conducting research on the geological, archeological, cultural and biodiversity and ecological wonders of Langkawi and has good collaboration with Langkawi development authority. Langkawi is one of the UNESCO Global Geopark in 2007 and has acknowledged as first UNESCO Global Geopark in South East Asia and world's 52 Geopark. UKM's engagement in Langkawi is not only limited to research activities but also expanded to community engagement as such in the establishment of Langkawi Geopark. They are trying to cover up various other areas of Langkawi Island development to make sure that growth and sustainability are compatible. The Langat River Basin in Malaysia has been recognized as one of the UNESCO-IHP HELP (Hydrology for the Environment, Life and Policy) Programme since 2004, and has classified as an Evolving HELP River Basin, out of 91 catchments from 67 countries in the world. This recognition is initiated by LESTARI, UKM through its various research focus in this basin towards sustainable management of Langat River Basin in Malaysia. In 2010, LESTARI UKM has also successfully brought another initiative under the UNESCO programme that is the acknowledgement of Putrajaya Lake and Wetlands as one of the Ecohydrology demonstration site of UNESCO IHP Ecohydrology programme in close collaboration of Putrajaya Corporation, the administrative city of Malaysia. Since then the catchment has been classified as one of the seven Ecohydrology operational site in the world which are implementing Ecohydrology principle and involve stakeholders in project management. He is so proud that UKM are making presence in Putrajaya because many people probably aware that Malaysia is driving our economic transformation, and in driving this economic transformation, there are three main pillars. One is on the income growth, the other one is inclusivity, and the third one is on sustainability. Professionally we need more attention on the issue of sustainability and also the issue of inclusivity. He also shared that the Deputy Prime Minister who is also Minister of Education Malaysia has agreed and approve for the establishment of Malaysia Institute for Inclusive Development and advancement at our university and we have to start working on that immediately. Lastly, he said that this workshop on Sustainability Science for Sustainable Development Goals (SDGs) 2015 can serve as a platform to pave the way forward in addressing this issue. On behalf of the university, he thank the participants on their presence, and also for their support for furtherance of knowledge and education in sustainability science. This is the kind of partnership that UKM would like to see more as it is in line with its role as the Guardian of the nation. He expressed his gratitude to all partners and all participants for their full cooperation, contribution and kind collaboration and wished the participant a good and beneficial workshop.

### MR. TAKAO NODA, JAPAN MEXT ASSISTANT SECRETARY GENERAL

Mr. Takao Noda expressed his gratitude to be at this workshop. He delivered few remarks on behalf of Japanese National Commission for UNESCO and Japanese Ministry of Education, Culture, Sports, Science and Technology at the start of this workshop. He emphasized three things which their ministry considers the most important when they promote sustainability science. The first thing is that they have to solve concrete global issue that we are facing today with sustainability science. This means that the stage to understand the concept of sustainability science has ended; they have to move on to the stage of social implementation. The second thing is the linkage is education, as people, the main factor in solving global issues is to educate young people to acquire skill of sustainability science will be the most effective measures in this regard. When it comes to education, with no doubt, UNESCO most important policy in this field is ESD that is Education for Sustainable Development. We cannot realize sustainable society without an appropriate linkage between ESD and sustainability science. The last thing is related to the fact that sustainability science is promoted by UNESCO that is international cooperation. There are various global issues that we are facing today such as infectious disease, disaster prevention, climate change and so on. No single country can solve these global issues which transcend international border. So these are the three points that has given emphasize which are implementation, linkage with education, and international cooperation. Touching upon a little on the situation in Japan, policy for science and technology is the basis for Japan national strategy, and Japan aims to be the most innovation friendly society in the world by strongly promoting policy for science, technology and innovation. The total Olympic and Paralympics games will be held in 2020, and will be ideal opportunity for Japan to be the leader in addressing social issues and ensuring the world society where people will able to enjoy safety and security. Last but not least, he expressed his sincere gratitude to UNESCO Jakarta Office and LESTARI UKM who made great effort to organize this workshop.

### DR. ALEXANDER A. LIM, ASCC SCIENCE AND TECHNOLOGY DIVISION HEAD

Dr. Alexander started to highlight that ASEAN was setup in 1967 with five countries that is Indonesia, Malaysia, Philippines, Singapore and Thailand. Why? The formation of ASEAN mainly for conservation, for political security reasons. In 1984, Brunei Darussalam joined ASEAN and later on in 1995 Lao PDR, Myanmar also joined and the last country to join ASEAN was Cambodia. The intention of ASEAN has seen evolved from mere political security consideration to include cooperation towards economic integration as well as join pursuits on social cultural and diverse. In December 1999, here in Kuala Lumpur, ASEAN leaders envision ASEAN by the year 2020 to be a champion of South East Asian Nation, outward looking, living in peace and stability, prosperity, together by partnership in dynamic development and community of caring society. To achieve ASEAN vision 2020, a series of plan and actions was done such as Hanoi plan and action; adapted in Hanoi, the Vien Tien programme; adapted in Vien Tien Laos PDR. This plan and action were developed and implemented. So in 1997, we had ASEAN vision 2020. Ten years later in 2007 in Philippines, ASEAN leaders agreed to accelerate the establishment of the ASEAN community from 2020 to 2015. And this year is 2015, our leaders must be very brave and visionary at that time because if we can recall in 2007, we had the economic crisis. The ASEAN community has three pillars that is the ASEAN political security community, economic community, and the social cultural community. Malaysia as chair ASEAN this year will declare in December or earlier this establishment of the ASEAN community. He found with high degree of confidence that the minimum necessary and sufficient condition envisioned by ASEAN leaders would be established. He said that ASEAN by 2016 will be a stronger and resilience region that has sustain growth even after been subjected to external pressure. We have had economic crisis, avian flu, Cyclone Nargis, Typhoon Haiyan and so many, but we still see ASEAN is everywhere in the media. ASEAN continues to be ready, to respond as one because various instruments have been put in place. ASEAN is also a very productive region not only in producing wealth but also in producing people. ASEAN with a combined population of 625 million people is a big market and so many mouths to fill and a combined GDP of 2.4 trillion US Dollar. ASEAN is now the 7<sup>th</sup> largest economy in the world and 3<sup>rd</sup> in Asia after China and Japan. It is projected by 2050; ASEAN will become 4<sup>th</sup> largest economy in the world. The implementation of ASEAN Social Cultural Community (ASCC) blueprint from 2009 to 2015 was shown to be effective in developing and strengthening the coherent of policy framework institution to advance human development, social justice and rights, social protection welfare, environmental sustainability, ASEAN awareness and narrowing the development gap. We have reduced the proportion of people living on less than a dollar a day. The proportion of seats held by women in parliament has increased. ASEAN has been performing very well reducing maternal death of 100 thousands live birth. The proportion of urban population living in slums decrease from 40 percent in year 2000 to 31 percent in year 2012. Now, ASEAN leaders declare by end of this year the establishment of ASEAN of the ASEAN Community, it is the hint that the process would have ended by this year. ASEAN Community building will of course will be a continuing process and it will end in 2015. Now, last year ASEAN leaders have agreed on a post-2015 Agenda just like the UN you have post-2015 Agenda. The ASEAN leaders have has disposed 2015 vision to realize an ASEAN community that is politically cohesive, economically integrated, socially responsible and truly people oriented and centred and roles base ASEAN. As a very important component of the ASEAN Community, the ASEAN Social Cultural Community will focus on ASEAN Community that is inclusive, you have heard from Prof Datuk Noor Azlan that sustainable, resilient, dynamic, and why do we do this? Because ASEAN wants to engage and benefit its people. Everything that we do is not for the government and for the leaders but for the benefit of the people. To contribute and to realize in sustainable ASEAN Community, the ASSCC Community engage these envision to move forward towards sustainable environment that can support its social development. The key resource areas in corresponding are strategic measures or action to achieve a sustainable element of community building will include sustainable management of ecosystem and natural resources, sustainable cities, sustainable climate, sustainable consumption and production. At the end ASEAN will also need to pursue sustainable livelihood. In ASEAN, we deal with so many government institution, we talked a lot, we have so many declaration and statement. But what do these mean to the people? Some may find ASEAN not relevant because they don't feel it. Perhaps this time there will be less talk, because aside from talking about sustainable development, we must have sustainable financing. It is very important for ASEAN and the rest of the world to also look at sustainable financing as one of the important element in achieving our goals. They are many bodies in ASEAN that work individually or jointly towards the sustainable ASEAN. Among this bodies will include the environment, when we talk about sustainable development is not only about sustainable environment, we also talk about sustainable agriculture, sustainable transport, energy, health, social welfare, education, and of course in my area, science and technology among others. We would like to inform you, at this time developing, we at the finance stages of finalizing the ASEAN plan of actions on science and technology and innovaton. In the past we only have action plan of science and technology, but if you're younger, you will recall in the early 1990s or the late 1990s, the letter 'e' were very prominent. We have e-commerce, e-transaction, e- everything, but this time, the letter 'i'is very popular like 'innovation'. The case of Malaysia in the past Ministry of Science, Technology and Environment, the remove the word 'Environment' and they are now called MOSTI with the significant 'i". In ASEAN, we have the committee of science and technology, later on, it will become COSTI. Innovation is important in ASEAN to make it more innovative. When we talk about innovation, it is not only technology innovation; it is to be look out in broader perspective. Now ASEAN has engaged various partners in planning, implementation, monitoring and assessment of various initiatives. UNESCO continues to be a very valuable partner. The framework agreement for cooperation between ASEAN and UNESCO signed in December in 2013 in UNESCO Headquarters in Paris by our Secretary General and Director General of UNESCO is seen as a continuing commitment by both parties towards science sustainable development. With appreciation, the inclusion of science of technology and innovation as among the areas of cooperation identified in the agreement. Now, this is our first time to participate in this exercise, talking with partners and participant with regard to sustainability science. To be frank, at ASEAN Committee of Science and Technology, we do not talk about sustainability science, but we talk about science or sustainable development. We wanted to know what sustainability entices with this we note with interest that Malaysia is our partner in pushing forward sustainability science. Lastly he expressed that he looks forward to engage in exchanges of use on how we can work together on sustainable development.

#### PROF. DR. SHAHBAZ KHAN, UNESCO JAKARTA OFFICER-IN-CHARGE

Prof Shahbaz expressed that he is really grateful to UKM and vice chancellor to host the very important event with ISTIC. He also thanked the chairman of ISTIC i.e Dato' Lee and Dato' Samsudin, ISTIC Director for collaborating with UNESCO and LESTARI again in organising this workshop. He thanked Dr Lim for the overview and said that this collaboration with ASEAN is very important and he is working with his friends in that regard. He is very generous to have Ms. Philomene Robin for her great effort to link with ASEAN. He thanked Mr. Noda, to make his special presence from his busy schedule in Japan. He said that he is very grateful to the government of Japan for supporting many programme of UNESCO. This is one of the programmes that are funded by Japan Funds-in-Trust both in UNESCO headquarters and other offices. This fund is to strengthen science in the Asia and Pacific region and it has been a key while we have so many difficulties to progress many things. He also acknowledged the presence of International Science Technology and Innovation Centre For South-South Cooperation Under The Auspices of UNESCO (ISTIC). ISTIC is a very important centre which is linking not only south cooperation in the Asia Pacific, but Africa and Latin America as well. He said that they have few programs that are working together. He also said that he have a friend from Humid Tropic Centre, Dr Roseli and Mr Khairuddin. This is a centre contribute to the Malaysian Government and very importantly in the area of water wchich is such an important issue for us. He also acknowledged his colleague from Japan, ICHARM, it is about hazard management. Asia Pacific is a big region for hazard, and that is why they have special effort. He found it's helping us and another region of the world as well. They have just finished major project with the Government of Japan with the cost 4.37 million dollars to make early warning system, with involve ICHARM. There will be another 4 million dollar project to do link system. He is then acknowledged his colleague, very respected Mr. Ali from Iran, a head of UNESCO Centre for Urban Water Management. He said that UNESCO family is altogether at this workshop and he said that UNESCO Jakarta Office is not the only UNESCO Family which is doing science in the Asia Pacific region, they make a special effort to invite. those colleagues who work on that at this workshop. He acknowledged the presence of important colleagues from UNESCO field offices of Vietnam, Uzbekistan, Kazakhtan, Pakistan, India, Cambodia, China and you got a presence from APIA Samoa. They have focus on sustainability science on small island which hopefully will help us in new area to deal with climate change and importantly for sustainability economic. He thanked all of them to spare time to be able to participate at this workshop. He said that the programme is very packed programme. The effort has been made by UNESCO and LESTARI UKM and ISTIC, and we have more than 50 speakers. Sustainability science is more than 50 important people and they have been handpicked. They are very important people and I am very grateful to all of you to travel from many countries and we have special colleagues from Australia who is working on the big issues in his continent which is very fragile continent the balance between water and sustainable communities. They are Prof. Wayne Meyer and Prof. Hector Malano. He said that participants will get some excellent idea on how this two colleagues has been managing sustainability in very difficult environment. He also said that we have number of colleague from Philippines, China and Africa. Then we are going to have a special session on the Africa. On that regard, we will have a video conference tomorrow and we will hear from Central Asia and South Asia. We will have our colleague from United Kingdom. Interesting development with respect to system dynamic and working with communities. We have very special professor from Indonesia; Prof Helmi is helping community by helping the farmers. Very importantly, we are going to emphasize that this is not a natural science effort only; science is from social all the way to natural science only. There are many developments including collaboration with government of France, his colleague from France was attended. He is very grateful for John Crowley who made special to come very late at night at this workshop and he is a key collaborator from UNESCO Headquarter. This is a very important event for UNESCO and he take it very seriously and there are also big expectations, what is sustainability science? Whatever we do in this world is to make sure that not only us, our future generation will exist as well. The things that we enjoy, our future generations will enjoy as well. Being responsible citizens with the unsustainable consumptions, it is not possible to sustain ourselves on this planet. So how to bring balance back to this planet? He said that we might know everything, but what we need now is to move to actions as moving from sustainability science with all this discipline. He said that he had a talk with the UKM vice chancellor this morning; he is in the economics background. They agreed that business is important but business without sustainability will spoil the whole planet. We need to bring our various partners into the sustainability approach. A document called the 'Regional Science for Strategy' is just been release to everyone. In page 10, it says strategy for our next 80 years starting from last year it links with UNESCO plan approve by 195 nations. It has the key issue in the Asia Pacific region that we want to tackle. UNESCO will emphasize on environment, environment is a very big issue on the whole Asia Pacific. There is a programme about biosphere in diverse, global environment as far as sustainability in Asia Pacific. He said that we have a major problem with disaster. We have major emphasize on resilient communities through this programme. Another effort, WISER, it is about water informatics, sustainability and resilience. There is also program to bring higher standards of education program and that is being done with ISTIC now lifting standards in Asia Pacific which will help other region as well. Lastly but not LEAST is STAR, Sustainability Transformation Across the Region. He urged everybody to take time and give them some guidance and ideas on what people think. He said that all ideas need sustainability science in the core of it. Water, environment, disasters, energy and we have to think broader than our discipline. In that regard, he asked participants to think carefully and briefly about human existence, for how long we exist in this planet? There are many different clues. According to one book, there are three revolutions; the human existence is for about 200,000 years. The first biggest revolution was cognitive revolution for us to be able to speak to each other and communicate to each other. That is 130,000 years before revolution took place according to scientist. The next revolution we have after that is agriculture revolution. The moment we learn how can we plant and have food security but in the process we destroy the planet as well because we were not too care to have sustainable agriculture to balance environment, agriculture and societies. In the process, interestingly, people who produce most they earn the least, the farmers earn the least and the others benefit from there. So agriculture revolution has changed our life. Science and technology revolution has changed our life in one or the other way but in the process we have become bigger consumer after resources of this earth. So what would be the fourth revolution? The fourth revolution will be environmental disasters which mean eliminate human race from this planet. To avoid that we need to have sustainability and sustainability science in the mind of business for

everybody including scientist and government. Lastly he made a special request to all participants to think of how will sustainability science look like? Many professors at this workshop and participants can ask them to debate about sustainability science definition but they will not even agree after years of debate. What is sustainability? How can we implement it? This is a big challenge. So we have picked very carefully with the help of government of Japan and our colleagues from Malaysia on how can we help people for example in ASEAN if we say sustainability will improve the live and ASEAN integration. So you have here a number of examples, he drawed participant's attention to first of all this Langat River. This is a very important river which is passing through the Putrajaya and the Putrajaya Lakes. How can we manage river so that better coexistence with the environment at the same time with better businesses and there is longer term future. You need to bring many people in the management. Next one we have is a very special island, Langkawi which is a very small island but it is a very important economic zone and it has one of the geopark of UNESCO as well. There is a special partnership between community, scientist and with the greater policy makers. How we bring those example to the other parts of the world as well. Then we have these rice terraces of Philippines. This is a world heritage site where the rice is being grown for hundreds of years and it is a world heritage. The problem is, do we want to keep the farmers do the same practices forever so that we can enjoy the culture? We need to have them to be able to have better education, communication, food and at the same time we preserve the culture as well. The other example we have are the problem links to the tropical rain forest of Sumatera. Sumatera is considered to be the last place on the earth if we destroy the other rain forest heritage. So how we create the kind of facilities for local community so that they look after the forest and at the same time they can feed and educate themselves and they have energy so that they do not need to destroy the forest. Then we have in Siem Reap in Cambodia. We have an excellent system where Angkor Wat which is a cultural part of heritage in ASEAN and also for the world heritage site. It is also a place where everybody comes and population is so high where people are pumping too much ground water. As they are pumping too much ground water, the foundation of Angkor Wat are in trouble and Tonle Sap is getting drier. How can we have a better environment and creating a sustainable society. In Indonesia, we have Citarum River, where our plastic is discharge into the river. How can we have a better society linking with flood management, water management, integrated water resource management? There are other examples where Tsunami happened in Indian Ocean and examples like how can we avoid big disaster like Haiyan. There are more posters for example from every region that you can refer. He emphasized that, it is not that sustainability science just came as a new study but now what we are trying to do is consciously bring the ideas and helps us to communicate more coordinate in a way we can promote these ideas into policies of the level of government. He hope that this two days workshop will be very enjoyable experience and hoping that participants will come out with some sustainability projects, he requested his colleagues form the different offices to actively link with collaborators from the region so that UNESCO can come out with how can they help the ASEAN and how can they help the Asia Pacific region. They also have small emphasize on the small island. Lastly he hope that this workshop will find a very productive, way forward to help solve the greatest challenge which all of us face.

## KEYNOTES SPEECH ON SOUTH-SOUTH COOPERATION TO DELIVER THE SDGS BY DATO'. IR. LEE YEE CHEONG, ISTIC CHAIRPERSON

Dato Lee wished to set a scene. That is why he entitle his address as UN MDG, South-South Cooperation and Sustainability Science. He was planned to tie all three together. He said that he was one of the founding father of Sustainability Science. In 2001, the International Council for Science (ICSU) obtained an international grant to prepare for the UN World Summit on Sustainable Development in Jonnesburg in 2002. So in 2001 a group of people, including himself, representing the World Federation Engineer Organization. They were shut up in the National University of Mexico City for two weeks to debate the issue of sustainability science and arising out of that workshop the proposal was put by ICSU to WSST at the summit that sustainability science should be one of the anchor for the Johanesburg plan of action anchored by WEHAB as we know water, energy, health, agriculture and biodiversity management. His great interest in SDG is because he was the only Malaysian who was appointed by Kofi Annan to be a member of UN Millennium project 2002-2006 to actually put action into the UN DGs which ends this year and actually would lead to sustainable development goals. With that introduction, he highlight that his presentation

content would be UN SDGs 2000-2015, UN SDGs 2016-2030 and what will be considered to be inference of South-South cooperation on the SDGs, the relevance of sustainability science on the SDGs and finally a bit about ISTIC, his organization on how he try to align their programme to the SDGs. The eight MDGs are going to expire this year. In his experience, the MDGs are actually very unambitious, not multidisciplinary and also government centric. Background was that before the turn of the century, the development committee led by the world bank and the West they actually turn from the hard infrastructure constructions to soft issues like women, education, gender, human rights, labour rights and the rights. The MDGs was promoted by the West and they talk about women, environment, health but they avoided all the hard issues. The hard issues actually are infrastructure on necessary infrastructure as well as virtual infrastructure like ICT connectivity which you anchor the development of industry of small and medium enterprises in developing country leading to commerce and trade within the nation, region and internationally. With infrastructure and establishment of the small and medium enterprises then foreign direct investment will grow. Then the economy of developing country will get uplifted. All this will not mention at TOR in the MDGs on of the things from my own perspective there is a cardinal omission of the MDGs. They do not mention on how to deal with youth unemployment. To him, if the MDGs were to succeed it must actually achieve two objectives one is wealth creation and economy uplift in the South and the second one is youth employment in the South. These two issues were not address. Why do you think these two issues were not addressed? Because at that time there was this perception in the West that government should not be involve in business. All these actually should be left to the private enterprises. So, the MDG which are soft MDG were the one that is left to the government become government centric and whereas the hard issues about infrastructure, construction and the rest and ICT development should be left to the private sector. But as we know from the crisis that actually unsue whether it is a ICT bubble, ASEAN economic crisis, global financial crisis that unregulated private sector is a path to greed and disaster. He said that the MDGs are not ambitious although the first goal said that eradicate poverty and hunger, actually, what the MDGs are about the combating incidence of poverty, hunger and pandemic diseases, child mortlity and female morbidity. It is not ambitious enough to say that we are going to eradicate the absolute poverty. Furthermore it is unambitious because the MDG were cought in terms of what aid is available for developed country. If the amount of aid is only so much, than, the developing country cannot expect to uplift themself anymore. The most actually are getting example for me is the education goal, MDG goal number two. That is primary education for all. We mentioned the need of tertiary education. How to have good primary education if their teachers are not educated beyond primary education. The west says that the amount of aid that we can allocate to the developing country for education can only result in the primary education. Now, coming to the SDG, I am really glad to see the seventeen SDG are listed in the posters. He suggested participants to go into the SDG website and not just to look at the seventeen SDG, but the 169 targets which are associated and the target are actually gave the action plan and focus on how to achieve the SDG. In contrast to the MDG, the SDG address all the issues of sustainable development but to him the most important part is that, thy only proclaim the end of absolute poverty by 2020. If we can achieve this goal of eradication of poverty than the other SDG will be easier to be achieved. What is more important is that, the SDG is the result of intensive global multidisciplinary and multistakeholder consultation since the Rio+20. This consultation has resulted into the very holistic and inclusive SDG. At the end of this year, because they are going to adopt the SDG next year at the UN Summit General Assembly, at the end of this year the UN Secretary General actually declare the end of the consultation and he actually has a synthesis report about all the consultative process and all the problems that was debated and discussed on how to move the world forward to sustainability. Everyone is invited to look at the synthesis report of Secretary General. In the synthesis report, the SDGs are very holistic and comprehensive. The SDGs break new ground with goals on inequality, economic growth, descent job, cities and human settlement, industrialization, energy, climate change, sustainable consumption and production, peace, justice, and institutions. It addresses all the issues that confront he human kind going forward. I think it is a great step forward from the MDG to the SDG. Why is this transformation? From the very narrow and the unambitious MDG to the very holistic and all embracing SDG. I think it is because of South-South Cooperation. In the last two decades, the South had shown that they have gone away from the soft MDG like infrastructure, construction, industrialization, the development of small and medium enterprises and this has actually uplift the economy, socio and economic development in South country. Of course the most striking example has been

China. The rise of China has also help other South country in their economic development but also help them to whether the Asian financial crisis in 1997 and the global financial crisis in 2008. He estimated that the South-South cooperation through organization and institution like the ASEAN Infrastructure Investment Bank, and Regional Economic Communities like ASEAN, East African Economic Community, West African Economic Community, and in South America, they will be the principle engine for South country to achieve the SDG. He wished to tie the irrelevance of sustainable science due to the UN SDGs. He said that UN SDGs is a great step forward for sustainability science which allocate cross disciplinary problem solving of the world as demonstrated by their resonance. Sustainability science bring together scholarship and practice global and local perspective from South and North and discipline across the natural and social science, engineering and medicine. It can be usually thought of by a few divine problem it addresses rather than the discipline it employs. It serve the need of both advancing the knowledge and action by creating a dynamic bridge between the two. The fuel is based on the need food, fuel, and fibre, etcetera to the current and future residence of this planet earth. He said that if we refer on the UN Secretary General Synthesis report, we can see how often the word technology has been used. We have all the technology we need to satisfy the SDG. He also appeals for multisectorial and multidisciplinary effort in order to through to achieve the SDG by 2030. For the first time, military budget was mentioned. In most of the UN Development Conferences, very seldom that was ever mentioned that we need to reduce military budget. He is very pleased by this fact. In order to advocate sustainability science, we must face the fact that science is also destructive. Fire and missile killed people, mother and children. So, the Secretary General has mentioned to reduce military expenditure towards more productive measures to enhance the human condition. Secretary General has also emphasized that science and technology, engineering, mathematics occupation especially for women. He also mentioned that we must have new intellectual property right regime. He wished to emphasize that the South should not actually look into the high technology like the most advance green technology and the east polluting technology in trying to achieve the SDG. They should actually depend on available and affordable technology and look at their own grassroot innovation within their own country and their region to overcome the condition of eradication and absolute poverty. Hence he urged everyone at this workshop to look at our own organization and our own individual action programme on how to infuse sustainability science and other to align our action to achieve the SDG. ISTIC is the category two centre of UNESCO, funded by government of Malaysia, for South-South Cooperation in Science and Technology Innovation. We have actually been promoting this priority activities very simple but on the ground. This activities now would need to reoriented to make them much more meaningful and applicable to achieve the SDGs. We pick out SDG four and SDG five within the scope of UNESCO. Everywhere we go, we see people discussing on the aging population, the lack of labour force in the developing countries and high income developing countries. Then we have the transboundary migration labour and all that creating a lot of social problem. The scientific community, if we believe in this we must do something. Like the Academy of Science and Engineering. They are all male. We must achieve gender balance from 30 percent ladies and 70 percent men. He said that ISTIC is very glad to participate in this workshop and he hope that the deliberation and recommendation will also help ISTIC in the realignment programmes to suit the SDGs.

#### PRESS CONFERENCE SESSION

The press conference session was held after the opening session. 8 Journalists from 5 media representatives in Malaysia i.e Asian Broadcast Network (ABN) News, TV Al Hijrah, Radio Television Malaysia (RTM), Berita Harian and Bernama (the national news agency of Malaysia) and also from UKM News have made interview to the distinguished Head of Institution and Organization who are organising and co sponsoring this event. They were asking question regarding this sustainability science workshop to the 4 main speakers and representatives from organiser i.e UNESCO, LESTARI and ISTIC.

**Question 1:** Can you explain about the programme being held on this day?

**Prof. Dato' Dr. Mazlin:** This is a special programme to bring in susutainability science in decision making and policy making in the countries or the region. Particularly we listen about ASEAN and also countries of the Asia Pacific and also it is about sharing the knowledge and experiences on how across the world different regions are bringing in the science into

everyday livelihood of communities around the world. And of course when we mention science as we have listened from various speakers this morning, that science doesn't only mean science and technology and engineering per say, what is more important also the social science and the humanity, inclusivity and so on.

**Prof. Datuk Noor Azlan:** Probably what I can say on Malaysia side of the story, end of this month it will be five year of the new economic model. In that model, there are three pillars. One is about the income, inclusivity and sustainability. I think it is very timely today, that we have very reputable participants coming from various parts of the world, gathering here in Kuala Lumpur to talk about sustainability science which is actually one of the main pillar on how Malaysia want to move forward. I strongly believe that this deliberation will benefit us in terms of moving the nation forward and also globally as shared by the keynote address suggest about how to ensure that the world economy can be sustainably growing in future and it encompass wide area of aspects of living in world economic.

**Question 2:** Where the output of this two days workshop and the discussion will be brought to? Is that for the implementation? What happens next and where do we go from here?

**Prof. Dato' Dr Mazlin bin Mokhtar:** What we are hoping, because this year is the end of the Millennium Development Goals (MDGs) as mentioned by Dato' Ir Lee Yee Cheong. Not only is it important for our region but many region of the world. The whole world community are looking at what is next? Under the United Nations big umbrella, we are trying the challenge of Sustainable Development Goals. In order to realize the goals and aspiration of Sustainable Development is not easy. Based on the prominent speakers this morning, we must look at economic growth together with inclusivity, environmental integrity and sustainability. That is the big challenge for the whole world. The fact that climate change and ecosystem change is happening so how do you also factor that in? We have greater challenges with increasing of population today approximately 7.5 billion people and by 2020 we are expecting 9 billion people. A lot of issues need to be taken care of, if we have growth, how to ensure growth is intact by everybody? It must be inclusive and the gap must be small. A balance approach is needed. SDGs are for women and science and technology is to be taken out by women. It is

found that in many education and research institution, more women are coming into the arena. Senior citizens and children will not be forgotten as well. Also, we are very happy to have participation by Japan Funds-in-Trust and ASEAN is getting more vigorous in this field as well.

**Prof Shahbaz Khan:** This two days we are looking at the example of sustainability science is already making a difference. Based on that, we want to establish pilot. Pilot for Malaysia, this would be very interesting for everyone. Malaysia has a lot of rainforest bu the water is not suitable for consumption where water pollution is a very big issue. How we are going to solve that kind of challenge? Now we have selected Langat River, to make it as an example in managing water resources with sustainability science. Secondly is the Putrajaya Lake, how it can be a model for having water, businesses, government people together? These practical steps become two very important pilots for UNESCO within ASEAN. Then we will also establish as another pilot following this meeting. In the greater Asia Pacific, we have special actions for educations and also pilots in other countries. We are establishing pilots in Cambodia, Indonesia, and we are hoping to have very strong programmes which link women and society in the education and basic education with ISTIC. That will be the major follow up from the conference. From the universities in Malaysia, we are now linking very strongly through ISTIC and Humid Tropic Centre on helping the higher education in the whole Asia Pacific and we will establish a programme Engineering Qualification with sustainability key factor and this will be the major programme as a follow up. At the policy level, we have this framework, agreement with ASEAN. Now, we are going to put that to the next phase and hopefully we will have policy in the ASEAN with the government. For small islands, there will be small actions about climate change. So, these are practical steps in the Asia Pacific region then globally. This problem is not only for Malaysia, Indonesia, Cambodia and ASEAN. We have passed the many of the boundary of this climate in this planet. Climate has been affecting many of the boundaries of this planet. Climate has been affecting us with too many disasters taken place. There are problems of water and bad air quality happens everywhere. Human health is affected and the food is not safe and it is not sustainable for future. This year, we have a special emphasize in Paris, where we will have our General Conference with 195 countries with the help of Malaysian government and Malaysia Funds-in-Trust a special showcase of this project. So, these are some actions and the government of Japan with the Funds-in-Trust we have now, we putting special emphasize on sustainability science under the UNESCO programmes which are water programme with 162 countries in the world and most importantly in this region to create better environment and better people. A special effort on how to connect centre of higher learning in Japan and another countries including Malaysia. There are many actions with the concrete examples out of this meeting.

Dato. Ir Lee Yee Cheong: Although ISTIC is International Science and Technology and Innovation Centre for South-South Cooperation, but we do not limit our self to cooperation in the South because there are a lot of science and technology innovation in the North. We work on triangular cooperation and not limited to South-South cooperation. One of the things that we emphasize on is education on science and technology, engineering and mathematics education. For that programme, we cooperate with France. We are trying to incorporate not just the scientific element for example water, energy, and air. We also teach the children to deal and recognize natural disaster. Natural disasters are going to be more frequent and violent. The natural disaster may not be nationwide and may just be heavy local shower that flood the school and the area around the school. It is very important to teach the young people on how to look after themselves during natural disaster. In a lot of less developed countries like Africa, Latin America and small island, Malaysia is looked up as development model. Not only we need to absorb the good example from elsewhere, but we need to donate what we have successfully done through our sustainable development to help the less fortunate developing countries.

Prof. Datuk Noor Azlan: As a capacity of being the UKM Vice Chancellor, today we have seen how the national university have taken a big responsibility in the context of sustainability and sustainable development in the country, and also in the context of being together with the global community for ensuring the world development growth becoming more sustainable. Sustainability aspect is the main stem in UKM, as as we have seen this morning is the capability of the university to attract participation and involvement from experts around the world to participate in this workshop, this is an important strength to be celebrating in the context of university progress in the country. Recently, the Ministry of

Education II has been asked on how to be a world class university. For me, being a world class university is not necessary being the best in the world, but being able to work together with world expertise to hadle a big issue for global community. Secondly, as a capacity of an economist, he said that to be able to actuate the country economy to be a developed country with high income, he want to attract all Malaysian community that in this year we have achieved 5 years new economic model. In this new economic model, there is three pillars on how we transform the country, mostly focused on the first pillar i.e income. The second pillar is in the context of inclusiveness i.e holistic. Bring together the group of community which we have put aside for so long, such as women and children. It is important to know how far we are succesfull in transforming the economy based on this model. The third one is sustainability. These are the three pillars which are always being forgotten. How far this transformasi can ensure the performance, sustainability and continuity of of this country in the context of growth, cultural, environmenth etc. This is a very timely event for Malaysia, because March is a special month for us in terms of how we move our economy.

**Dr. Alexander A.Lim:** On ASEAN side, ASEAN leaders have already agreed on the central element, the vision and goals of post 2015 for the post 2015 ASEAN Community. One of the goals of ASEAN post 2015 it to engage the people in community building and we thought that science, technology and innovation would be important instrument to bring about and to contribute to sustainable development. That is why ASEAN is partnering with UNESCO. We have the sustainability science approach of UNESCO and we want to engage people. Sustainable development is not the sole domain of the government or international organization but we need the people to take part in the cooperation effort. When we engage as much stakeholder as possible then we hope the rest problem and challenges with regard to mobilising resources. There are the issues that could be resolved very well.

Mr Takao Noda: Promoting the cooperation in ASEAN countries in the field of science and technology is one of the most important policies for Japan. No single country can solve such issue of global disaster prevention and reduction and infectious diseases. This is one of the reasons that Japan proposes to UNESCO that sustainability science should be promoted by UNESCO. Sustainability science is also incorporated in UNESCO strategy two years ago.

think it is the role of UNESCO to put together various initiatives which is implemented in various institute in Asia and the world with regard to sustainability science and make clear message to policy makers to realizing sustainable society.

Prof Dato' Dr Mazlin bin Mokhtar: On the question of where do we move from here? This two days workshop will also be giving useful input for the upcoming 7th World Water Forum, which will be held in Korea on April 12-17. On March 14-18, National Security Councils (MKN) and also some country delegation will be at the World Conference on Disaster Reduction, in Sendai, Japan. We will give output from this workshop to the world meeting and conference on how to reduce world disaster risks. As you could remember, March 11 2011, there was a big Tsunami of the earthquake, so the next weekend, many countries of the world, leaders of the world, many organization of the world are congregating in Sendai, Japan in which Malaysia will also have delegation. This two days is very important as the input and will be useful to a lot of other important events of the world. So that is Malaysian role, ASEAN dan Asia Pasifik region to incorporating the expertise from academia, industry, business and community to be together to give input based on science and technology as well as social and human science in the decision making and policy in our daily life.

KEYNOTES SESSION 1: SETTING THE SCENE (SDGS & SOUTH SOUTH COOPERATION)

CHAIR: DATO' DR. SAMSUDIN TUGIMAN, ISTIC DIRECTOR

#### PROF KUNIYOSHI TAKEUCHI, ICHARM ADVISOR

Prof Takeuchi highligted the main concern of disaster trigger by natural hazard are the major step to sustainability. Disaster able to destroy history and also able to destroy future and give a big impact to natural border. It also has cross country impact and we do need to study about the natural disaster and the impact. Disaster can cause poverty, hunger, and climate change. Therefore, the disaster is major issue in disaster. I am defining sustainability as a capacity to create and maintain condition where humans and nature can develop in productive harmony providing socio-economic and environmental need for present and

future generation. Therefore, there are two main targets are (human) human security and (nature) biodiversity. Also, sustainability needs to have social sustainability, economic sustainability, and environmental sustainability for present and future. As for the human security, biodiversity social sustainability, economic sustainability, and environmental sustainability, each has their own attribute. Although security is one of the necessary attribute, however security always have risk and disaster is one of them. So, risk should be reduce and how to reduce? So, the reduction is an action. Capacity or reducing of reduction is the game. Basically, the capacity can be supported by science and technology and governance in ultimate sense, science and technology are a trustable basis of sustainability. Now, resilience the capacity to achieved sustainability. Resilience can defined as capacity of system to maintain the core function and if the core function is destructive, quickly recover into new change condition. The core ideas of resilience are resist and recover. Tsunami is a good example of resilience. This type of disaster attacked Banda Acheh and Japan. For Banda Acheh, it took about two years to recover while as for Japan, after four years it still not fully recovered. So, this is a combination that we have to figured out. In summary, resilience is an accelerator of sustainable development. If resistibility is too small, and recovery capability too low, than sustainability is impossible and this country that face disaster will face other problems like poverty. As for example, Japan and Bangladesh are two countries that face hazard and all the time both of them have a lot of successful but still to maintain the hazard into small or median frequent hazard. Conclusion: Disaster triggered by natural hazards are the major threat to sustainability. Sustainability needs risk reduction and resilience. Resilience is the capacity of maintain core function and quickly recover.

#### PROF WAYNE MEYER, ADELAIDE UNIVERSITY PROFESSOR

Prof Meyer talked about Science and its relationship involvement in regional management. Sustainable development is not a signage rampant growth. Neither growth in population nor growth in consumption. We will have a zero population growth. We need to encourage our economics expertise to continue economic growth to stay inside economics. We as multidisciplinary scientist able to influence the process but cannot control about the systems. We need to influence the decision makers, and policy makers. What we also need to do also managing our resources, build our people skills and awareness. One of the

examples is about the two regions in south Australia. We were looking up the resources, the community and the background. The crisis needs to be tackle in series of steps. Besides the entire physical environment, we should ask what does people really value in this community. Awareness and complete information systems which bring all the information including geographic information systems and information about climate, soil and everything and put all these together into simple modelling for people understanding. Future has a lot of options in which we can manage. If the region is large, then we have a lot of opportunities. Changes in crisis and cost surely have bigger impact on how people can do and manage their resources and avoid climate change. So, sustainability sciences is a good thing, but it is nothing if we can't convey the messages, awareness and the real information to change how people think and make the policy makers realise about the truth. How do you get the best result for the design research impact? And also the use of research? Do they have capacity to resolve the problem? Do they have problem with the people involve? So, there are few things that we need to learn. The main focus is to communicate. So, the future, we are the ones who determine the future, and for now right decision must be made.

#### PROF HECTOR MALANO, MELBOURNE UNIVERSITY PROFESSOR

Prof Hector mentioned that we have been talking about sustainability science and he realised that from sustainability science we able to determine sustainability development. For science there have to been pathways to science to inform the policy in general and principle. So, for environmental issues, there are different understandings between science and policy makers. He is going to use one case study of Northern Australia because it is an example of international project collaboration which used science but still integration with government policy. There are several lesson learns from it, which will explained briefly between science and technology. First of all with policy. Policy is something came from government to do something properly. Normally, it revolves public issues but he must clarifying that from his experience in his area specialization, water resources management, there are a lot of issues involving this field such as infrastructure. One of the issues arise which policy makers face is the confusing with the more than one policy makers authorities So, that is what science is needed and able to play a practical role because science can

evaluate different alternative with additional framework and determine the real situation. He also raised that we already talked about curiosity driven by science, and the knowledge and science itself have been generated. Usually, scientist trying to solved the problem and generates humanity. Sometimes, there also called supply agreement because it has requested by anyone particular that need to address particular policies. However, there are some misalignments with what science produced with the policies needed. One of the reasons of the misalignments occurs is science accept uncertainty as a fact while government and public council unable to receive this results. Therefore, science and policies also governance have different degree of comparison. There is no best example to be seen compare to climate change issues. As for scientist, science accept the fact that climate change may occur at a certain level of uncertainty the impact might be worse however as for governance and policy the uncertainty might be used in different way. Managing the boundaries and barriers between science and policies and between the disciplines itself will took a lot of time especially towards the physical science towards the social science because both of us using different 'language' in defining something. These barriers preventing proper communication and collaboration which at the end we need the integrated assessment to solve this problem. Therefore, there is an example of the project which need these two disciplines and the main concern of this project are objectives and key questions to be asked: strengths, weakness and challenges for everybody in the water sector as it stands. Synchronizing for both disciplines relates of funding of the project and development of the project (time). The science policy cycle because of the funding, the project unable to determine yet because the project itself still developing.

#### DR. OLIVIA CASTILLO, SDSAP CHAIR, UNSGAB

Dr Olvie gave introduction about UNSGAB. She said that this was the original body which established in 2004 by Kofi Annan and our chair was Prime Minister Hashimoto and unfortunately he was passed away. Now, the majestic King William Alexander being our chair. The Imperial Highness of Japan as our Honorary president. UNSGAB is an independent body to advice Kofi Annan for the action for water and sanitation. UNSGAB had Hashimoto action plan which cover sanitation, financing, IWRM, monitoring and water disaster. As for

today, it is about our goodbye plan because on November 2015, our body will end. UNSGAB have water architecture and implementation in water community. They have been noticeable progress in international water sector since the MBG. The scope only covered water sanitation and drinking water in meaningful manner. The MBG did not adequately address some important element such as wastewater management and water resources which were covered by UNESCO by their IHP. There are multiple progress in developing countries today that they are struggling to cope with water management challenges in the like of population growth, rapid urbanisation increased, economic activities and changing climate changes. Therefore our body which was formed by Kofi Annan as an independent body to promote achievement in MDG especially on targets to save drinking water and basic sanitation has been doing this for the past ten years. Guided by this, we were given a renewed by Ban Ki Mun to advanced international water sanitation agenda. This group is one of the factors, in pushing a broader water agenda for post 2015. This will be main basis for the on-going intergovernmental negotiations in accordance to 2015 development agenda which will not only to focus to the poverty reduction but specially towards sustainability. She hope that in global level, there is not only focusing about profits, business and money only but it is all about moral and unthinkable. We should realise the important to deliver and implement the targets especially through the suitable international sector of water architecture and plan. They need to have a transformation at one time and need to happen now. The new universal sustainable agenda requires international communities that fit for purpose in order to support the countries that implement the new generations of sustainable development. She mentioned that we have to prioritise improved water intervention which is what we have today the sustainability and science approach. The international water sector cooperating with one another to monitoring and reporting the framework of adequacy and consultative initiatives, networks and others. So, where are we going? The key success factor is you doing your role and are you doing something? Please think about it.

#### Q&A

Prof Barzani, UNISZA: In Malaysia, few months ago, have a bad experience in flood disaster. He is looking forward to the solution to solve water ways in Malaysia, especially after the bad spell of flooding that Malaysia had experienced recently. The solution is sought for problems that is basically due to rainfall and storm water. Incessant rainfall throughout the flooding period, peaking at 500 mm a day. Within this context, how do we make our environment resilient?

**Prof Takeuchi:** He brought attention to the importance of integrated water resources management. It is emphasised that non-structural means, early warning and evacuation lie at the very heart of the solution to the problem occurred. These approaches, especially early warning and evacuation, are very important in reducing death toll drastically. In order to do so, there is a need to ensure the availability of hazards 'maps'. The people need to be ready, and as soon as they are warned, they could be evacuated. However, this does not negate the importance of structural means. Small and medium size scale hazards should be preventable, and this is the kind of investment that is needed, albeit difficult to obtain. In this context, financial sustainability should come from the country, and should not be obtained from external sources. Achieving what Japan as it currently stands takes time. Japan is not made in one day, and it takes many years for Japan to come to such an advanced stage. Dr. Kuneyochi cautioned that we should be ready in the advent of climate change, and we need to be aware of the urgency and the importance of disaster management. For this, an integrated and transdisciplinary approach is important.

**Hassanal, UMS Sabah:** He wanted to know how the panel member's view on the role of capacity building in every country, when it strikes him that capacity building is fundamental.

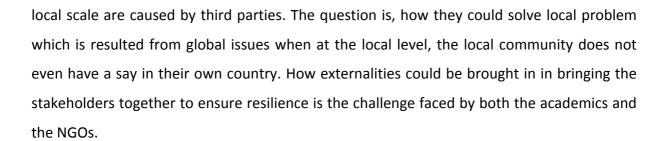
**Dr. Oliva:** She explained that in her country, the weather bureau did not sufficiently prepared the people at the time of disaster. It is actually the concerted effort of businesses and all stakeholders where they join forces to help raising the level of awareness of the local people. As the time goes, more and more people have become aware of capacity building.

initiatives conducted by UNESCO and other agency. These capacity building efforts prepare the people at the time of emergency and disaster. With regard to the question posed, the speaker sitting in the middle commented that it is disappointing to learn that the people has no opportunity to learn something new because they have not the time to stop and learn new stuff, being busy with their everyday job. There is a need to face the reality that engineering solutions could be found for each disaster, as it is both economically and socially unacceptable. The speaker emphasised that we have to learn some capacity building.

**Prof Hector:** He continued that continuity in some business institution is important where capacity building is deemed important in managing disaster risk where a lot of capacity building is needed as India does not have a lot of experience in this area. In response to the question of how we could respond to climate change when the prediction is clear: there is no other way we are going to change the intense way precipitation will be falling, which would cause flood. There is a real need to look at integrated land and water management. Investment in this area, perhaps, would be far more productive if land is managed to reduce flood. This forms part and parcel of solutions that we have to look at. At the global level, different design material should be looked into, but by itself, this is not the only solution.

**Prof Takeuchi:** In terms of capacity building, he proposed that, as Japan is a country of disaster, they have received many students in many capacity building programmes offered by the country. MEXT and JAICA operate many courses at the master or PhD level. Dr. Kuneyochi reiterated the importance of technology and knowledge, where a lot of importance is place in delivering their knowledge. Even so, it is recognised that knowledge and experience, are more important, where it is crucial to study what are the practices in every country. Corruption is an issue in governance, and it is really killing the people. It is not just a moral issue as corruption kills. This is just not an issue of capacity building. It is important that this issue is discussed within the government. As such, capacity building programme should be reconsidered in many institutions.

**Prof. Shahbaz Khan:** highlighted the difficulty existing within the UN system. The global programme that they are looking at could not address local problems. Most problems at the



SPECIAL SESSION: A FOCUS ON CLIMATE CHANGE – BRIEF INTRODUCTION TO BANGKOK REGIONAL WORKSHOP ON CLIMATE CHANGE

BY: MR. ANFRE DE BUSSY, FRENCH MOFA AND INTERNATIONAL DEVELOPMENT –
REGIONAL COUNSELOR FOR COOPERATION-ASEAN

Mr. André de Bussy called upon the scientific community to make sure that politicians strike the right deal in Paris in a regional forum to be held on 3 July 2015. This forum will be organised by the ASEAN Secretariat, a force in the region, politically speaking, with collaborations and help from various parties and agency, such as the European Union, Germany, and the UK. All the stakeholders will be meeting at the 3-days conference at the regional forum on climate change where France is funding three to four proposals that gather scientists from France and Asia where long-term scientific collaboration is established. There is a need to speak out to the policy makers who will be meeting in Bangkok in a meeting with EU-ASIAN chief negotiators who will be present at the forum to hear the scientists' proposal of solutions for disaster and climate change. Mr. André de Bussy called upon the scientists, politicians and the media to contribute as much as they can 'at the heat of success on the road to Paris'. They are training two journalists and media from each Asian countries on the needs of communication, and send them to Paris.

#### JOHN CROWLEY, UNESCO PARIS

Mr. John has raised issues on definition of sustainability science itself. What is sustainability science? And what does it means for different people and why its important??

PANEL SESSION 2: LEARNING FROM PILOTS AND MODELS

CHAIR: PROF. DATO' DR. MAZLIN BIN MOKHTAR, UKM DEPUTY VICE CHANCELLOR

PROF. LI ZHONGJIE, WUHAN NATIONAL CENTRE FOR FRESHWATER FISHERY ENGINEERING

**DIRECTOR** 

Prof. Li gave an overview of the history of inland aquaculture in China. China has the longest history of aquaculture in the world, with the earliest record dated 2500 years ago. In the 1960s, there are artificial propagation in the major types of carps. A great milestone for Chinese aquaculture was achieved in the 1970s and 1980s where large scale stocking of major carps are done in ponds, lakes, and reservoirs. Other species are cultivated since 1990s where new models of cultivation, or new cultured species, such as 'culture-based fisheries' and indoor cultivation ponds, are invented recently. Freshwater aquaculture is developing rapidly in China, and has now commanded two thirds of the world's freshwater aquaculture production. At the global level, aquaculture an important fish producer and has become a significant contributor to the food fish basket, where freshwater aquaculture has played a continuously dominant role. In terms of sustainability of aquaculture in China, multi-prong approaches are adopted, with particular focus on strict regulation of scale that encourages ecologically favourable aquaculture practices. The aquaculture industry sought to reduce the volume and frequency of water exchange in ponds, and promotes integrated approaches in the cultivation process.

ASSOC. PROF. DR. RUTH U. GAMBOA, SCHOOL OF MANAGEMENT, UNIVERSITY OF THE

**PHILIPPINES-MINDANAO** 

Dr. Ruth Gamboa started with the assertion that science is a tool to influence local governance, especially in the greening of local governance. The issues existing in the locality is a marginalisation of the Muslims and the local people. However, before the turn of the last century, peace came, thanks to an effective leader. Dr. Gamboa added that peace always come with economic development, and by restoring the economy, peace prevails. Dr. Gamboa gave a brief introduction of Davao, and concluded the introduction with the

assertion that Davao sell themselves as the most competitive city in the Philippine. This competitiveness started with two landmark decisions ordinance: one on watershed protection, conservation and management framework 2012, and an updated zoning ordinance for the City of Davao 2014. The provisions are drafted in accordance with the support backed up by some (scientific) studies, which establishes an evidence-based framework for development. The management unit is watershed with additional provisions on areas with high flood susceptibility based on the terrain analysis of Davao City watersheds. The City of Davao is moving towards sustainability science in governance, especially with the 2011 Watershed Code and the 2014 revised land use plan, which is a turnaround of the 1995 comprehensive development plan, brought about by the 'GREEN GRIDGE: NGOs and the civil society'. Dr. Gamboa mentioned explicitly several important NGOs that brought about the turnaround. One of the NGO, Conscience Bridge, started the profiling of watershed (terrain analysis) using technical tools, of the city. Although it is an old tool, they knew more or less about the watershed in Davao, which is taken into consideration in the recommendation of environmental fee to be paid by big industries. This recommendation was codified into the Watershed Code because of the analysis. The other notable environmental NGOs is Interface Development Interventions that uses militant advocacy. They advocated for clean water and healthy watersheds. They turn from going out on the stress to using science as a tool. They use the resource and socio-economic profile to conserve a particular area. The role of HELP Davao Network is in the dissemination of international knowledge through international conferences. IWRM guidelines are produced, although it has yet to be mainstreamed by the government where HELP Davao Network provides objective platforms that invite legislators who are the key people in making policies. The Academe is another key player. They are technical working groups of researchers that provide evidence for policy making. The final actor in greening local governance of Davao is the city mayor, who has an accumulated 20 years in office. He has a support group – Duterte for President. Some of the accomplishments when he is in office were, the Watershed Code, anti-aerial spray ban, local organic farming ordinance, environmental fee (for banana growers), and the construction of water-demanding industries, such as malls, which are extremely water demanding. The city mayor has been a big plus in the sustainability of the city. He is recognised as a key single actor for contributing towards the sustainability of Davao. Throughout this process, science as a tool has earned some mileage towards sustainable development of Davao, but more is yet to come.

#### MR. YOHANES PURWANTO, INDONESIAN MAB NATIONAL COMMITTEE

Mr. Yohanes presented on sustainability in Indonesia's biosphere Reserve Development, under Man and the Biosphere Indonesian Programme. There are eight biosphere reserves in Indonesia. These biosphere reserves are learning sites for sustainable development, especially in the continuous improvement of the three pillars of sustainable development the community, productivity, and also the environment, through sustainability science. It has been identified that politics and investment are barriers that affect the development of Indonesian biosphere reserves. Aspects of biodiversity richness, cultural diversity, the fertility of volcanic soil, geographic position, demographic structure, tropical ecosystem and human activities must be addressed through an interdisciplinary science-technology perspective. Science and technology are tools in moving the biosphere reserves forward, which is identified as a single factor that should be implemented through multi-, inter-, and transOdisciplinary research to ensure continuous development (of the biosphere reserves). Underpinning continuous improvement are the principles of economic feasibility, environmental viability, and social acceptability that are technologically appropriate. Mr. Purwanto cited the example of ecotourism development in the biosphere reserves in Indonesia. The main requirement in developing eco-tourism in these biosphere reserves is the accessibility to accommodation and places of attraction that requires cooperation among agencies. Local communities, traditional or simple usage of technology, and the linkage with nature have to be taken into account in providing basic tourism facility in order to give travellers the most intimate travelling experience of the biosphere reserves. The indicators of success include the management and development of tourism destinations that are well-organised. The trajectory of social well-being and environmental damage prior to the implementation of development and conservation management intervention that integrates conservation with socio-economic development in biosphere reserves is studied. This provides the basis for research programmes that integrate geosphere (environment), biosphere (ecosystem) and humanity (socio-economy) through units of monitoring,

production, processing and socio-economy generated from modelling and simulations, which generate scenario for policy making. There is also an integrated bio-village programme implemented in the vicinity of the biosphere reserves that aims to develop and empower community livelihood, and to avoid unsustainable farming practices. The programme includes peat water purification to provide clean water supply; organic agriculture development, freshwater fish farming, and also bio-energy. The lesson learnt from the biosphere reserves management and development experience is the importance of developing partnerships and cooperation. It is found that the biosphere reserves landscape management approach is a practical framework in communicating, discussing and managing local sustainable development issues of national and global importance. Best management practices require the combination of scientific knowledge and governance modalities. More research and development are needed to ensure the implementation of biosphere reserve development that contribute towards SDGs. The outcome of science, technology and innovation provides new strategy to solve problems arising from the continuous improvement of biosphere reserves. However, sustainable funding is an issue in the effective management of biosphere reserves, where 'monetising' ecological services is an option to effectively manage the core area.

# MR. MOHD NIZAM MOHD NASIR, GEOPARK & CONSERVATION DIVISION, LANGKAWI DEVELOPMENT AUTHORITY (LADA)

Mr. Nizam shared the Langkawi Global Geopark Experience. He started with an introduction of LADA. LADA is a planning and implementation agency specifically established, amongst others, to promote tourism in Langkawi that sustain the environment and natural heritage. The main assets of Langkawi is the beaches, the forests, and its status as an island geopark. Geopark is a platform for the sustainable development of Langkawi through the concerted effort of local governments, local communities, industry players, tourism industry, and the government. The people of Langkawi are the ones who play an important role in ensuring the sustainability of sustainable planning. Langkawi was formed by 99 islands, with only three of these islands are occupied by humans. The rest of these islands are rock formation. Langkawi is the first geopark in South East Asia, the 52<sup>nd</sup> geopark in the world, and the only

one in Malaysia. Currently, there are four other areas contesting or being proposed as geoparks. In the future, geoparks would no longer be unique and this compels LADA to put more effort in bringing out the uniqueness of Langkawi geopark as compared with the rest in order to stay competitive. There are 78 species of mangroves in Langkawi Geopark, out of a total of 114 species found in the world. Four Strategic plans for the management of Langkawi Geopark are developed: Langkawi Tourism Bludprit 2011-2015; Community Plan 2014-2015; Marketing Plan 2014-2016; and Langkawi Geopark Management Plan 2012-2013 (collaboration with UKM). The Langkawi Tourism Blueprint focused on infrastructure that supports accessibility, enablers, and product (which is the iconic geopark) with quantified targets. After an overview of tourists' profile, a few initiatives are proposed: the conservation of heritage by the National Heritage Department; researches on cultural and heritage, carrying capacity of the island, launching of iconic programme, and strengthening enforcement trough the blue ocean strategy. The strategy requires for the bringing together of all government agencies, to carry out enforcement together, a minimisation of human resource and assets, and ultimately aim for a singular enforcement mechanisms in Langkawi. LADA undertook the beautification and cleaning up of Langkawi with special grant given by the government. An incinerator was built in Tuba Island that is in operation two days per week. The incinerator incinerate waste and generate energy for the Island. The main product of Langkawi that is continuously promoted and marketed is (eco-)tourism. LADA has a fiveyear plan to carry out the construction and improvement of infrastructure, especially in the dissemination of knowledge to tourists. LADA is not a sole entity working on the management of Langkawi. They collaborate and share experiences with the relevant stakeholders through the formation of expert group, NGOs and etc in the formulation of action plan. Education and capacity building efforts are important. Through awareness raising, the people are more appreciative of what LADA had done, for the public, the school children, and for the Island as a whole. Community involvement is crucial in the effort to change culture and behaviour. Thus, it is important for the community that they support LADA's initiatives and conservation and preservation efforts. The challenge faced by LADA is mainly the increasing demand due to the expanding tourism industry. If the Islanders are not together in protecting and preserving the island, the beauty of Langkawi will be bygones soon. There is a need to educate the people in the community, and that is the challenge faced by LADA. If the people are given a choice between what they can gain with what they need to do, they will always prefer what they can gain monetarily. The way forward for LADA is to formulate a comprehensive conservation and protection plan that focuses and intensifies efforts in creating public awareness and educating people about geopark, and to maintain geopark status for the next five years. The status of geopark makes people aware of the importance to preserve and conserve the island.

# PROF. DR. MOHD. EKHWAN TORIMAN, UNIVERSITY SULTAN ZAINAL ABIDIN (UNISZA) DEPUTY VICE CHANCELLOR

Prof Ekhwan presented on Managing Malaysia Flood (Disaster) which has just recently occured in East Coast of Peninsular Malaysia. The crucial question is, 'How do we want to stop the flood'. Some hydrologists claimed that this is a 100 years (or more) flood, which is the reality experienced by people living in the East Coast. The difference between this flood and the previous flood incidents is the frequency and the magnitude of rainfall. Over the past 3 years, there are a lot of sequenced flood happening in Kuantan, Johor, and Kelantan, with bigger magnitude each year. Prof. Ekhwan Toriman cited two types of floods commonly occurred in Malaysia, namely monsoon and flash floods. Referring to the flood disaster recently, the actual question should be, whether destruction was caused by water of the flood, or the debris carried by the flood? Citing Kuala Krai, located between two rivers, as an example, the destruction was due to failure of the structure of Kuala Krai bridge, which was destroyed in the flood. Similar flood event happened in Terengganu. UMT and UniSZA took several structural solutions to ensure that the water could be washed away quickly. The identified best management practice is to redesign the perimeters of drain to carry away rainfall based on a 150-years return period flood, and to develop another artificial flood carrying area to resolve monsoon flood occurring every year. These structural solutions hopefully would provide up to 60% relief to these affected states. The same problem of debris flood occurred in Cameron Highland due to sedimentation in Ringlet Lake. The Deputy Prime Minister commented that the legislation is sufficient in the country, more important is the enforcement of these legislations. Prof. Ekhwan explores the relationship between artificial intelligence and effectiveness in decision support system that is knowledge-based

The decision support system for flood management is to provide a combined structural and non-structural solutions through the system. The establishment of such system needs the contextualisation of physical data/rainfall data and social information through the collection of information or relevant data, the framing of issues, drawing of conclusion, and to learn from feedback. The existing decision support system, IDSS-GIS SWMM was engaged for the management of flood and its socio-economic impact in Langat River Basin, and the management of the impact of drought in this particular catchment using one single model. The beauty of this model is that it is accessible to all stakeholders, with hope of extending the model to other catchments. Based on this model, the severity of the flood could be estimated. With the scenarios generated, there is a need to create a simple but efficient platform in managing flood information. The proposed Decision Support System is able to assist planners, stakeholders and decision makers for the best flood management approach prior, during or after flood events. However, the Decision Support System does not meant to replace existing models. What is needed, at this stage, is an improvement in data sharing at the local and regional level that is access-friendly. At present, there is no system that combines the data through an open/cloud system. Most importantly, funds are needed for the sharing of data. All stakeholders and universities collect data, but none of them compile the collection of these data, and there is no data pooling or data bank that could inform better policy and guidelines making.

## PROF. KAZUHITO FIJUYAMA, INTERNATIONAL CENTER FOR BIOTECHNOLOGY, OSAKA UNIVERSITY

Prof Kazuhito development presented on the human programme on biotechnology/microbiology with ASIAN universities, at the International Centre for Biotechnology, of Osaka University. The International Centre focus on bio-resources where Oska University to initiate human capacity building training programme where we started the microbiology programme. They worked on a postgraduate inter-university course in biotechnology and in microbiology. The UNESCO MIRCEN (A microbiology research centre, and later a regional centre for microbiology) programme started in 1973 and continued with second phrase with another programme in collaboration with Thailand. The network/distribution of UNESCO alumni mostly comes from Thailand, followed by the Philippines, and followed by Indonesia, with few from Malaysia and Singapore. There are some alumni from Korea, Mongolia, and India. The alumni play an important role in their home country because they occupied important positions in the academia and the government. MIRCEN received a lot of applications from countries from the South East Asia. South-South-North collaborative projects from human resource development supported by, inter alia, MEXT, Japan in the form of fund in trust, UNESCO Jakarta, and also Osaka University. The third phrase of UNESCO biotechnology school in Asia started in 2012 with human resources and network of 459 alumni around Asian region. This school offers graduate school for the studies of biodiversity, infectious disease, sustainable agro-industry, environment (benefit sharing) after Nagoya. The programme focused on mobilisation with the initiation of south-south-north collaborative projects for human resource development, with active participation from Thailand, Indonesia, Philippines, Viet Nam and Japan in the scheme. The current effort undertaken by the programme is the coordination and harmonisation of the programme for international and Japanese students where the whole course spans over five years, comprising master and doctorate degree, and the mobility of exchange students, which is supported by the Japanese government. The programme will be focusing on sustainable science.

#### DR. MOHAMED ROSELI BIN ZAINAL ABIDIN, HTC KUALA LUMPUR DIRECTOR

Dr. Roseli talked about sustainability science by linking sustainable development with environmental science through the example of water security and eco-hydrology. Dr. Mohamed Roseli commented that science is critical in meeting the challenges of sustainable development through the SDGs and post-2015 Global Development Framework. What is required to achieve this end is the need for a broad understanding of science as such. It requires a massive global cooperative effort in integrated cross-disciplinary coordination in order to deliver the SDGs, which are dignity, people, prosperity, planet, justice, and partnership. Several pilots and models are developed, such as debris and mudflow warning system, rural river rejuvenation, and a study that uses solar still stepped system for domestic and drinking water desalination of sea water, and also the upscaling of MSMA Integrated

Stormwater Management Ecohydrology (ISME). The proposed debris and mudflow warning system aimed to prevent the five death cases resulted from the Cameron Highland mudflood episode. The system is planning an online system and operational system to enable early warning of people using online information through our 'info banjir' (flood information system) for the early warning of disaster. This develops an architectural decision support system that can be expanded for DMFWS. Another ongoing project is a rural river rejuvenation at Jenderam River, which is a tributary of Langat-HELP basin to improve water quality of the river so that it can become a recreational are for the local community. Another ongoing study conducted by the centre is the use of a solar still stepped system for domestic and drinking water desalination of sea water in Perhentian Island, Terengganu. The result so far is noticeable, the water desalinated using this system meets the standard for drinking water. We proposed to upscale MSMA Integrated Stormwater Management Ecohydrology (ISME) that the Langat-HELP River Basin by having several bio-retention sites through ecopark, as well as improving river banks using this system. There is an MSMA integrated stormwater management ecohydrology components in HTC compound in our effort to improve the standards of water from class IV to class II. The components consist of green roof, porous pavement, greywater reuse system, constructed wetlands, bio-retention system and rainwater harvesting, all within the compound of HTC. The Centre received many visitors to look at the systems. The outcome of the development of the framework serves as a tool for sustainability science, which establishes sustainable science culture and ensure the delivery of sustainable science. The components that support socio-economic needs are planning, project deliver, procurement, design, construction and maintenance, which provide inputs into the components for the sustainability development. The strategy to improve the framework is will, governance, capacity, training, advocacy and engagement. Further enhancement of existing outputs is establishing a database/portal, the identification of outputs and results, further gap analysis, the design of new problem statement for R&D, and to develop more R&D initiatives in order to provide feedback to the system.



CHAIR: PROF. DR. SHAHBAZ KHAN, UNESCO JAKARTA OFFICER-IN-CHARGE

#### KATHERINE MULLER-MARTIN, UNESCO HANOI

Ms. Katherine presented an initiative for a more resilient and sustainable society in Vietnam, developing skills for sustainable development: a comprehensive approach bringing together, education, science, culture: Bio-literacy, regenerating biodiversity as key solution for disaster reduction, and adapting and mitigating climate change. Introduced into the curriculum. Teachers – students – communities take the message to the parents: parents take the message to neighbours and communities. And the media takes the message to the broader society. We use ICT tools, to reach more people. She also explained on E-learning: school assessment and preparedness, bioliterary and CBD, and CC adaptation and mitigation with a positive focus: it is teaching the younger generation, love what they have of the nature were we leave them. Not through a continuous policing of the younger generation. It is about doing assessment of what they have at the school level and develop plans for the school. Community develop what their visions and their solutions for, and work with the school (community action plans) that support the school preparedness plan. For example, leftover of rice stalks: composting (collaboration between school and the community), and bringing in media through the media communication plans. At all levels, ministry of education, people, school .... assessment tools and remote sensing tools of what and where to build school. There is difficulty in interpreting results of remote sensing and bring out in normal language. Technical guarantee of the quality of the plan. Listen to the plan, and choose, what they want to fund. The authority leading the presentation to the donors, linking the community as to what was needed by them. The national dialogue for the learning societywhat kind of learning society and citizen they want to have. (Grassroot level influencing policy: Many enablers that facilitate this process, such as UNESCO Biosphere Programme).

#### KRISTA PIKKAT, UNESCO TASHKENT

Ms. Krista presenting on an initiative in Aral Sea i.e. helping the local community tackle the outcome of the man-made disaster. What UNESCO can do to help tackle environmental concerns resulted from this catastrophe, and to help the communities reinvent themselves (of their livelihood). It is an education research project. We have University of Bonn, and a local university in Uzbekistan, doing research on different aspects on land and water management. As a result we have 70 master students and 50 phd students and a wealth of knowledge. We have a UNESCO Chair on Education for SD and NGOs, on different issues relevant to the farmers (alternative crops): interesting findings: drought resistant crops, and also handicrafts. Culturally related activities. Build capacity and awareness through education on SD. Lessons learnt: importance of working with the community, especially the young generation. Building awareness and capacity at different levels: community and authority using the media. Look at traditional knowledge, and how we combine scientific knowledge with traditional knowledge, especially in water management.

#### KRISTINE TOVMASYAN, UNESCO ALMATY

Ms. Kristine explained that it is important in sustainability science to bring the sciences together. Aral Sea catastrophe. A project started in the 60s, mismanagement of the irrigation system and the irrigation itself, the Aral Sea has shrunk to 10% of its original size. Apart from environmental consequences, and economic, social and health issues, especially in migratory people. In the interest of the international community to address the Aral Sea problem at regional and national scale. An international fund to save the Aral Sea project. However, these programmes are not projects that address specific/vulnerability of the community, especially through the 3 pillars of environment, society and economic domains. A UN Joint Programme, with collaboration of 6 (UN) agencies in a region in Kazakhstan, aiming the community addressing the 3 pillars. A good example of sustainability science, as it links several problems and disciplines in sciences, water resources, disaster risk, environment and ecology. Shifted focus towards integrated approach in water resources management: building capacity of local communities, especially local water managers to

address this issue at the community level. Of course, wetlands monitoring. Building of dam to restore the wetlands that was destroyed after the shrinkage of the Aral Sea. UNESCO comes here with an interdisciplinary team of expert in monitoring this specific site. MAB programme addressing very pertinent issues at the site level. We hope that we could nominate a new BR – protected area, distinct zonation, enhance conservation, biodiversity and involvement of local communities in these areas. Disaster risk reduction: we are addressing mainly with regards to warning system on drought sand floods. More on education of disaster risk reduction, and information on ESD, with sustainability science on the part of UNESCO. Perhaps we can integrate in future, another discipline, on medical geology, multidisciplinary approach, bringing together issue of health, geology, in health disaster setting.

#### RAZA SHAH, UNESCO ISLAMABAD

Mr. Raza presented on Ecohydrology projects: Science and technology in Pakistan. Using technique to reuse waste water for different purposes. FILTER was developed in early 2000 in Australia. 8 artificial wetlands to extra treat the water in near periphery they are using groundwater for (potable) uses. The water is within the safe range against the standard set down by EPA. This technique is zero waste, and there are plans to upscale this project to the urban level. We are treating the wastewater of the whole campus of the whole university. Sewage water going into the sedimentation tanks, and then it goes to constructed wetlands, through the FILTER, then the storage tank, and reuse for horticulture and to recharge the groundwater. There are various possibilities to use this water.

#### HANS THULSTRUP, UNESCO BEIJING

Mr. Hans raised that it is extremely important to engage the relevant stakeholders in promoting sustainability, where the global initiatives undertaken by UNESCO could be an important enablers and facilitators in bringing together all the relevant disciplines to achieve a more sustainable future, through a more inclusive process.

#### RAM BOOJH, UNESCO NEW DELHI

Mr. Ram presented about a sustainability science based natural heritage and BD conservation in Manas National park in Assam, India. It is located in foothills of Himalaya, rich BD, spectacular landscape, and a biodiversity hotspot. It is an important habitat of elephants, and an important birding area. Issues – natural and cultural values. They believe in nature worship. Ecologically important species are also socially and culturally important. It is important to protect this biodiversity. Conflict between local authorities, poaching of tigers and rhinos, route of tiger parks and rhino horns – major setbacks in the reduction of tigers and rhinos. The site was declared an endangered site by UNESCO. UN Foundation – matching grants. Pool together funds, 1.34 millions, with the rest of the funds locally raised. The project look into habitat improvement, the thematic mapping of invasive species to study how these species could be controlled (iconic species), camera trap census that track tigers and all wildlife. Swamp deer recovery plan. In 2011, back from Brink-restoration of lost attributes, regained World Heritage Status through SuS based effective management. We initiated school education programme. We are approaching Bhutanese governmental authorities.

#### PHILIPPE DELANGHE & MARIA INIGUEZ DE HEREDIA, UNESCO PHNOM PENH

Mr Philippe & Ms. Maria were presented on Education for SD: BD Education Pilot Project in Cambodia. In response to the Decade of Education for SD (2005-2015) to develop public awareness and understanding on SD. Capacity building of teachers and students at the community level. Integrating environmental and economic issues into the education programme. Develop programmes on biodiversity, with focus on school programmes from primary to secondary school. Capacity building workshops for teachers, media professionals, students, policy makers etc. Adaptation of the tool kits that fits local society's needs. Cultural diversity incorporated into education programmes in Cambodia. The translation of BD toolkit by a BD expert team that is appropriate at the ground level. Introduction of the toolkit for teachers, feedback from them of the appropriateness of the toolkit, based on a multiple stakeholders approach, and developing strategic plan based on this new approach. It is a

good cooperation between the ministry of environment and the ministry of education with UNESCO office in Phnom Penh. A total of 15 schools and 45 teachers are involved in this programme. A case study report, documentary report and a wrap up workshop were produced. The wrap up workshop is important where feedbacks are collected. The pilot project is short, as it takes only 6 months, but the teachers understand the concepts, and these teachers would be able to transfer the knowledge to the students, and the students would bring the knowledge into the community. It is important to established 'a network of the main powers'.

#### DENIS CHANG SENG, UNESCO APIA

Dr. Denis raised issue on Climate extremes in the agriculture and tourism sector. Samoa, Cook Islands, Fiji, Malaysia, Timor Leste. UNFCCC – more knowledge and experience sharing in terms of lost and damage, focusing on climate extremes and climate change. There are 6 countries in the project (as above). The main aim is to generate knowledge on loss and damage, identify adaptation and gaps, and figure out new solutions and way forward. The big question in loss and damage, what is avoided, unavoidable, and avoidable. Resilient: is related to loss and damage as we deal with collapse of system – we are looking at the acceptable and not acceptable level of risk of loss and damage. The big question is, if we are not doing well in adaptation and mitigation, what is next? It is not about policy and strategy, but also an improvement of the tools to reduce loss and damages. How sustainability science could be incorporated into this project.

#### IRAKLI KHODELI, UNESCO JAKARTA

Mr. Irakli presented a sustainability science approach from social sciences perspectives. We have specific and pilot projects that put social sciences into a sustainability science framework. Pose some general questions, on how strategic the role of social sciences in sustainability science. Climate change targets, segments of the population that are most dependent on the environment to provide for their lives. Even if we do not have a set definition of sustainability science, we certainly have an understanding of society to the

multidisciplinary venture. What can social and human sciences bring to the table, how can it make itself heard in an environment where hard science seems to have a leading role in the discussion, and how a special segment on social science in UNESCO can bring to the table. Two major areas where social sciences work globally, and also regionally, including SEA. One aspect not sufficiently covered is ethics, of science and technology, global ethical framework adopted as universal by all member states of UNESCO. How does ethics apply concretely to issues of sustainability science, and assist policy makers to execute actions. UNESCO is a leading organization in setting ethical standards in science and technology. One of the example is the UN declaration on bioethics on sustainability science. A lot of human and social environmental degradation is manifested in the medical area in terms of health. Bioethics of the UNESCO is a general concept and in the declaration, Art 15, on sharing of scientific progress, 16, protecting future generation, 17, protecting environment, biosphere, and BD. These articles are subject of extensive deliberation by global deliberative committees that are also UNESCO agencies (?). They meet regularly to produce deliberations of what these principles mean, and how these could be taken up by the policy makers to affect policy outcomes. Another interesting areas - social science methodologies within sustainability science. What it really means is, social inclusion. What is our primary aim is social policy generated within the social area within the mandates of UNESCO do not leave certain segment of the population out. There is a force, vulnerable population, living with disabilities, and other general perspectives, are one of our primary global priorities and it is interesting from a social science perspective to explore environmental degradation impact on women and girls, and what can policy makers do to address these changes. When we talk about social inclusion, there are lots of methodologies emerge, on how to not leave people out in the decision-making process. We are working on how these methodologies could be applied at the community level through collaborative projects with local universities. Communities, farmers etc, are the subjects as they are those affected by environmental change where their inputs would be brought up to the decision making level.

#### ARDITO KODIJAT, UNESCO JAKARTA

Mr. Ardito presented on UNESCO Flagship Programme called FORCE: fostering safer and resilient communities Natural disaster preparedness, - strengthening local and indigenous knowledge for community resilience. Resilience based on knowledge. Disaster has happened in the past and the community has the knowledge to overcome these disasters. Focus on coastal and small islands. Philippines and Timor Leste. We are looking at whether the local and indigenous knowledge has any bearing in the disaster. Whether these knowledge could be validated against scientific knowledge. Through education materials, we try to ensure that these materials are used by the community. We are not transplanting one local knowledge to another locality as the knowledge as normally site-based. We work with universities, we train researcher on LINK, DRR, and CCA. We work with the community with LINKs Identification, and documented these links. We make decision based on LINK categories. We identify scientific areas, after we identify local knowledge and link it to the field of science, in order to see if there is any scientific explanation and validation of these local knowledge. Lastly, to share these local knowledge with other localities as lessons learnt. We identified that there are LINKs related to DRR and CCA which can be scientifically explained/validated. LINKs which can be scientifically explained but not related to DRR and CCA. Links related to DRR and CA but cannot be xxxxx (4 categorisations). Posters are developed with the target audience of the community so that the community could relate to it. We develop booklets that explained the knowledge in depth for policy makers and researchers. We develop materials that fits the needs of different target groups.

PANEL SESSION 4: SUSTAINABILITY SCIENCE FOR EVIDENCE BASED DECISION MAKING
CHAIR: PROF, WAYNE MEYER, ADELAIDE UNIVERSITY PROFESSOR

DATO IR. HANAPI MOHAMAD NOOR, RIVER BASIN ZONE MANAGEMENT DIVISION
DIRECTOR, DID MALAYSIA

Dato Hanapi started his presentation with an introduction about Rivers as a precious gift from God. Sustainability of river basin is crucial. Massive investment on the beautification of

rivers in Malaysia, for example, the beautification of Klang River, under the River of life Programme. Multifunction of rivers – cultural, aquaculture etc. Rivers is a major source of potable water. IRBM defined as the process of coordinating conservation, management and development of water, land and related resources. Coordinated effort in the development of water resources across sectors – in line with the SDGs. Components in the IRBM framework, within the basin approach, from river source to the mouth of the river. Issues and problems of rivers in Malaysia. In 2014, we have two major disaster related to the way we are managing our river system. Landslides in Cameron Highland in some of the hilly areas, water catchment upstream is bared by logging (forest clearance for other land uses), which increases runoff. Mud flooding in Cameron Highland, and many houses destroyed with fatalities recorded. Kelantan, Terengganu, Perak, Pahang, Johor, Sabah and Sarawak were seriously flooded. Another problem is potable water shortages, especially because of the way we manage our water resources, and pollution. He mentioned that Malaysia is developing a legal instrument to give mandate to institution to provide more power for enforcement. Malaysia have one ministry in charge of resources (land forest and water). The implementation of NWR Policy at the state level, drafting of a new law, assessment, and we are at the stage of developing plans to be implemented into the Malaysian Development Plan to prevent water shortages. River basin information system and R& D on IRBM, and encourage stakeholder participation. What is important: problems related to water are expected to intense. IRBM as a subset of IWRM is vital in ensuring water security and sustainable development. Participation of all stakeholders is extremely important.

# MS. ALICE LIM, DEPARTMENT OF WATER SCIENCE, PUBLIC WORKS – MINISTRY OF DEVELOPMENT, BRUNEI DARUSSALAM

Ms. Alice presented about Sustainable Water Resource Management in Brunei. Brunei has a small population in northwest Borneo. Brunei Vision 2035 to achieve world class infrastructure and world class citizen. One of the way to achieve this vision is to have infrastructural improvements – sanitation. Integrate the principles of SD into country policies and programmes to reverse the environmental losses. Water supply lies with department of water services while drainage, flood management and sanitation lies with department of

drainage and sewerage, and irrigation lies in the department of agriculture. Raw water - we have abundant rainfall I, river catchment covers 75% of the country. The worst drought is 12 years ago, dry spell of 3 months. We did not have any severe water rationing during the drought period. Infrastructure: dams constructed to achieve SDGs goals. Membrane technology, adopted from Singapore. We have done quite extensive water demand and supply studies. Just like any other water authorities, for water supply system: demand, supply, assets, and funds management. She explained that the challenges were operations efficiency. NRW of over 45%, water lost, and wastages. She describes some action plans, such as continue to look at the requirement, and what are the resources that can develop in the future. They did risk assessment, such as droughts. Treatment plants, location of the plants very far from cities. They rely on water treatment plants that is located 80 km away from this cities. Losses could be in the inefficiency in the production process: checking efficiency of treatment plants. Demand management and conservation action plans: water conservation strategy one of our main activities. The incentive to conserve water, they started with targeted sectors. Brunei have very low water tariff, and that is not much incentive for people to save water. They have to look into the renewal of water tariff. She also described some examples of conservation drive: world water day activities. They did it every year. However they still have problem with collection of revenue, and reducing per capita consumption. This is one of the main challenge. They also look at capacity building. Train our people, successor planning, getting NGOs and people to become professionals, continuous strengthen the core group of operation and maintenance. Flood mitigation programme has also been conducted, although Brunei do not have much problem in flood mitigation as the efforts have already taken by the drainage department in the 80s. There are many acts and regulations that control developments, especially private developments. A lot of activities are conducted with the people, training the people to conserve, minimize, and not waste water in order to achieve world class status. She highlighted that they need political will and good governance. She said that we need to focus on the use of technology and science and the education of people. We cannot force them, we can only advise them. We cannot control them, we can only influence them. The sustainability of water resources starts with the children as the sustainability of the water is meant for the children.

#### DR. ALI CHAVOSHIAN, RCUWM TEHRAN DIRECTOR

Dr Ali explained about Evidence-based decision making nature-oriented river restoration. Sustainable approach, from unsustainable approach that is single objective, with engineering solution that are structural measures oriented at the river scale at a short temporal scale with limited responsibility is shifted to a new approach that is multi-objectives, multi-disciplinary, incorporating structural and non-structural measures at a river basin scale, with a long term focus, and imposes more accountability and responsibility of authorities.

#### PROF. HIDEAKI OHGAKI, KYOTO UNIVERSITY PROFESSOR

Prof Hideaki talked about Renewable energy for sustainable development. A dependence on fossil fuel is not sustainable, but this is not known to the students. We have to address social issues. Programmes — how to involve the students to work on something related to renewable energy. We have a very good experience, due to a competent programme and a very good team.

#### PROF. DR. FREDOLIN. T. TANGANG, IPCC VICE-CHAIR WG 1

Prof Fredolin presented about the driving force of climate change is because we have not been sustainable, and Goal 13 of SDGs is to combat climate change and to limit the impact. Human influence of climate change is clear. The earth system – absorption of heat by the ocean. Green House Gasses (GHG) emission is much higher in the last 10 years compare to the previous three decades. Slower economic does not translate into lower GHGs emissions. Where GHGs come from? 30% of them come from the energy sector. If we are to become sustainable, we have to look into the energy sector. Scientists are able to observe the changes in the temperature and attribute these changes to GHGs. The negative effects of aerosols and GHGs – causes the change in temperature. Natural causes' are negligible. When we come to the projected changes, things will continue to be projected – ocean warming, shrink of the artic sea ice, and glacier around the world. Impact will be on all sectors, food, water shortage, increased poverty if we do not tackle these things. Capping this 2 degree

Celsius is important because most of the system would not be able to tolerate beyond 2 degrees. Business as usual model will go beyond 1000 ppm CO2 eq, will result in 6 degree C, that is very high. The only way for us to go, below 2 degrees C, is to limit our GHGs emission. In terms of GHGs, how much we have there in the atmosphere. 790 Giga tonne, the window is around 275 Gtn... Mitigation measures are available, including the reduction in energy uses. Implementation of mitigation plans, the impact on the economy is not much, less than 1%. This translates into delayed growth, not foregone growth. He added that we have a choice, between substantial mitigation, and without additional mitigation measures. DDR – risk management and hazards – hazards is a function of climate, but also a function of vulnerability and exposure – this can be controlled through emissions and land-use change. The impact itself need to be looked from the perspective of mitigation: any mitigation efforts might not contribute towards combatting cc. Science is still very low in the Asean region. We do not have much data to assess this thing. SEACLID/CORDEX SEA – to downscale a GCM on a sharing task basis.

#### PROF. DR. ANTHONY CAPON, UNU-IIGH DIRECTOR

Prof Anthony deliberated about Sustainability Science for evidence based decision making in the area of health. Essential a big difference between the MDGs and the SDGs, is the SDGs is an informative approach to poverty eradication. The key difference in the processes, is that all countries must sign on to the change, including my home country, Australia, in the context o the SDGs process. This time, it needs to be substantially about interaction and convergence: the need to contract consumption for higher income countries for convergence of outcomes, especially of the obesity endemic. Health as an important input, as well as an outcome of development. Boyden's bio-sensivity triangle (Steven Boyle). His early works funded by the MAB UNESCO programme. One of the output of that work, is an elegant triangle the bio-sensitivity triangle: everything we do, every human activity, individual or collective ones, have positive or negative impact on human health in a direct, or an indirect way on the health of the people. It is simple, and elegant and it is profound. The Rockefeller Foundation: commission on planetary health. International programme office, Chinese Academy of sciences, Xiamen China: Future Earth: Health and wellbeing in the

changing urban environment using systems approaches. Keys to the key program is the idea of systems thinking: dynamic interactions, feedback, policy resistance, leverage points, unintended consequences. We have to account for dynamic interactions across systems, and feedbacks as an important factor. Identify intervention points, and having in mind, the unintended changes of each decisions we made. Collaborative conceptual models: essentially a 6-steps iterative process: what is the challenges we seek to change, the history of the change, can I see how you think: contextation, and language; what drives the system behavior, where is the leverage points/intervention points; and finally, do we see it the same way. Health is an important input as well as outcome of development. The relevance to SDGs is that health is an output of development. Systems thinking and human ecological approaches help understand policy resistance and identify intervention points. The idea of planetary health cognates with sustainability science and it could be framed in sustainable development discourse. A little message by the moderator: education and development of understanding as requirement of education system, health, ecosystems, as a piece of compulsory agree (consensus) is the thinking in system. Health is connected to everything else, and we should not separate it into silos, and a new way of thinking from a reductionist approach, and move towards a comprehensive and integrated approach to address the problems we faced today. He also explained on the conceptual, methodologies, and institutional issues. Hard challenges and trade-offs in developing sustainability science. These challenges are particularly important to the development of social and human sciences. Institutional encounters with the juggernauts of the hard sciences. Can this distinction be maintained to fit social sciences into sustainability science? There are some hard questions to be asked yet, and in application, there are hard answers to be answered. Knowledge scientific and connection between scientific and non-scientific knowledge, where science is defined by an institutional processes, that has not been built into the process. Doing what science demands has not work, and will not work. Science of sustainability and also science for sustainability. Literature is negative, of why everything is screwed up. But these did not provide recipe to improve what is to be done in the future. Sustainability of what? We have not face the challenge today. Sustainability of development, meeting needs, and converging of uniform needs satisfaction. Normatively – the concepts of HR declaration of human rights. The challenges of sustainability framework: achievable? In appropriate terms? Planetary boundaries are consistent with invariant needs human satisfaction in a few decades. No one refer to other questions, whether those are the correct terms for the future. Are we referring to sustainability development science, so the sustainability of what is an important question. Something we have to question in the framework. A political subject, which is also a science, questions to be answered is, sustainability of what?

#### **WRAP-UP SESSION OF DAY 1**

#### BY PROF. DR. SHAHBAZ KHAN, UNESCO JAKARTA OFFICER-IN-CHARGE

Prof Shahbaz expressed that a lot has been shared on the various practices and initiatives undertaken from various countries at various levels, be it, local, national, regional, and global. Apart from several advanced scientific and technological models proposed for the improvement of information databases, which provides an excellent tool that provides scientific, knowledge-based input to support decision-making, there is an increasing focus and attention paid to stakeholder engagement in the generation of strategic action plans at the ground level. The extent of stakeholder participation expands from the initial goal of awareness raising and capacity building to a more inclusive approach where the community and the public are actively involved in charting the direction of scientific research, where their local and traditional knowledge are recognized and incorporated in the generation of scientific knowledge. These scientific outcomes that assimilate the best of both worlds are shared through international platforms, which are subsequently translated into local practices as appropriate (downscaling), with adaptations that suits the needs and circumstances of the locality. The discussion raises the importance of information and knowledge sharing, and the need for a global platform for the dissemination and mutual exchange of lessons learnt and experience. A systems thinking that move towards a comprehensive and integrated approach, where health, economy, environment and other pre-determined sectors are not independent silos, but an integrated whole, is crucial in the sustainability science framework. The conscious incorporation of sustainability science concepts in the various initiatives and programmes launched by local/grassroots actors, national and regional governmental authorities, and also the work of international agencies working at the local or national level seems to paint an encouraging picture for the achievement of SDGs, despite challenges posed by a human-induced climate change. However, the first day concluded with a somber conclusion that the hard questions of sustainability science have not been asked, nor answered, and participants are compel to deliberate on the important question of, sustainability of what? It is a political subject, where politics is also a science.

#### **WELCOME DINNER**

Welcome dinner was held at Saloma Theatre Restaurant and Bistro Kuala Lumpur, Malaysia.

100 Participants were joined this dinner which was served with local food and traditional dance performance of Malaysia.





### DAY 2: THURSDAY, 5 MARCH 2015





KEYNOTES SPEECH ON THE ROLE OF SUSTAINABILITY SCIENCE IN ADVANCING THE FUTURE EARTH INITIATIVE AND THE SDGS

BY PROF. KAZUHIKO TAKEUCHI, UNU SENIOR VICE RECTOR

Prof Kazuhiko delivered keynote on the progress and development of Sustainability Science. He expressed that we need to meet the challenge of global environment issues, food security issues. Very small group of scientist growing to design and co production. Science should be for society. Discuss science for society. Also try to produce science with society. Importance of capacicity building and education. Sustainability science and resilience. The two ideas are quite important. Clarify if our work consider sustainability. Social ecological system. Transboundary issues. Core production is the key development. How we coud transform our community towards sustainability. Consider how the sustainability science to contribute? Proposed Sustainable Development Goals to be attained by 2030 cater issues of poverty, hunger, economic, climate change and many more. He also explained on Intergovernmental PBES Conceptual Framework. The conceptual framework is applied in accordance to the respective characteristics of the locality. How we could integrate the different fragmentation. The most important is to develop the governance of the environmental. Multilevel environmental system. At which level it should be? The situation is changing drastically. In Rio+20, many stakeholders join the discussion, and these discussions by stakeholders are as important as the discussion at the plenary by member states. At the Future We Want, we could see the importance of the stakeholders' participation and involvement. We could not change global politics, when we talk about global issues such as climate change and BD, local issues could not be ignored. Nested structure of the governance, needs to be associated with the understanding of natural capital and other anthropogenic activities. Nested Governance: Multilevel governance and cross scale coordination. Social, produce, and human capital in creating governance structure at the local scale. Nature capital needs to be developed for a common future. At one side, we need to consider the physical maintenance of the society, we also need to consider the social maintenance of the society, at the same time. Strategy for establishing a sustainable and resilient society. Six strategies to be taken by the government towards a sustainable society. Harmonious coexistence of human and the environment. Technological, social system, and lifestyle innovations for establishing a sustainable and resilient society. We need to reassess the natural capital value of the environment. Environment and diplomacy, needs to be developed. By these strategies, we need to take three important approaches in innovations, as stated above. Again the society is fragmented. We like some systematic approaches in coordinating social system, and this is what I called social system innovation. We also try to create some conceptual framework for revitalising local economy: how we could combine the rural area, based on the material side, and based on the socioecological system. Based on this, we uses government funds to revitalise the economy of the country. We are trying to apply this idea, social ecological restoration to the disaster area (ie Great East Japan Earthquake). Ecosystem function could contribute to the reduction of disaster risk, not just by protecting by using architect. If we can restore the natural mass, this could reduce disaster along the coast and add value to the landscape of that area. Many tourist flocking in to see the beautiful landscape we create through environmental restoration. We are very pleased that the wife of the PM is a strong supporter of our activities, and hopefully she will be influential towards the PM, who is her husband, to persuade him to see the further importance of the idea towards the reduction of disaster. This is one of the very important issues in developing SDGs. Today's discussion, hopefully it would further contribute towards SDGs.

# KEYNOTES SPEECH ON PROTECTING GLOBAL BIODIVERSITY AND POST 2015 AGENDA BY PROF. TAN SRI DR. ZAKRI ABDUL HAMID, SCIENCE ADVISOR TO THE PRIME MINISTER OF MALAYSIA

Prof Tan Sri Zakri delivered keynote on his extensive involvement in sustainability science. Protecting Global Biodiversity and Post 2015 Agenda' is a topic that has been increasingly becoming the daily bulk of Tan Sri Zakri's work. Biodiversity as the nexus in overcoming global challenges such as global health, global biodiversity health and simply, the achievement of the standard of development (sustainable development). There is a need to address how science influence sustainable development and how science and technology impact on society. As the founding chair of the newly established IPBES on science, policy on biodiversity, ecosystems and ecosystem services in the 26 members of Ban Ki-moon's scientific advisory board, and a science advisor to the Prime Minister, these three roles figure strongly in what Prof. Takeuchi's nexus on science, policy, and society. There is a need to get into serious consideration of what sustainability science is for in the conference on sustainability science. Is it just to publish papers to get promoted to professor? Increasingly, sustainability science/scientists can claim that they have a role in leveraging on the politicians, as shown by the Japanese Prime Minister. Mr. Ban is interested in how science could be linked up with policy development. The trans-sectoral nature of sustainability science syncs very well in the 21st century in overcoming some of the problems faced by local community brought by unsustainable development of the countries. The configuration of sustainability science today, and the science on climate change as seen in the case of IPCC, illustrates the effectiveness of linking science with policy making. This is also the purpose for which IPBES is established. In fact, the IPBES is the consequence of another process in the assessment of the state of what is the world's ecosystem – the Millennium Ecosystem Assessment (MA), which is currently the largest undertaking in the world to assess the state of ecosystem of the world. The report produced by the MA, simply put, concluded that 60% of the ecosystem services in the world had been depleted, and that depletion occurred in the past 50 years. That is the burden of the conscience that we have to carry with us. It is our generation that destroy the natural landscape, changed the chemistry of the atmosphere, and it is our human activities that increase the temperature of the earth. The consequences of such is well known to all of us. The IPBES tried to strengthen what was done by the mA. One of the key products to come out in two years, is the coordination with health and food production. For example, the decreasing number of bee species would have an impact on food production. This consequence provided by scientific assessment would have to be relayed to the government so that there would be policy at the global, regional, national, and local level. This is the kind of scenario sustainability science would also weigh in. At present, there are 123 national governments involved in IPBES. Increasingly, the involvement of NGOs is on the rise. Despite the increase in NGOs observing the IPBES process, the decisions are still made by the government. Lessons to take home from this situation is, what we are doing is of little consequence. However, decision making has to rely on the knowledge generated by scientist. Scientists have to provide clear, concise and convincing advice to the policy makers. They should not isolate themselves from the process. It is important to ensure participation of the scientists in the process. The recent Disaster Risk Reduction (DRR) action led by the Deputy Prime Minister incorporates scientific information. It is believed that public concern on the threat has been attributed in part by the slow biodiversity decline on human time. The reports on the warning of global warming and biodiversity losses in the past few decades have become so familiar that some may be numbed by the urgency of the problem, or accepted by others as inevitable cost (of development). Featured highly in the debate on the value of sustainability science, one of the most important issues is the value of biodiversity and ecosystem services, commonly and vastly under-estimated. We are delighted to have eminent scholars who champion another new concepts of valuing non-traditional factors of production, the inclusive well index where the exclusive value of ecosystems must go beyond the value mentioned. The value of ecosystem services is hard to estimate but not impossible, where it is valued at about USD 33 trillion per year. Late last year, nearly quadruple of the value of ecosystem services to USD 125 trillion per year. In 2010, as estimate by economist, wetlands ecosystem in terms of flood and storm protection is valued at USD 2.4 billion. Pharmaceutical products where the industry relies heavily on biodiversity. The challenge now is how these economic assessment of ecosystem services could be mainstreamed for society to take up as the cost of our eventual survival. There is no mention about biodiversity nor the important role of the IPBES as an important vehicle in the 17 SDGs. As the advisor to Mr. Ban, Tan Sri Zakri works. with Mr. Ban in looking at the crucial role of science, technology, and innovation for sustainable development. Science, broadly defined, includes the natural sciences, technologies, the social sciences, and the humanities. Science is critical in helping meet sustainable development challenges, and lays the foundation, amongst others, in identifying and providing answers that are reproducible, as conclusive evidence that serves as the basis of decision making and effective impact assessment. The examples of better weather forecast and the availability of new antibiotics, illustrates the direct and significant contribution of science towards sustainable development. They also demonstrate that sustainable development requires a broad understanding of science, and cover a wide range of disciplines. The need, as referred to the SDGs, integrate science into the post-2015 agenda, which necessitates more investment in science by national government in developing the minimum and maximum standards for the society, the economy, and the environment. The 17 SDGs do not mention science despite the scientific board's effort in trying to influence towards an explicit mention of science as an overarching underpinnings of the 17 SDGs. The constant challenge faced by Tan Sri Zakri as a science advisor who needs to convince policy makers on a daily basis of why science is so important, especially when there is not much seriousness given to biodiversity. This shows a lack of understanding, which we have to make the policy makers understand. There is a need for scientist to make connection with negotiators and policy makers to compel them to put science and biodiversity on the table as something crucial. As a science advisor to the Prime Minister, my stakeholders are politicians and policy makers. For them, their instructions, (to be answered by scientists are), could S&T create jobs? Could the scientists increase the well-being and the income of the people? If the scientists could not answer these questions, there is a big mountain to scale. Most schemes that improve the economy of the country and alleviate poverty are not rosy, and the downside of these schemes is the destruction of forest. The question is, how do we create that equilibrium between the right to develop and the need to conserve ecosystems, where other lives on earth, like the orang utan in Bornero, are respected. The role of sustainability science in real life is illustrated in the recent flood disaster experienced by Malaysians. The scientific council came out with a scheme to understand the root of the flood and the measures that need to be taken, which address the disaster management cycle. An S&T panel is established to advise the national Security Council. It is hoped that sustainability science could play a key role. In the daily work of a scientist, there is a need to predicate on three elements:

- The science that we are promoting must have credibility, and the credibility could come from publication;
- 2. It must be relevant. If the salience of the work has no relevance, it would have no consequence. In addressing challenges for SD, it has to be science for society;
- 3. Science must have legitimacy. It is translated into, legitimacy must emerge from the endorsement of political support at various levels.

PANEL SESSION 5: PRACTICING SUSTAINABILITY SCIENCE AT COMMUNITY LEVEL CHAIR: PROF. KUNIYOSHI TAKEUCHI, ICHARM ADVISOR

# PROF. DR. IR HELMI, ANDALAS UNIVERSITY PROFESSOR

Prof. Helmi posed the question of, what does all these declarations, targets and goals meant for the people? If they are meaningful to the people, it must necessarily be translated to the society. In this respect, Prof. Helmi opined that the essence of sustainability science has not actually been touched upon yet. The issue is, what is, and what is not sustainability science? The elements of sustainability science are inter-, trans-, cross-disciplinary, where the most important aspect is the blending of disciplines. Sustainability science must be solution oriented; the optimisation of social and humanity potential through the learning process; and the maintenance and continuation of benefits streaming from natural source, as we have only one earth, and it must involve all. It is obvious under the sustainability science framework that keeping to separate disciplines is not the solution. The separate disciplines of physics, chemistry, biology and the environmental sciences might deliver wonderful solution to some of the challenges of sustainable development. However, whether these solutions will gain traction depends on factors beyond their discoverers. All credits should go to those who establish multi-disciplinary projects from the outset, who integrate natural and social sciences, and the humanities from the outset through the mutual framing of challenges. Such approach supports understanding and effectiveness of science. At the community level, the issues faced are the lack of synergy among actors, consideration of local economic impacts, and the need for skills enhancement. In addition, environmental justice, the social impacts of climate change, should not be ignored. At present, more is focussed on technical aspects, and less attention are drawn to the needs of the people. 'Think globally, act locally'. It is reported by IISD that we can no longer rely principally on the approach centred at the global level. Prof. Helmi proposed a quadruple helix model that seeks to increase the use of S&T to improve livelihood. The model provides for a community learning centre as platform for the coming together of different people to improve the livelihood of the local people. The framework starts with the framing of sustainability agenda problem, where there are concerted effort in effecting sustainable solutions at the community level. Successful implementation at the community level could be scaled up and increases the stock of sustainability practices. The expected outcome of such model is that social and economic well-being is functioning at a high level of social capital, the formulation of policies to support decision-makers, and the capacity building of the community through the learning centre.

#### MS. UMI KAROMAH YAUMIDIN, LIPI RESEARCHER

Ms. Umi presented on Macro-economic prediction of Indonesia. Indonesia is predicted as the sixth largest country in the world, with an economic improvement plan for the country in order to restore the country's economy. However, at present, it is unable to solve the current socio-economic problems of poverty and unemployment. Indonesia needs stability, science, technology and innovation, and environmental sustainability, apart from inclusiveness in order to emerge as an innovation-led economy. The source of innovation should be based on science, research and commerce, which depend on the underlying competence of the country. The future option for policy design on R&D investment seems to come from informal processes, mainly the R&D of private sectors. In order to transform the economy, there is a need to make future policy that provides the appropriate leverage points. Biodiversity is a bridging point in accelerating economic development. Bio-tourism in the rural area is an opportunity for business even though biosphere reserves are not included in the government's agenda. However, there is a shifting paradigm in developing the biosphere reserves in the Cibodas case. The model of development is implemented in

this case after extensive research. The integration of the three sectors (economy/business, society, and the environment) is crucial, albeit difficult. The integrative management system (participatory programme) implemented at the community level is a learning by doing process where the ownership of running the programme lies with the community, as supported by local governments and NGOs. The supportive base for this programme is scientists, where the appropriate technology is offered to the community, where implementation involves the partnership of all sectors. Continuous monitoring of the programme of a minimum of five years is taken in order to ensure the sustainability of the programme.

## DR. CRAIG HUTTON, UNIVERSITY OF SOUTHAMPTON RESEARCHER

Dr. Craig Hutton explored the role of the community, in terms of indigenous knowledge, representation and role in the broader sustainability science socio-environment projects. Several questions need to be answered. How the involvement of the community other than simply a subject for the abstraction of information could be ensured? How do we sample the diverse perspectives of communities? How could the different context of industries, locals and different stakeholders be located in the sustainability science framework? How do we learn about the past in order to decide the future for sustainability? How do we assess sustainability and what are the practical indicators? Dr. Craig Hutton sought to explore these issues in a project that intended to create a rural flood vulnerability map to characterise community's vulnerability to flood. The perspectives of the communities are captured to the extent possible to answer the question of how researchers could relate them to the policy level in order to sufficiently represent a community's perspective. The weighting of priority of areas are solicited from both the community and the government. Each of the 10 communities are equally important as stakeholders from the government. The priorities of the communities are map against the priorities of engineer and different kind of maps are obtained. The difference between them is apparent. However, the issue is, how do we bring the differences into policy-making to make it useful for the community? On the particular issue of poverty alleviation, the scenarios are built into a system-dynamic conceptual model for the community in relation to poverty and food production where the statistical model of census and environmental outcome are incorporated in order to come out with key drivers of environmental problems for the development of future scenarios in order to address the problem of poverty.

#### DR. DENIS CHANG SENG, UNESCO PS FOR SCIENCES

Dr. Denis Chang Seng presented the experience learnt from different regions that contributed towards a better understanding of loss and damage. Dr. Denis Chang Seng focused on the limits and gaps on adaptation in seeking new solutions to address loss and damage due to disasters. These include assessing the capacity needs where the entry point of the project is the conduct of regional conservation and dialogue that focus on loss and damage resulted from climate extremes in the agricultural and tourism sectors from selected countries. (it is to identify the leverage points for new solutions on L&D). The cook islands: 15 islands. Climate events in the cook islands: tropical cyclones-causing swells, storm surges and wind damage. Cook islands lie within the 'cyclone belt'. No major tsunami yet. Slow onset events: drought, sea-level rise, increases temperature. Loss and damage realities of this 24 damage cyclones; 3 involve earthquake. Emergency management cook islands-Disaster risk management for rapid onset climate events. Current adaptations: agriculture-new crops more salt resistant.

## MR. LIAM RAMSAY TUAIVI KOKAUA, TE IPUKAREA SOCIETY (TIS)

Mr. Liam introduced a background of the Cook Islands, landmass of 240 km and 2,000,000 km2 of ocean with a population of 15,000. Rarotonga the capital has majority of population, international transport, administrative and economic hub. Northern islands are low-lying, Southern islands are volcanic. Main focus on agriculture and tourism, main contributors to the country's GDP. The main problem faced by the Islands is extreme climate events, especially disaster and its responses. Getting to the northern grid of the Islands is very hard, and it is limited to certain flights, which is more problematic in times of disasters, as compared to the southern islands which are better connected. The Islands are prone to cyclones, and several slow onset events such as droughts, sea-level rise, increased

temperature, and the increased of numbers of insect pests and invasive species. Tsunami is another area that the Islands need to prepare because some of the Islands are of volcanic origin. It might not be a problem at present. However, there is a risk of collapse, which will cause local tsunamis. Since 1955, there are 28 disasters in the Islands, and the fatalities are serious. The economic cost alone totals to NZ\$ 65.4 million in damage. Hence, the priority area is emergency management for Cook Islands. Collaborations are held with CICC to form the Joint National Plan for disaster risk reduction and climate change 2011 – 2015 (JNAP). Trust funds are established for emergency for disaster management. Some of the existing adaptation solutions are successful, but some are not as successful.

# MR. SOANE REMUDU, MINISTRY OF AGRICULTURE, FIJI

Mr. Soane presented on Disaster Risk Management Loss and Damage: A Fiji Case Scenario. He started with a background of Fiji. The climate variability of Fiji: over different time scale, features that drives the climate: the el Niño southern oscillation etc. Sectors affected by climate variability, with emphasis on the agriculture and tourism sectors. For the agriculture, land arability reduced due to salt water intrusion, and physically damaged crops, infrastructure damage, and also the socio-economy impact associated with all these. Onsets of cc, death of livestock and crop damages that are substantial in dollars terms. Mitigating opportunities such as the use of fuel efficient equipment, maintenance of forest cover, for soil conservation, and agro-forestry is one of the developmental projects we venture into. Small scale agriculture activities to optimise production. Fiji has subsistence farming, most of our rural farmers are located out there, and taking out of agriculture, there would be poverty (or vice versa?) Unclear. Resilience: resistant crops, drought tolerant, saline tolerant, and flood tolerant. But I have notice that in terms of genetic diversity, it is so narrow, we do not have enough varieties, as if we are putting all our eggs in one baskets, as said by economists. This is a gap we noticed in the agriculture sector. Adaptation and gaps: genetic diversity is so narrow. Relocation of houses, and the housing sectors due to rise in sea level. Relocation of Fiji, have to be adapted to the rise of sea level. The draft guide is there, subjected to consultation. The constraints: institutional framework: Governmental bodies, supporting legislations, as some of the legislations are outdated. We are at times, the victims of our own policies, which we need to change. There is no consideration of climate change issues in development plans/programmes. There is a lack of awareness of climate change events to generate appropriate responses. Review and update of cc in school curricula etc. There is a need for more education. Bio-literary concept used in Vietnam, and he is very interested in it.

#### MR. SUNNY KAMUTA SEUSEU, SAMOA METEOROLOGY DIVISION

Mr. Sunny presented on Loss and Damage in Samoa and explained that some of the examples from the Pacific is really important. To give a more or less introduction to Samoa: it is very vulnerable to tropical cyclones and other slow on-set hazards. Assessment, incurred 10 million USD per year for loss and damage due to climate events. National level, there is no organisation mandated for loss and damage issues. The discussion at the international level, with actual implementation on the ground is lacking. The government understand the loss and damage and the concept is very important, and slowly working towards building those elements to help address loss and damage and to help the victims. For small island Pacific states, first document talking about loss and damage in small-island states, a big milestones. we have many cc and energy policies, and also national disaster management, risk reduction and management side, but for loss and damage, these two areas converge, for national implementation, it is inline and working together (convergence needed). some of the experiences - tropical cyclone Evan 2012, which killed 5, and displaced about five thousand people. The total damage amounted to 103 Million Tala, 29% of the GDP, 28% of the total value of goods and services produced in 2011. It brings development backwards, and adversely affects the BD agenda. We need to bring in experts to estimates damages, and to look into ways to improve the resilience of different sectors. Some of the lessons learnt, from some of the impacts, is to improve preparedness, and to prepare and widely disseminate, we need more diversity in crops. Some solutions: reef to ridge 3D model with the community. Some of the gaps and limitation we have: the lack of certain climate and development scenarios, the lack of data. Solutions: is the development of a national climate early warning system for agriculture that brings different disciplines, agriculture and meteorology to inform issues happening in different circumstances. Some of the adaptation actions would be slow to change, and we believe that education will go hand-in-hand. We try to move economy from fossil reliance economy to renewable energy economy.

# MR. MICHAEL TAPAHOLOIESI HOOTA, MIN. AGRICULTURE AND LIVESTOCK, SOLOMON ISLANDS

Mr. Michael gave a brief introduction to the Solomon Islands. Severe flash flood experienced in April 2014. We went to do a coordinated structure to deal with disaster. Some issues we try to carry out relief and recovery to tackle the disaster. The SOP (for emergency), placed under the livelihood cluster. The total damage on agriculture amounts to USD 18.4 million (for crop and livestock), of which USD 1.5 million is damage. The recovery plan developed to facilitate quicker recovery and re-establishment of normal livelihood, with short-term and long term goals (in the emergency phase under the developmental plan). In the mediumlong term recovery phase, we provide community nurseries, improve resilient crops, drainage systems, livestock structures, restoration of facilities, and designation of flood areas for evacuation of livestock etc). Several outcomes: 1. recovery of livelihood damage by flood, and to better prepare them for disasters; 2. recovery of income generating activities and enhancement of capacity to respond to further shocks; 3. better preparedness to future disasters for agriculture, livestock, fishery and commerce sectors. Cross cutting sectors: disaster risk reduction, environment sustainability, gender and social inclusion lack of baseline data and the sharing of information during emergency and recovery phase.

#### MR. EUGENIO LEMOS, TIMOR LESTE NATIONAL COMMISSION FOR UNESCO

Mr. Eugenio presented about community based Water Conservation in Timor Laste. His personal experience working since 2000 in water and soil conservation in Timor Leste directly with the community. He explained about water conservation in Timor Leste (TL), the community water issues in TL, long time forest and environmental degradation, causes the land becomes dry, and the spring water getting dry. Often, women and children become victim as they walk miles and miles to obtain water. Children do not have time to play or study, and it affects the health of the women, and putting so much work on the women.

From our observation, we work with the community to restore the environment to bring back the forest and the water, to secure water for the community. We focus more on water conservation. What we do is, to work with the community to do the community assessment to assess the water situation, listen to the community, the plants that brings they water back, listening to the elders of the local area, and what causes the water situation today, how water knowledge maintain water in the soil. They tell about traditional law, which the young generation, do not obey traditional law, and cut down forests. They do cultivation, and hunted wild animals that bring seeds to the area. Study with the community, we design how to bring back the water. I facilitate community meeting, and listen to everyone, even women, children, elders, talking about the importance of water for them. We discuss which area, how, which water source is a priority to bring back. Different areas with different traditional knowledge, local beliefs of the people, of which UNESCO has to develop, respect local knowledge beliefs of the people, and that is science should be, it has to be bottom up, that incorporates local knowledge. I learnt from the local how they conserve and protect the environment. He said that, he do the traditional ceremony with them, he do what they do, and he facilitate them with technical aspects. Community participation, because water is so important to them, the whole communities involve in this initiative as this is their water source. This work is to create water catchment system to hold water during rainy season so that the water could penetrate groundwater to feed the spring system. They use just hands, and plant so many trees around the area to increase precipitation. After 3 days, they create the soil, and the soil protecting spring water so that the water do not slide down directly? Technique to seal, to create water catchment, so that water coming down to the spring is clean water. The result is, water increase during the dry season, and the water become clean.

#### EMERITUS PROF. CHAMHURI SIWAR, LESTARI UKM PRINCIPAL FELLOW

Prof Chamhuri presented on assessing Socioeconomic Impact of Flooding: Case study in the East Coast of Peninsular Malaysia. Agricultural economist, forwarding a proposal for the economic assessment of recent flood. The recent flood is mentioned a lot, and I will not go into detail today. This is an attempt to assess the socio-economic index, including L&D. The

cause of extreme events causes a lot of L&D especially to poor and marginalised communities. Most affected would be the vulnerable living along the river. High vulnerable associated with low level of resilience. We cannot avoid relating poverty with environmental damage. We have examples of environmental damage that leads to poverty, and access to ownership, Ecosystem Services, safe water and sanitation. Problem of pollution, ecological fragility and likelihood of natural disasters would increase the vulnerabilities of those affected. The sustainable livelihood framework developed by the DFID, the vulnerability context of livelihood assets (human, natural, financial, social and physical assets/capitals) through influence and access of policies, institutions and processes in developing livelihoods strategies. Some of the socio-economic impacts would entail, estimating the L&D, physical related to natural capital and so on. The key concept would be damage, total or partial physical damage, and resulted in monetary value incurred for replacement. Losses is a change in economic flows, a decline in output in productive sectors, lower the revenue and increase the operational cost and other unexpected losses to meet humanitarian needs during the post-disaster emergency phase. In the selected case study areas, the loss of agriculture and losses to tourism sectors, would reveal the status of L&D of the flood. Method is Climate Vulnerability and Capacity Analysis, provide local knowledge of adaptation and mitigation strategies. We conduct household survey, collection of data on livelihood and asset losses from those affected, and assess the impacts of the extent of L&D; face to face interview. We also factor in DRR strategies and mitigation, and approach to assess hazards impact the people and society, involve steps to minimise and avoid impact that would influence policies that address disaster risk in an integrated manner. Hopefully it increase capacity of people vulnerable to disaster and enhance their capacity in handling disasters. There are several priorities areas for intervention in the DRR framework, including risk awareness and assessment, application of measures, and early warning system etc. The studies hopefully, could relate to sustainability and liveability, quality of lives of residents affected by extreme hazards etc.

#### **PANEL DISCUSSION**





Question by Prof Takeuchi: You have presented your problem, and maybe how to tackle in a conceptual way, the real people is from Assam and TL, the bottom up of how people is important, the nested governance, how do you trying to make this nested governance a reality? In other words, the scientist and policy makers, nd the government officers should work together, with other stakeholders. However, do you really have scientist in your team? Are they available to the local issues, and how do you connect to the scientist? Are they busy working on their publication? I would like you to comment on the nested governance, and how it could be a reality.

**Mr. Eugenio:** working at years in the community, often many graduates produce from universities, also how to see these people going into the community to work hands-on. This is my concern. I do not see the scientist in the area I work in my area. Maybe it is because I work based on working by learning. I can work with community from different areas. I hope that community knowledge to work with scientist to systemise the knowledge, so that we can solve the problem we face today.

**Mr. Sunny:** We are doing well in terms of inclusion of community. We are developing plans, fisheries plan, as far as the way government looking at empowerment in these issues, consultation process, communities, what are their priorities, government will come back to develop this plan, take back to the community, their priorities will be 'sign off'. We approach donors to obtain funds, to fund those activities, varying to infrastructural development to soft solutions. We ensure engagement so that the policy is not top-down to ensure

community ownership. In Samoa, we identify 3 hazards zone, coastal erosion, coastal, future projection working with sea level rise, and people knows that their houses are located within these zones. The next thing for them to do is relocation, if they know that they will continue to be affected by erosion and sea level rise.

**Prof Chamhuri:** Multidisciplinary team from different disciplines looking for solutions.

**Prof Takeuchi:** The real question is, there may be an integrated team, but there should be co-design and co-production of knowledge. But it takes time. But science comes from consultancy arms seeking for a particular budget. Is this the way SuS going to do. What type of real collaboration in the co-design we are thinking about.

**Ms. Umi:** In Indonesia, we have bottom up and top down. For the government, our solution is on one hand science, the government ask the scientists to give some funding to 20 groups of multidisciplinary projects to develop areas to become more 'sustainable', such as areas destroyed by mining to make it a tourism area. Scientists listen to the government. Local governments, some programme to support local governments and local community (?)

**Dr. Denis**: The project is just an entry point. The first step is to take in scientist on board. We want to work in the South Pacific and 'Script', to get them involve, and get things off on the ground.

**Dr. Craig:** what is the interesting practical applications — conduct activities with decision makers with communities to understand their communities. Many of these officers have not been to the communities. We get them to talk about the priorities that come out from the communities. Experts are surprise to hear that women have problem getting children to school. Decisions placed on communities, and from these meetings, priorities are reorganised, by bringing experts to the communities. Perhaps one of the skills in SuS is to get connectivity between them into their environment.

**Prof Helmi:** Researchers from the communities, trying to understand the local issues. Researchers bringing into field their applied research together with the community. Then we present to the private sectors and local governments. Then we sign MoU with companies and to try to develop the community learning platform as an economic unit so that they can be self-sustaining (through selling compost) etc.

**Prof Takeuchi:** This is an important panel to the future. SuS is co-design and co-production of knowledge bottom up combined with top-down approach, only through cases we realise, (through presentation) in this symposium (?)

#### **FISH BOWL SESSION 6**







**GROUP 1: POLISHING THE CONCEPT OF SUSTAINABILITY SCIENCE** 

FACILITATOR: MS. KRISTA PIKKAT, UNESCO TASKENT

**Question by Ms. Krista:** Ultimate Question is how its different on polishing the concept of Sustainability Science?

**Dr Craig:** There are two contentions: 1) definition, not waste time, but criteria to be fulfilled 2) Extreme difficulty to define life, but define by criteria.

**Mr. Ram:** Science can assist policy makers. Integrated science, not just leveraging. Sustainability Science as a process? Mistakes, failure & processes? Problem solving? Only-traditional science mode. Not mind set of problem solving but living with it or deal with eliminating. But risk? Wider pollution? Still need traditional solution. But no single problem.

**Dr Craig:** Identify gaps in the process. But if we sets criteria, but not acted upon, no point.

**Dr Aldrie:** What is Sustainability? Its about Informed decision making. Science of the process. How to do it? Methodology **in** Msia, conservationist, romantising, not use standard. Its a process that let people decide based on technocrat info.

**Dr. Zeeda:** We are facilitating. Make them achieved what they want. Try define time? Ideal future, what is low carbon. If narrative about enduring state. So define in term of time.

**Mr. Eugenio:** Example in Agriculturist: Amrcorp. Conservation in 2003-2006 is Sustainable Development Idea. We have a social project: Are we using science for Sustainable Development? The answer is yes. And Now is Sustainability Science?

Mr. Hans: As a discipline? Can be science for future, integrating manner?

Mr. Ram: Ethically applied science? Question of values? How defined ethics?

Its actually Dilemma: When we see insect but we didnt kill. But the society want food , loth, and education, that's matters.

**Dr. Zeeda:** Anybody can argue its sustainable. Affordable?. Ecologically sound. Local initiative. Participatory.

**Dr Aldrie:** Sustainability Science is science which connects all science.

**Dr Craig:** How characterise a process of Sustainability Science? Interdiciplinary app? Science, policy and society. Integration etc

**GROUP 2: PROMOTING SUSTAINABILITY SCIENCE THROUGH PILOTS** 

FACILITATOR: MS. KATHERINE MULLER-MARIN, UNESCO HANOI

**Question by Ms. Katherine:** What are your views on how to involve stakeholders so that they can give their opinions: richer, diversity, and makes it stronger? At the end of the session, recommendations will be listed to better implement sustainability science.

**Prof Takeuchi:** I have no idea of how to really combine the scientist, policy maker, practitioner combined together to implement sustainability science. How to make this kind of opportunity. I have no solutions, but would like to know from everyone else.

Mr. Anthony Wong: I have 42 years experience in tourism business. I have implemented a lot of sustainable project for the country. I started off as a student and I developed home stay. The whole idea is that industry must be willing to share, have the leadership and must not only look after money. Second thing, we started with eco-tourism. 40 years ago, there was no tourism bound. After that, together with NGO MNS which was headed by Tan Sri Salleh and also Director General of forestry we developed together a nature guide course and we do capacity building. Now I'm actually developing green hotel for ten years. Business people would not do things just for environmental sustainability. They need to be informed on the bottom line. I actually taught them on 200 ways to save money and did not talk about environment. That way appeals to the business people. But then you work with NGO, scientist, and academia to tell them that it is sustainable method. We need to make papers and educate the media. After that, do educate school children and local community. It takes leadership to continuously develop this effort. Once we have identified the sustainable method, it takes leadership to practice this.

**Dr. Elfithri:** Most people don't really understand what sustainability science is about. Now is about to start or to do the management aspect based on sustainability science concept. Although sustainability science is just a concept, but the success of such project towards sustainability will need a science based approach in its implementation. For example my

project in Langat River Basin, take into account the sustainability science and policy implementation in the area. Most people do not realize that science is consisting of soft science and hard science. Hard science can be like pure science on biology, chemistry and physics while policy approach is the example of soft science. After understanding the concept of sustainability science, I think it is the time to apply it especially for policy and decision maker, if not it will be left as a concept and not applicable for everybody to comply to. Everybody have to adopt and implement sustainability science. Doing our sustainability works based on science approach. After we have understood this, everybody has to follow this aand make it necessary for all. My suggestion is to make sustainability science as a policy so that everybody need to do or to follow it.

**Ms. Katherine:** You're saying implementation on project has to have sustainability science. Make it mandatory is it?

Dr Kalithasan: The issue of sustainability science that's need to be understood especially by the funder. Firstly, the criteria of the selection of the pilot project, who decides that, the funding agency or the needs of the project or to solve the local issue of the site? So it is always a conflict in the area. Secondly is the stakeholder involvement and engagement. Involvement is much easier. There is a lot of project saying involvement of the stakeholder or people, but do they really engage? The third one, on the understanding of pure applied science or local science or I would call traditional knowledge. There are many knowledge especially for old generations that have been implemented and maintained with sustainable manner for over 100 to 200 years. The issues on pure science and applied science only appear around 30 years ago when we are saying that we are getting better and better but we must not forget that problem also increase.

**Ms. Umi:** We have to have good communication on the basic requirements with the stakeholders including industry and government. After we have a good communication, for the project, we must have same understanding and vision for easier implementation. To maintain the tie sustainable, the government should set up a policy with regulations and law

that ensure the continuous effort in the future. If they don't have same vision, they will not understand the sustainable science. We have to upscale the science, after 5 to 10 years.

Mr. Anthony Wong: Tourism is the biggest industry in the world. Hotels are 50% contributing to pollution, the carbon footprint. As for education for hospitality, we need integrated education by the Education Ministry. If we look at green hotel, we have to bring chemistry, biology, architect and environment. Even if you have the science behind, how do you change the mindset of industry? Industry will ask how to integrate all this. They will excuse saying that they are excluded because water is privatise. Even though you have science behind, how do you change industry mindset?

**Dr. Denis:** Regarding the statement that people won't do for the sake of environment, and that we have to introduce to company ow to start saving money? I want to start with how to actually generate income. Let's take a look of this example, UNESCO has nice concept and framework about how to protect the environment but allow sustainability development. It promotes economy, tourism in a sustainably and ecologically manner. Also we need to have sustainable financing for sustainable time. One more thing is that we need sustainable partnership to create sustainable environment.

**Mr. Yohanes Purwanto:** I think sustainability should be taught to school and university programme and there should be action to promote sustainability through pilot.

**Prof Takeuchi:** In order to have the sustainable sconce implemented it should be involve by the government, practitioner

Mr. Anthony Wong: I have started project with the government of Japan on ecotourism. We know that Malaysia is also big on ecotourism, they need to educate the local community in Langkawi. We started over 20 years back. In fact Langkawi is the best case study. Whether do we teach each other or totally supported by government to grow ecotourism. Whatever need to be done must be practical, inexpensive and doable to the local community. If you talk about science and technology which is very expensive, that is not very practical. Then

you have to work with NGOs related with industry so there is bind between them. We need to push it to the government to make it into the policy.

**Ms. Miza:** I am form NGO, and I work very closely with community. For me we are role player. Firstly, we are talking about science not everybody especially in the rural area understand science. We have to educate them on science and sustainability. Then identify what project that you're going to do with the community that is suitable or related with science. After that you have to identify your partnership and engage all the stakeholder including politicians, residential associates and form a committee before starting a project. In my projects, we do composting, and we teach them how to do compostiong and then we keep the data.

**Ms. Umi:** We need to understand that what local people can do. We have a networking for t90hem to discuss the problem of the area. Persuade the government on what the real problems are. Sometimes they are unaware of the problem. After 2 years, government now pay attention to them.

**Dr K. Kalithasan:** I just want to add another dimension, which is on the spiritual site. You are very convinced that you can design even though they like the idea, but in order to commit to the practice, they are temporary and not permanent. They can be hook by spiritual approach. By the money must be sustainable within their community.

**Dato' Shaharuddin:** I would like to pick up some point raised by Anthony, I've seen many pilots but it doesn't work. Why? We have good project, but the project only last on its project cycle. We need good leadership when it comes to sustainability and long lasting. Another important element has to be across the board, motivation is important. Always motivated when doing the job.

**Dr. Denis:** i just want to add on the religious issues. UNESCO has three dimension, including education, science and culture dimension is important for sustainability.

Mr. Anthony Wong: Whatever we do, do it step by step, don't go straight to the whole

vision. Start with your neighbourhood. Continuously work with passion. Very hard to get

industry to understand sustainability science. We best start with baby steps. We must look

at the different approach to the whole framework. For the sake of continuity, we must

identify leaders with passion.

Ms. Katherine: I would like to thank all of you for your passionate contribution. We are

going to make checklist for 'What kind of checklist to implement sustainability science?'. We

are trying to really ensure that people use the correct science. Science is there to ensure that

we are using the right way. We can use science to show what can be achieve. We need to

make sure those projects that use sustainability science are useful and practical.

**GROUP 3: UPSCALING SUSTAINABILITY SCIENCE** 

FACILITATOR: DR. AI SUGIURA, UNESCO JAKARTA

Dr Ai started with an explanation of the fish bowl concept. Persons sitting in the middle is

about 2 sentences.

Question by Dr Ai: What do we mean by upscaling? more? bigger? in terms of policy? what

is that we are talking about?

Dr. Olivia: Upscaling, I guess, bringing it to higher heights, involving higher ministers to

adopt or propagate it. We are talking about SD, and make it more scientific and systematic

approach. We involve many stakehodlers, involving ministers, education, sciences, public

works, environment. I do not know if I am on the right track.

Mr. Ardito: Same wise, more science, more or less, has not attract a wider audience, in

importing politicians, involving politicians

Dr. Olivia: More of a systematic approach, indicators, quantify or qualify, I donot know if

that is the approach to be used.

TECHNICAL REPORT

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**Prof. Wayne:** Why do we need to bring to the attention of authorities, to make it more influential. I would prefer that decision makers, those who can make decision, not necessarily those in the governments. There are all sorts of lifts in different levels. If we want to go down that route, how we bring those people to decision makers, to understand SuS. The decision makers can be lots of different levels.

**Mr Ardito:** To fit the gaps between society and policy makers. Approach for SuS, in the science, sustainability in the science. If we do not have any means for that kind of quantification, indicators, that we could somehow smmarise our work – after a certain period (10 years), level of education of policy makers, but try to promote sus in decision makers.

**Dr. Ali:** Challenges, incorporation into the activities of all stakeholders, domain activity of government, private, community. I would like to suggest that ASEAN can put into policy, in their activities, to put that into the budget, domain enlarging. In uni, we encourage research grant, as long as their ideas of their research more on Sustainabiltiy to Science. To explore more. How do we approach association of the business. Inside their domain, to push the agenda. Take the subject to their own activities and to bring it to the local community, enlarging the domain, and this is how upscaling happened.

**Dr. Irina:** Involvement of academia, private, local community: 3 level multi-tier, interactions dynamic between these 4 interactive points, should be highlighted at all levels, global or loca. Botoom up approach to address local and TK, and to identify what was the existing issues in the communities. And to provide the real issues to support the bottom up approach and how sus can mediate bottom up and top up policy making. Contextualisation should be place base or issue base that could be replicated in other areas to identify issues that are crucial. Upscaling is important for communication to reach out to what are the successful applications (of certain initiatives etc). Indicators: it would be better if we can have co-creation of knowledge involving multistakeholders to identify crucial indicators. Pinpoint ONE important indicators arising from others.

**Prof Helmi:** I would like to propose that indicators of upscaling is how much resource we could put on the action side. If we do that, it is easy to theoreotise for SuS, we increase the stock of SuS, by pushing hard on that side (funds)?

**Prof Wayne:** A concern to me, we are convince of the merits of sus, and we think it is really important to influence decision makers. We got to this point. We need to step back abit and say ok, and when we start to speak to others, decision makers, local levels, we need to be aware that the language we use, the way we engage, needs to be in their terms. Example this morning, from the advisor Tan Sri Zakri: He can't talk bout SuS, how good it is... when they are interested in employment, and economy. We need to be conscious of that is the language they speak, and how we address the issue so that they start listening. Similarly, this is the same thing we do at the local level. We have to convey in the construct that they are aligned to, in the language they are aligned to.

**Prof. Helmi:** Being an advisor, for talking to the boss, you need to go to the grassroot first to understand the problem and the language of government and researchers, synthesise, and then you talk to the boss. The advisors should not be in the ivory tower. This is important.

**Dr. Marlinda:** Referring to Prof. Hector. This is not the kind of language we should go, back to the grassroot. Talking in Malaysian scenario. An example. I am from Uniten. TNB is the owner of the dam that releases water. TNB claimed that they did release the water. Before tey release the water, they did alarm the people, but the people ignore. The flooding, and few more people died, within few months' gap. It tells that, in the short interval, what has the government down, and how did they educate the people tere and then. The opening remarks of this workshop. We have nice framework. But we need to start the action, but these actions are not refined, at a level, a KPI of level of actions, so that the people on the ground knows what to do. The communities know what to do. The people take it for granted, and the ignorance of the community... where are the educators? People starting to blame each other. Authorities: we did give warning. We can see the level, if the country wants to be developed, there are these issues to be addressed.

Mr. Takao: The need to have a systematic approach to refine needs and targets. I think it is important to have indicators, to measure, but has it be agreed what SuS wants to be achieve? if it is agreed, then we can start develop indicators. What is to be achieved? should it be agreed at the global, regional or local level. We need that to develop targets. It is a question of scale. Has it been clear? According to the last presentation, raisin a lot of questions. What sustainability for, what SuS wants to achieve? Has it been clear at the global, regional and local levels. When we have this, then we can start talking about indicators, and measuring our progress (towards the agreed goals).

**Ms. Shazwin:** Why concern is who is going to take the role, and on the young scientists' role. Who is young, and fresh and energetic, and be visible to policy makers. We need to know how to involve these young scientists. On function of academicians we have lots of fresh students who can be educated and be involved since the inception. What are the successful matters to get these young students to involve in and be part of these activities.

**Dr. Irina:** Referring to indicators: I just want to know if there is any indicators – multilevel indicators towards SDGs, and if it is possible to use the 100 over indicators to achieve the targets? there is no single words in the 20 goals of SDG mentioning SuS. How can we create something that interact with these goals? How do we reframe our efforts towards the SuS framework. It is not about SuS being stated clearly in the SDGs, but more about SuS as framework and platform to achieve SDGs. By using the 100 over indicators, we could upscale our efforts.

**Prof. Wayne:** Obsessions with indicators and KPIs. This kind of system about grade, for a long period of time. Is that process successful? and the answer is, sometimes maybe, sometimes no. Invariably successful. For scientist, should we be doing different things. We are humans, and tend to do things that we are comfortable with. We redirect local communities, and go through a 20 years process and how they look after their environment. keep th society in the community prosperous and etc, all the same things we are doing. We look at the processes, we have indicators, targets, and how many of those... but nobody go

back and actually check. I would, it is a bit radical. Many of these targets are useless, and many couched in physical terms when tey should be couched in value terms. Value of people being affected and have vested interest in what changes they need to change and what are the values that are really important. Many values we are tying to incorporate are not the best ones. Indiators used should be munch more about story about people being affected and will be affected. This might be uncomfortable for physical scientist. I would challenge us to, how to incorporate these values, of indicators that are value base, instead of physical indicators that people actually take note of.

**Ms.** Alice: I look at it from a different point of view, not necessary of any of the comments so far. Basically, in Malaysia, excluding Brunei, since we are so small, in terms of research, forcasting, resource assessment. is there any budget allocated for this kind of work, even in the budget committee, how many scientist are they? are these scientist able to have expected KPI for these scientists? Upscaling needs budget. Same for policy makers, no money, we cannot do anything.

**Mr. Takao:** Japanese makes decision, on kind of SuS. Each ministry has various policy, and if they need to make decision, they have a committee consisting natural and social sciences, and local community. This system applies to local government. Meetings of these committees are public to ensure transparency. I hope this would be of some help to promote sustainability and to upscale SuS in Asian countries.

**Dato' Mazlin:** Knowledge and leader. People are uncomfortable when others refer them as experts. Knowledge are every where, including in businesses and industries. When we try to rope in these knowledge, we should try to bring in knowledge fromi business and industries. Upscale should be done at the local government level, especially in Malaysia. When local government officers take up the responsibility, they should be encouraged to be a leader, where they are needed to be good coordinator, of sciences and local knowledge. Leaders, the coordinators.

Mr. Ardito: Decisions to upscale could be influence in success stories, and proof of concepts, and if they have proven something, it could be upscaled. It should be based on some logical framework. This could influence decision maker. This is one of the processes that need to be undertaken. We need to have clear goals and objectives, sufficient conditions for the initiatives to prosper and to be sustained. We need to have multi-sectoral consultation. We have to identify the various actors, leading and supporting, who play a role in the initiatives. We have to have ownership, if no ownership, the initiative would not work. If there is no ownership on the ground, it would not work. And resources, people likes to talk, but we have to mobilise the resources. We need to know what resources we have now, and what resources we need to make things work in ASEAN. For practical pruposes, if we have a blueprint (to bild a house, we know the estimates of how much needed to build the house). Same applies to community. We do not know if USD300 million, is sufficient to build the community. Upscaling in a logical framework, funds and players.

Dr. Olivia: In Asean context: empowerment, good governance, and transparency. Especially last two, good governance and transparency, are failures of development of inclusive growth. The previous administration has been so corrupted, that you could feel it. n japan space agency, they give agency support to Bangldes.... but why Philippines is not included because of too much corruption. Philippines need to borrow Lee Kuan Yew. What is most important, as Mr. Alexandra said, the leaders have to have good governance and to lead, and not to enrich. They should change that, and transparency, people should know what is going on, what they have etc. Social Scientist: Decision makers. During the restoration of the river, I have a talk with the mayor, we focus on prof. Zakri, his advice to the PM, how much job you can create and how much poverty could be reduce. Same for the mayor, how much job created under the restoration. As a scientist, it is difficult to answer. One thing is very sure for SuS, we have to keep in mind, decision makers are afraid of decisions that risk their seats. As SuS, we are coming up with an idea, frankly, we are rather slow. We are playing with the idea, we look at some case studies. But policy makers deal with this on a daily basis and they need quick answers. We used to be siting on the seat of scientist and blame policy makers. If we are in their shoes, we can see that science are really slow moving and actually laymen create effective proposal to solve their problems. We have to change scienctific committee. We have to discuss about this soon.

**Dato Mazlin:** Leadership and empowerment. Young people must be brought in, roping in the young people. Leaders must recognised that. Word by Alex, how to determine a long-term sustainability? Through sustainability, and when leaders are chosen, they bring in the next generation. Sharing what is happening would go a long way. Sharing must be conducted at the local level, sharing of partnership must be done through PPP (for this to happen).

**Mr. Raza:** We are chipping in to the concept? Do we really have to spell out SuS in the policy, targets? It is abit late for us to be part of the SDGs, it would be one of the output or recommendation of this workshop that it should be part of, to spell out SuS in the targets if that is possible. I think at some pointm top down approach would be better because all the member states would be obligatory (for them). They will do something, or start something, and a good starting point, even though they might not be able to do all.

**Prof. Wayne:** Absolutely imperative to develop new leaders, maintain and recognise them, and there is always a need for succession plan, institutions spending time and money to train leaders would always do better. Best chances of ownership at local elvel, when they are being defined, consistent with their values (of initiatives). If we get them to talk about their values, we can find remarkable level of consistency of their values. We always talk about differences instead of things we hold in common and things that bind us. That is a better chance for success. Define the objectives, but do not define them in a limited way, which defeats the objectives of SuS. This is complex system, changes are best defined as messy, but that should not deterred us from trying to do them. It is a complex system, and thus we need to be adaptive, and this is intrinsic to the whole notion of SuS or Science for SD. That is fundamental importance.

**Prof. Helmi:** issues of upscaling. We need new allocation or redirection of current ones. Private sectors steal from your ideas. Our CSR funds are like dust on the storm, we give to many groups, but no results. They want to look for new approach and new ways to spend

their CSR funds. They steal new idea on how to spend public money. It is not always new budget allocation, but a redirection of existing ones.

#### PRESENTATION FROM FISH BOWL DISCUSSIONS BY FACILITATORS

# STARTED BY PROF. DR. SHAHBAZ KHAN, UNESCO JAKARTA OFFICER-IN-CHARGE

The first question is what is sustainability?

The second question, how do we apply sustainability science?

The third question flows from Prof. Zakri's keynote, how do we talk to the politicians, as part of his job. The upscaling of sustainability science.

Have we manage to answer the question of, what is sustainability science?

#### **GROUP 1: POLISHING THE CONCEPT OF SUSTAINABILITY SCIENCE**

FACILITATOR: MS. KRISTA PIKKAT, UNESCO TASKENT

We had a very rich and participatory discussion. I think we might also have people who came along and expressed the view on how we polish the concept of sustainability science. We recognise that, some speakers, how they perceive the different points of Sustainability Science, but we need more clarification as to what is Sustainability Science as oppose to science for sustainability. We felt that SDGs, and how we can relate to the health of the planet, might be the ultimate goal. It is important to come up with the working definition of what is Sustainability Science, if we do not do that, there is a risk that it would become something that people play with, and promote at a small circle instead of bringing up to a wider circle. WE come up with a few criteria when we talk about Sustainability Science. We try to use some of these. Different mindset, fragility of system recognised, and to consider the risk when we engage with the system, processes and workflow, and promote the 3 pillars of SD in a comprehensive manner, interdisciplinary, integrated, system approach, and allow failure and to learn from failure, a kind of adaptive management, problem driven, but no applying traditional methods, recognises complexity. The most important aspects is the linkage between policy makers and the sciences. It must be ethically-based, action-research linkage, affordable, applicable, reporting and monitoring in place, inclusive stakeholder

process, complementarily, promote equity and evidence based. The task for us now, is to capture and perhaps complement the list of criteria and to come up with a nice working definition to promote it at a wider scale to strengthen/promote Sustainability science.

# **GROUP 2: PROMOTING SUSTAINABILITY SCIENCE THROUGH PILOTS**

FACILITATOR: MS. KATHERINE MULLER-MARIN, UNESCO HANOI

During group discussion we have discussed on how to involve stakeholders so that they can give their opinions: richer, diversity, and makes it stronger. Our conclusion: we would like to have a sort of framework or checklist to ensure that projects are using Sustainability Science correctly. It cannot be to complicated, or impossibly many requirements, and avoid the temptation of calling everything Sustainability Science. Recommendations, in brief, without specific order: Implementation of Sustainability Science to support projects, to support SD, we want to ensure a dialogue, sustained among policy makers, scientists, and practitioners. The need of clear leadership. Engagement of stakeholders in the form of buy-in. They have to have ownership. Educating community. Request from the use of Sustainability Science come from base. Educating new generation so that they can understand and apply it throughout their lives. Bottom up approach and convergence with top down approach through activities, concerted effort. Policy and norms allow adequate implementation of Sustainability Science. Green hotels, but not able to grow food on the roof because government does not allow that to happen. There is no norm to help promote innovative practices of Sustainability Science. Recognition of traditional knowledge, communication of all stakeholders, results, how it is working. There should be one single vision and everybody buys in on the vision. Smooth implementation from beginning to the end to make sure everything is implemented. Everything is implementable, to be adopted and adapted. We should not do complicated project. Win-win approach and find ways for engagement, ie, economic incentives to promote participation, sustainability of these activities. Use of basic science, is it a specific science (like waste management, and if it is correctly used). Who decides which project. It should not be the funding agencies. We should be able to compare the end and understand success. A lot of innovation comes from successful achievements. Interdisciplinary approach, long term solution, actions are practical and doable. Establish



network, mechanism for broad participation. Culture and social elements that affect the ways people see (a problem), and more importantly, passion.

**GROUP 3: UPSCALING SUSTAINABILITY SCIENCE** 

FACILITATOR: DR. AI SUGIURA, UNESCO JAKARTA

This group dicussed on how to upscale and link to the government at the policy level? Upscaling Sustainability Science, the first question is, upscaling what? to decision makers of all levels. These upscaling of Sustainability Science is filling the gaps between science and decision makers. Generation of action among different actors. Upscaling with both bottom up and top down mechanism – as issue/context/success story based, multi-scale through a feed back loop. Upscaling should happen through a systematic approach, with succession plan. The plan should be flexible, and allow room for trial and error. We need to come out with indicators that have to be co-design by all stakeholders, indicator of process, and should be value based common to the stakeholders. We help to set targets, and enable getting the level of actions already been taken. Upscaling is also translating to different groups and levels of stakeholders to enable communication, and not only in one language, meant for private or public sector. Upscaling through consultative and transparent process. The need for resource, how much we have, and how much is necessary for the whole process to happen. These resources should be shared, and to make that happen, we need strong leadership, empowerment, and good governance. We need the feeling of ownership of all actors at every level. Recommendation to take into account Sustainability Science in the SDGs.

PROF. DR. SHAHBAZ KHAN, UNESCO JAKARTA OFFICER-IN-CHARGE

The power of convergence, but in the end, we have a tremendous session.

# VIDEO CONFERENCE SESSION 7: ROADMAP TO IMPLEMENT SUSTAINABILITY SCIENCE ACROSS ASIA AND THE PACIFIC WITH LINKAGES TO AFRICA

FACILITATOR: PROF. DR. SHAHBAZ KHAN, UNESCO JAKARTA OFFICER-IN-CHARGE





**Dr. Arnaud Zannou:** Which science for which policy to reach the sustainable human security in the future we want. Statements on challenges on sustainability, what kind of areas for south-south cooperation. I am from African country. I think from MDGs, and to SDGs, there would be issues in Africa. We have a problem about natural resources management. We have a lot of natural resources, but the management is a problem. We notice now, if we see researchers and research centres. The work they are doing are not oriented to development. This is a big challenge. The SDGs offer opportunities to let corporations to strengthen the capacity of our staff and policy maker to know how to decide action and strategies needed to be implemented to make better life to Africa.

**Video conference (VC):** Cameron, within the framework of the projects we are implementing, ISTIC request to have a link with African countries, jointly with one or two (engineering) institutes in Africa. Generally, the outcome of the discussion is that the Asia Pacific has several colonisation background but they do not understand how development of Asia and Pacific is so different from what they have in Africa. We have new research institutions, universities, everywhere in all countries in Africa. A big challenge is how we could tap into these universities.

**Prof Hubert (via VC):** Approach we are going to take in this session, an introduction needed.

**Prof Shahbaz:** An hour and 30 minutes. We are following a similar agenda on this side, and we have invited some representatives from Africa. We have four major category 2 centre of UNESCO represented here. We have very good strength. Very importantly, we have a number of specialist representing social, natural sciences, NGOs, supporters of pushing UNESCO efforts, MEXT representation, and a funder from Malaysian side. A very brief rundown of where we are, and an opening statement. Then respond from your side. We open colleague from Africa and Asia to respond. First, a summary in less than 3 or 4 minutes, and moderate the session from that side, individual reporting. And in the end, we come to some concrete actions on how to lead the Africa-Asia cooperation.

**Prof Hubert (via VC):** We start from KL, brief summary and updates, main points, identifying of Sustainability Science in the context of post-2015, setting the scene, summarising the discussion we have, and the same in Harari Zimbabwe and we open up from there.

Prof Shahbaz: This is an very important initiative that attracts more than 100 participants, that we do not have enough room, more than 50 participants came from outside of Malaysia. Colleagues from 4 UNESCO centres, ISTIC (south-south cooperation), Human Tropic Centre (HTC, specialising on water), Disaster Management, Tehran, urban water management. Other colleagues from the region, head of the Vietnam office, Uzbekistan, Kristal, and many other colleagues, from Beijing, Pakistan, Central Asia, colleagues form Islamabad. We have a big presence from UNESCO. This is a big meeting bring all aspects together. We have important keynote speakers, Tan Sri Zakri Hamid, keynote. We have UNU Vice-Rector. We also have some important concepts, scene-setting by Dato' Lee, post-2015 agenda, and setting the role of science. How the UNESCO family could move forward. Important for your region, in bringing science and technology to development. Basic criteria to help solve big challenges, and to link to the SDGs, and to do a better job. A couple of request to have a clear framework to link all stakeholders that make big difference to the society. A special session, that brings in Asian senior officers, on ways to converge the top down bottom up approaches with the society. We need to work hard to make sure Sustainability Science is taken note of in all our efforts in delivering all the SDGs, and we

have to be pro-active, and to bring in scholars, and the need to have south-south cooperation.

Prof Hubert (via VC): We had a very useful and constructive discussion whole day. I feel the Asia and Africa connection is very timely and lead up to the adoption of the post 2015 SDGs September this year. The first, when we look at the SDGs and the challenges presented, taking some of the example, energy, food security, cc, none of these big challenges can be solved by a single country or a single region. This calls for cooperation. A horizontal agenda that the challenges we face is a challenge for all. We need to cooperate. We should avoid the same mistakes we made in the MDGs, we forget the important role of science, technology and innovation. If we articulate the role, we would have gone much further in achieving the MDGs. Let us not make the same mistake again. It must be science-based, based on scientific cooperation, between scientists, academic institution, disciplines. Problems cannot be solved with mono-disciplinary approaches. We need integration and we need Sustainability Science. 60 years ago there is a big wake up conference 1955 (?) to discuss a number of issues and challenges we face at that time. We have a much smaller complement. It is not judged by quantity but by quality.

Ms. Peggy (via VC): We have a very rich discussion yesterday. We believe that it is timely for African academics, policy makers, the private sector and the media to come together to see how we can enhance Sustainability Science in the post-2015. We have 35 experts, yesterday, it rises to 55. Meetings are streamlined in many universities in Africa. Vice chancellors from Ghana, Zimbabwe, South Africa. Ministers from Zimbabwe, Mozambique. We also have representatives from African Union. Representation of Africa's top scientist and engineers. We also have a number from various countries: some physically, and some commented via e-conference: Ghana, Ethiopia, Nigeria, Tanzania, South Africa, Zambia, Zimbabwe. We have discussions, looking at key areas, which Africa can nip from in the areas of the SDGs. To recap, we look at areas on the role of S&T. We have representative from Mauritius, and she presented a case on the ocean, important for small island development states. Food security post-2015. Science, engineering and food security, energy security, key element in Africa, capacity of women in science and engineering. Creating sustainable cities post-2015. We

went further to look at how we are able to develop a community and to enhance the capacity: group synergies, 3 groups, and we have had a good discussion. Under the foodwater-energy nexus, sustainable city and climate change, and capacity building in science and engineering. We came out with some key points. One of the key issues is that, there are too many goals of the SDGs, if we can reduce it to at least 10, but most 12, but a problem solving tree analysis is needed. as most of the SDGs are inter-related. At least 10 which is doable, as not goals, but indicators for us to achieve.

Prof Hubert (via VC): I would like to go very briefly to handle to Prof. Mable, Nairobi, Kenya. Overview of the outcome of the discussion on this side. Prof. Inguga. Mabeline, Vice Chancellor (agriculture and technology). We are happy to benchmark with you, and we are going to learn a lot from each other. we are trying to catch up with you. We came out with various commitments in the areas we have said, food, water, energy, sustainable city, cc, capacity building in science, engineering .... Prof. Manuku from UNESCO Jakarta office, to give us the whole brief of the points we captured. All our participants have a mic with them. It is going to be a participatory approach.

**Prof. Manuka, (via VC):** UNESCO Cairo office. Summary of yesterday's presentation and give us an idea, and where we are going to based on the discussion: Post-2015 agenda must address the big questions, poverty, sustainable energy, food security, managing natural resources, diseases, reduce disaster, and sustainable city. we then led through an overview of the meeting, and expected outcome of the meeting. We understood that we have to come out with our targets to enhance Sustainability Science. Africa needs a critical mass of scientists and advocate to promote Sustainability Science. We noted the importance of synergy developed between Asia and Africa, especially work on Sustainability Science to enhance s-s cooperation. What is already going on, in respect of ministers at the AU level. Developed S&T strategies (SISA 2014) of a 10 year plan for Africa. This is part of the Africa 2063 goal, a 50-year plan. We design goal for STI, integrated, peaceful Africa, representing dynamic force in the international arena. If STI is put at the very heart of Africa's development agenda. Apart from driving development, if the agenda is consented, we went to the 2<sup>nd</sup> presentation, to know that half of the issues we face, is severe imbalances.

between people and planet earth, and equity, imbalance between people. The result is, post-2015 agenda must look at a new SD revolution. This revolution must make transformation shoots, looking into new perspective, new energy, new water, new food. Future cities, what and how it would be like, and how it solves the problem of population growth. How would new cities cope with this? Dr. Majum let us know the preference of small islands, with scarce natural resources, vulnerable from cc and global economy. Three important assets small islands make use of: the people themselves, knowledge based economies, looking into ocean economies. Like Mauritius, revolution in leading the country from middle income country to developed country in 2020. How? New ministry of communication, innovation xxx, of which Mauritius is proposing. Role of S&T in food security by minister from Mozambique. Concern is population growth, urbanisation, sanitation, and consumption and also cc. As population growth, more food required, more land, water, energy, will lead back again to cc, and BD loss. For this to b solved, we need to develop a common agenda, for STI, and this must include development of STI strategies. Financing for agriculture and STIs for food security as a whole. Building infrastructural and human capital. Education, vocational training, regional and international partnership. Issue of water, which was presented by Prof. Everson, Zimbabwe. Energy failed to bring about the kind of resource needed for urban Africa. Flooding, unsustainable utilities, unrealistic tariffs. For tariff, it needs political will and intervention. Solid waste, sea water rise (problems). What should be in the post-2015 view is that, we need to look at the democratic challenges, water and food security, poverty, human capacity in order to resolve water issues.

**Dato' Lee, ISTIC:** I would say that, since Rio+20, there has been intensive consultation from multi-stakeholders throughout the world. At the end, it comes down to 17 SDGs. To UN Sec Gen on the intensive consultation issued Dec last year. 'The road to dignity by 2030. Ending poverty transforming all lives and protecting the climate'. Lengthy references to the consultative processes. I appeal to everyone, not to reinvent the wheel, and focus instead of how to implement. What you are asking for is all in there. Do not say to reduce the SDGs. Let us start to implement. I want to refer to the secretary general's synthesis report, resulting in the 17 SDGs. What the Sec Gen Ban said, to achieve SDGs, transformation and universal

post-2015 agenda is called for, buttressed by science and evidence. Science is the core of everything. Up to scientist to make sure policy makers do not ignore science.

**Prof. Takeuchi:** Importance of implementation, and should start from local area. Sustainability Science, is needs driven, not supply driven. We have to listen to local people's needs. We have many collections of participants. More than 50% are ladies. We have many representatives from small islands and Asian. Many countries face severe floods, and flood programmes are all over. ICHARM is in charge of flood management. We feel very responsible to all those programmes. We have to listen to local people. This dialogue among scientist, policy makers and practitioners, should continue, and make it sustainable as necessary. This creation of sustainable dialogue is important. We need leadership and finance. We bring in experience and success stories and pay more attention to implementation, and listen to the needs of local people for our centres to respond.

Khan: let us get on the SDGs as there are they, and UNESCO help in implementing them. The key challenges in implementation.

**Prof Hubert (via VC):** Punctual and precise in our intervention.

**Prof. Mabel (via VC):** The points made are very good. With highlighting science this time around. They want science to be prominent. Like food and poverty eradication are made prominence. Science should receive adequate attention. Local people involvement, we concur. We address their challenges and provide solutions for them, and we do concur with you. Some of our group (Musa): Anything you want to ask?

Musa (via VC): What issue we discuss yesterday, is sustainability of cities. We look at sustainability indicators, water and sanitation, transportation, land use. We realise that, with respect to water, when we use water, most of the cities, we do not use water efficiently. Normally what happen with water, is it is used by rich people. The poor people do not get enough tap water. This is the issues we discussed yesterday. Sanitation, do not come into poor area. To mitigate against this, we need to recycle our waste, and channelled it into agriculture.

**Prof Hubert (via VC):** This is an issue of really importance in Asia. Urbanisation. How do we organise our urban environment to move towards sustainable cities to be pleasant to live, without causing the imbalance we see in the cities.

**Prof Shahbaz:** We are not bound by the people in the front or in the audience.

**Dr. Olivia:** Can you give us some insights, with your high level of emphasis on water and sanitation? I mentioned that, the MDGs are ending in 2015, and we are moving towards SDGs, and we are very particular about goal no. 6, management of water and sanitation, vital for us. What we are saying is that, there should be indicators, because we push WHO and UNICEF for the future to have good indicators, sound monitoring for waste water pollution. In Asia and other parts of the world, waste water. Agriculture use 70% fresh water that is not recycled. This is wastage, and should be group as a problem. We are working closely with the Deputy Sec Gen in New York, we are pushing governments to adopt in their water agenda, for waste water to, ADB, African DB, in their financial programme, also World Bank, to include in their financial capacities of the government, not only nationally, but specially locally (to incorporate waste water into their agenda). We raise awareness with the financial institution and government.

**Dr. Ali:** How can we link UNESCO category II centre. Regional Centre based in Tehran. We have the Zimbabwe, (centre). I would like to talk about implementation, especially water issues. In some part of the world, East Asia, more problem of the flood, and some other countries, they face drought. Whether variation – useful science for different parts of the world. Middle East – oil rich countries. Water resources management, huge subsidy. When we are talking about East Asia, African, there would be some other issues, and we need to talk about science useful for them, instead of science useful for other regions. Special variation. Sustainability Science might be different for developed and developing countries.

**Dr. Roseli:** Eco-bio-technology to manage water, flood, and energy. Malaysian emphasising links with s-s cooperation. (HTC). Water in the city is one area where we can have our s-s

cooperation, focussing on water in the city. We can contribute in the s-s cooperation. We propose 3 areas of cooperation: 1. reuse of grey water system. Use of water in the pantry, recycled for use after treatment. We do have expertise to share; 2. Rainwater harvesting system, reverse osmosis could be use as drinking water. 3. Solar still step system, where even sea water we can desalinate by using solar, evaporation and condensation, but we can separate residue from freshwater. The freshwater can be reused. We can also use water from the river that is not so clean, through evaporization and condensation process. We can offer help in this area, while you can also share expertise from there in terms of water management.

**Prof Shahbaz:** Good will towards linkages

Prof Hubert (via VC): We want to see how we can link and share technology on knowledge between Asia and Africa. We want to move into Energy

Prof. Eva, Ghana (via VC): University on Energy in Ghana. Issues in Africa to be addressed in the upcoming SDGs agenda in Ghana. When I was looking at the SDGs, I am happy to see, energy is part of the loop. In Africa, we have a great challenge on energy. The definition of energy. Some see it as only electricity. In my presentation, I give the different types of energy. If Africa looks at energy issue of the SDGs, we need to properly define energy. And we need to look at energy demand holistically. Africa has a lot of resources (and energy), but we are unable to harness resources we have, and the energy available to us. Africa must look at renewable energy resources. We need to look at all forms of renewable energies. Solar, wave, hydro, geo-thermal. We advise, every country must map out their energy potential, and build the capacity to harness that. I propose solar energy because it is readily available in Africa, and harnessing it is 2x more efficient compare to the countries at the tip of the pole. We need technologies to harness these energy resources. Important to collaborate with us on renewable energy. Sub-saharan continent needs lots of support. Recommend that different developed countries must support green climate change, to fund renewable energy resources. Challenges existed. WE want to call on corporate bodies working in Africa to invest in capacity building. Without capacity in this area, it would become MDGs that we could not fulfil due to a lack of capacity. We can make it, Africa looks bright. We take our leaders and scientists; take the bull by the horn to address the challenges.

Prof Hubert (via VC): Leverage more on capacity building, especially in oil and gas, emerging issues. We have emerging issues: oil and gas. We do not have the capacity to harness what we have. We do not have the capacity to abstract what we have. In the MDGs, reduction and eradication of poverty. For Africa, we have to have inclusive prosperity for all. We need to develop the capacity. For example, we have huge gas deposit in the Indian Ocean. Huge deposit of oil and gas in whole of Africa. We need joint capacity development in these areas. These are areas that we have identified, for sustainable transformation of Africa's economy. Capacity development is crucial. Participants from Sierra Leone, on some perspectives, on the area we are working on. Just one emphasis, the need for research, a challenge for Africa and Asia currently, agriculture and BD conservation and this link is very important. There is also a lot of need to increase food production etc. Coexistence between BD rich area and agriculture area. Devastating effect and essential collaboration between Asia and Africa. We need to come together for ways to mitigate.

**Prof Shahbaz:** oil, gas, food security, linking capacity building. Starting with energy.

**Prof. Hideaki:** For education, we are now having under UNESCO, to develop energy course for development. Waiting for developing countries, Asian countries. We did it in Myanmar, and Cambodia. We focus on several, actually everything to the current energy problems, including fire power plant, coal, a real need in these countries, and renewable technologies.

**Prof Shahbaz:** We could share those master classes, and connectivity with Africa. How far we could link with Africa? Hidaki: we can send some materials to them, and for them to see if this is appropriate for their system.

**Dr. Olivia:** Important to Africa 2006, UNSGAR (?) French Japanese German governments on water, very fragmented, together with 'UNCOW', African Development Bank, render their support.

**Prof Wayne:** Issues of water, as water resources become more limited. How do we group regions people and community within their regions, bringing into the plan, how we are going to adapt to the dry situation, and looking into interactions in the changes in yield, cost associated with different forms of agricultural activities. Work with communities to find out what their values are, their future, provide them with options that they need to be considering during the planning process, to come out with decisions on how to use the land, to achieve what they need within the viability limit, the environment, that they are keen and want to live in. Bring all those together, provide people of assessment of options and consequence, and incorporate into planning, and end up in implementation plan.

**Dato' Lee:** I am advocating very much ISTIC's programme, is on maintenance of infrastructure. In the developing world, billions of dollars spent on infrastructure building, especially by the Chinese. When foreign contractor leaves the site, they do not train many Africans to keep those infrastructures in good repair. We go into several African countries, to get local engineers to be trained in good maintenance the infrastructure built. Keeping them in good repair would be a valuable asset, and reduce charges on future construction bonds and loans. We are asking you not to look at capacity of abstraction, but also capacity at the tail end, the constructed infrastructure.

**Prof Shahbaz:** I hope there would be a connect-Africa initiative, linking food, environment and the greater catchment base. We are running it not for water, but also for energy. We can promote cooperation on these issues first (water, food, energy). Asia has many disasters – how ICHAM (Japan, Prof. Takeuchi), give us some ideas, on issues of extremes that the region is facing and how we can have the cooperation

**Prof Takeuchi:** Many Japanese institutes have various disaster programmes. JICA, we open training courses. Disaster is so important to all of those SDGs are connected to natural hazards. Eradication of poverty, cities, cc, all those hot issues that the African has the Asian share the same problem. In my institute, we have master and PhD programmes, we have

and do have quite many African students, having good discussions together. ti is not a one way teaching, but a mutual learning together, with students and the instructors here.

**Mr. Ram:** India, institute: Mahatma Gandhi institution: basically on all aspects mentioned here. We are focusing on food, security, human biosphere interaction to ensure food security. We need to have a climate smart situation (?). They are linkages to Africa as well.

**Dr Ali:** Initiative: June, Emphasise, we need African expert on drought initiative. To proper person to make proper point from the African countries.

**Prof Hubert (via VC):** Issues of disaster and DRR are very important. We have extreme events here. It is always about emergency response. Gradually shift in the UN from emergency response to preparedness and disaster reduction. A relevant subject to strengthen collaboration: university collaboration, connectivity between academia and university connection, connect Africa-Asia. We have also connected to the US, Shirley Malcom. Gender imbalance in the panel and the role of women.

Shirley (via VC): Gender issues in the UN system. While I am listening to the conversation on food-water-energy security and women representation to the talent base must be developed. Perspective of women, gender perspective needs to be introduced into the discussion to solve the food-water-energy security problems. It would be very different to run from the beginning, mainstreaming, not as an add-on, at the end. Issues on the health, question about water as it relates to sanitation, disaster preparedness. Different gender perspectives that need to be introduced. Critical is the way we think of education, and the kind of talents we need. local capacity brought into play, what are the talent pools that are to be drawn upon in order to maintain development input that get put into different countries. We need both gender perspective and talent base, and gender balance, not as separate issues.

**Prof Hubert (via VC):** We have important agenda on women and science. we need to bring this into the programme. The 2<sup>nd</sup> point is university cooperation, and this is one of the most

concrete we can move for A-A cooperation. There is networks of networks connected together in Asia, and potentially reach out to thousands of university and institutions at one go. Collaborate on joint programmes, PhDs, masters, modules, research programmes. This is definitely on the agenda here. Science and technology institutions. We have resources on both sides, but we have not fully benefitted from the power of connectivity. We connect Africa as an initiative to get better networks of connectivity and collaborations between academic institutions. Connect A-A platform.

Prof. Urcheno, Kenya (via VC): On issue of collaboration and connectivity, an important one, and certainly from university is something that is to be encouraged. In the African continent, we have supports from UNESCO among the networks, and this is national scientific decision of the continent (????). For us to bring in many collaboration where Kenya practitioners can come together, with implementation in our view. We will find a lot of good ideas on implementation, linking research and innovation with actual practice, something that need to be addressed. To connect A-A finally, we will bring change, as this has been going on in the past. If we look around in the 80s, Asian Institute of Technology Network, similar in the network in Bangkok. We would like certainly perspectives from Africa, in the interest of moving the continent forward. We find that innovation – the role of research institution and universities, would be useful, especially through network, connectivity extended beyond, and bring in actual connectivity, information, moving around easily and cheaply. We want to encourage this, and hope that with the support of all colleagues, we can come together, to talk about the issue of connects Africa.

**Prof Shahbaz:** Two last interventions. Head of offices from Vietnam and Uzbekistan, dealing with gender.

**Ms Katherine:** In UNESCO Viet Nam we take gender issue in all our projects. Viet Nam is very strong on gender equality. Equal opportunities for both. Of course that applies, that when you see an imbalance in opportunities, concentrate on specific programmes for girls and women. Ensure we benefit from their role have had traditionally, and their experience, and knowledge and we identify lots of knowledge shared, leadership in raising a family. They just

need a push to have stronger participation as to what they want from the society. We have funding to work on gender equality in the agenda of SD. Sustainability Science is going to be, push into whole process of development in Vietnam. The Sec Gen needs to be aware on this, so that they can help us involve women in a much stronger position in the implementation especially in using science.

**Prof Shahbaz:** We have a series of programme, and one on women and science, details to be shared in other opportunities. Health. briefly, UNU links with universities.

**Prof Anthony Capon:** UNU university based here in KL. A new way of thinking about health, relevant to the post-2015 agenda and SDGs, and we call it planetary health, proposed by Rockefeller Foundation to explore this idea, to think about health in post-2015. One of the commissioners is from Nairobi. The commissioner report, middle of this year. The essence is that it acknowledges the ecological and economical foundation of health for the first time. It is relevant to SD, and Sustainability Science.

Prof Shahbaz: We have so many ideas. This room is full of very high quality people. Summary: discuss areas for immediate cooperation. Cities, centres that is available to start cooperation immediately. A solid area, urban water management, ciy of the future, let us put priority area. Water, food security. Links with Australia, with many good examples. Let us bring together a position paper, collaboration links in the area of water and food security and sustainable landscape. We have major capacity programme in sustainable energy. This is a major opportunity, with links with Kyoto University. On disaster, a common theme for us. ICHARM and many institutes in the region, drought initiative institute. University networks, we are ready to have this as a major theme. In May, the Director General is coming to Malaysia, and among others, we are going to bring in all UNESCO cat II centre and UNESCO chairs. In summary, this has been a productive sessions with good examples. We heard about energy and mainstreaming gender. We will focus on sustainability as a key issue and how to bring this into all these areas. Let's make it connect Asia-Africa. The Yale University, they can be excellent host. Let us start this cooperation with Jakarta, Harare, and bring in the

entire cat. Il centres. This is my summary. We are ready. We will send you the deliberation document before next Monday.

**Prof Hubert (via VC):** She is connected from the US: 3 am. Concluding remarks: Sharing of resources, resources available from the north as well: 1. a large number of courses available online, for free, from a number of US universities that can support some of the things you try to do in your respective location. Connectivity is everything, where that is available; I just want to point out that.

**Prof Hubert (via VC):** We need to access the resources already available, and free of charge. It is quite exhaustive, summary, wrap up.

**Prof. Mabel (via VC):** To fill in the gaps: I am just looking at the list of universities here that can pick up from this conference. Capacity training, the use of biotechnology to manage water, we are interested in that area, recycling of grey water, desalinisation through solar through condensation. We are interested. Disease control is very important to us. Universities that are here are ready to pick up these areas. Master and PhD programmes in energy, we have institute on energy, we can take up these courses as joint or double degree buildings. Capacity building of engineers and technicians to maintain our infrastructure left by Chinese contractors. Disaster management, we suffer from droughts more than floods. We can come out with solution to address disaster, food and agriculture, under-/malnourish. Dr. Ali, (triple s???) we lack the connecting with you, in the Africa, Women in science 1999 – 2005. We have very good results from that connection.

**Prof Hubert (via VC):** The word is reconnecting. This has been very useful and productive. The power of connectivity. We need to really follow up. These have been useful, and identify areas of collaboration. Let us not stop here with identification. Let this see this as a start of fruitful and strong collaboration between Asia and Africa. We are all in the same boat, facing the same challenges. We need to get to SD quicker, and much less painfully. Let us do this sometime soon.

#### **FINAL SESSION**

#### **CONCLUDING REMARK**

#### By: PROF. DR. SHAHBAZ KHAN, UNESCO JAKARTA OFFICER-IN-CHARGE

Prof Shahbaz expressed his thankful to the Japanese government, contributing to the expertise. We have a big challenge in education, science, culture. We have to work on these targets, and to work on them SuS is an important paradigm. For this, we are very grateful to Prof. (from Japan) to constantly pushing us towards this direction. We need to have more UNESCO centres and chairs here. We are grateful to our host, to invite all possible connections to this conference. We have a framework to bring in SuS and to link in to that framework. We can push with implementation and how we are going to do it. We have some pilot projects but it is not worthwhile without getting this done. How to implement and how to link different levels of development. We have to help the governments. We have a reconnection with Asian, and serious interest, and they want to learn from UNESCO and the projects we are doing. In that regards, Personally, I am satisfied, on behalf of 195 countries that employed me, I am grateful. The ideas are not for me, but for the world. Words of gratitude to the host, UKM, master of the ceremony, workshop coordinator i.e Dr. Elfithri, Dato' Lee, where you give us new challenges every time. The young people are the torch bearer of the SDGs, we need a transformation. The SuS workshop should have more young people. For young people from 8-80 years od. You still need new technology to have more hair. We have to have generation balance. Notes available less than 2 weeks. We do not prepare CDs or USB, is a waste of materials, downloadable yourself. We need to build partnership. We want to have more colleagues working from both partners. We want more Japanese, linking with projects, and there is a need for all to come together on energy, water, mobilise more institutions. We have also many institutions and universities. Pilots projects to link up with more universities. To have joint projects. Some of the ideas, I can see, Prof. Helmi, communities of learning. I also see, what is happening in the Aral Sea, links with Malaysian Universities, ESD, enhanced. Cat II centres meeting, and bring bigger presence from China. Hopeflly, with our cat II centres, you will be contacted to have many projects from different countries. What is important to remember: we are at an important

crossroad now. Moving to the next SDGs, 195 countries of UNESCO. We are not just bring there academician. With the help of national commission of Malaysia, side event, taken place in Novermber in Paris. It is not just political level, we will bring in experts to tell us about the success stories. Dato' Lee, I am pushing for more. Before Nov, we need to prepare many things, issues that the policy makers need to take note. From our offices, we are ready to work with you. It will be a very big challenge. With the flood here that wipe out the economy. We want to highlight to other countries what the UNESCO-country partnership could bring. With the help of Malaysia, we could showcase to many other countries who would be interested to strike a partnership with UNESCO. Mr. Noda, for spending so much of your time. I am really impressed that you have the dedication to go through every presentation. Would you like to say some final words. I welcome you:

#### MR. TAKAO NODA, JAPAN MEXT AS. SG

Two-days' discussion are encouraging, because it illustrates STI have critical roles to play in realising a sustainable future. SuS is indispensable to this purpose. It is encouraged to see so many projects that SuS is incorporated in these projects. S&T is one of Japan's most important priority. Japan propose to UNESCO, SuS should be incorporated into its programme. Japan establish funding trust for incorporating science, human, resource development, and Japan will continue to support this initiatives to tackle these issues through SuS.

#### MR MOHD KHAIRUL ADIB BIN ABD. RAHMAN, MNCU SG

What we need to do right now, is how to move forward. On that point, UNESCO funding trust willing to work with UENSCO to concretise these ideas. We hope to work more closely with Jakarta office, on where we can bring this agenda more to the forefront. We are quite happy with the outcome from this, capture some of this, and champion them. We are also using the findings from here, to be voiced out in UNESCO forum.

#### PROF KAZUHIKO TAKEUCHI, UNU SENIOR VICE RECTOR

Another force behind pushing SuS: UNU has been developing initiatives on ESD for Africa, which we are looking at in order to solve issues in Africa and Asia. It is gite important, in the framework on the new framework agenda for UNESCO, how they are going to combine SuS initiatives with ESD, which celebrate the closing of the UN decade for UN decade for ESD held in Nagoya. They are trying to move forward. These linkages are important subject to be discussed. We could organise something where many of you can participate in this new initiative.

#### DATO'. IR LEE YEE CHEONG, ISTIC CHAIRPERSON

ISTIC is offering ourselves to participate in any programme of yours. Implementation is not to create new programmes. It is existing programme that already has funding. if you want to enhance it, ISTIC is willing to participate. Cooperation is through personal friendship, and get together in cooperative activity, build up cooperation. I want to emphasise that we do not want to work exclusively on s-s cooperation. I am interested in n-s-s cooperation. Shirley, triple AS, published in major scientific journals. ITSU, chair of ITSU capacity building. She is our advisor to the state. She is very prepared to visit any country. ISTIC offer ourselves. More importantly, I hope that we prepare the proceeding and the recommendation of these 2 days, well. Circulate for comment and get it really into a consensus document. It is not only the DG of UNESCO is coming. We are very confident that UN Sec Gen Ban will also be here. it will be great opportunity to present our advocacy, not only to UNESCO DG but also to the UN Secretary.

#### PROF. DR. SHAHBAZ KHAN, UNESCO JAKARTA OFFICER-IN-CHARGE

Before we invite our last speaker, while we are finishing our fishball sessions. An interesting idea came. Malaysia has such interesting connection. We should have 'MySustainability' as a new network under ISTIC that brings together all universities under the ISTIC umbrella. Dato' Lee, Tan Sri Zul, and Tan Sri Zaki, National Professor Council. ISTIC very low profile.



I would like to know among the participants, who took part over the past 2 days. 143 participants, 85 Males, 58 Females, came from 23 countries. Among those 43 coming from International organisation and 100 from local organisation including government agencies, private, NGOs, academia, and media. UKM has been observing over the past two days, we are not starting from ground zero. Policy intervention, local management plan, we took cognisance of the fact that we need to bring in more STI, and special emphasis on encouraging next generation to take up science and technology, medicine and mathematics, and a need to integrate the social science, arts and humanities. WE need to solve problem of the humanity at the ground level through integrated approach, cross cutting issues, women, children, youth, senior citizens, while not forgetting the theory and fundamental concepts. We must be conduct high impact projects, through the word 'RICE' research, innovation, commercialisation, entrepreneurship and engagement. We must do it with integrity, and professionalism. Among the Malaysian universities, we congregated and zoom in, and going to work together to work on issues of agro security, growth inclusivity, heath, heritage, sustainability and environmental integrity. Commodities for economic growth, and other cross-cutting issues. We really look forward to link up and meet with you again.

# 05

# CONCLUSION AND RECOMMENDATION





### **CONCLUSION AND RECOMMENDATION**

These two days workshop on Sustainability Science for SDGs has successfully organised and had a very fruitful dicussion and deliberation during all sessions. The workshop was attended by very prominent person and experts from various countries and UNESCO Field Offices. The workshop has successfully brought up to 150 participants which 50 international presenters/panels (43 presented directly and about 7 other experts/UNESCO Field Offices via virtual sessions) to share their valueable thought with participants. Some highlights during the workhop were:

- The event was graced with the opening remarks by Prof. Datuk Dr. Noor Azlan Ghazali, UKM Vice Chancellor; Prof. Dr. Shahbaz Khan, UNESCO Jakarta Officer-in-Charge; Mr. Takao Noda, Japan MEXT Assistant Secretary General and Dr. Alexander A. Lim, Science and Technology Division Head.
- Three keynotes were delivered during workshop i.e by Dato' Ir. Lee Yee Cheong, the Chairperson of ISTIC; Prof Kazuhiko Takeuchi, UNU Senior Rector; and Prof Tan Sri Dr Zakri Abdul Hamid, Science Advisor to the Prime Minister of Malaysia).
- Panel Sessions started with an insightful presentation and case study of one of the
  most important non-navigational uses of water resources, which has high economic
  value for a country, and major commodity traded globally.
- The case study raises the importance of maintaining the viability of the resource, and laid out an appropriate platform for the discussion of many ways in the implementation of sustainability science.
- Various site-based best practices are shared, which highlighted the need for local champions in spearheading global initiatives at the local level, either through an inspirational leader, or an innovative, forward-looking institutions.
- The session on learning from pilots and models showcased the processes provided by different frameworks, such as an education programme on microbiology, Geopark initiatives, Man and Biosphere Programmes, in addition to scientific and technical solutions that combine inputs from knowledge systems into a support system that informs decision making.

- These experiences highlighted a need to strengthen the science-policy interface,
  where the engagement of informed stakeholders through an inclusive decisionmaking process is prioritised in a governance process that is evidence-based,
  supported by sciences developed through an integrated and transdisciplinary
  manner.
- The development of a myriad range of models and information and decision-making support systems corresponds to the need of capacity building of local communities, especially for an effective and timely warning of disasters as a means to reduce fatalities in disaster-prone areas.
- Different approaches initiated and spearheaded by UNESCO clarify and strengthen sustainability science as a methodology, and a means to address environmental problems that impede the sustainable and peaceful development of the human population. Emphasis is paid to stakeholder participations and engagement in charting climate change adaptation and mitigation plans, disaster risk reduction actions at the policy making level. The role of social sciences methodologies and ethical concerns in the conduct of sciences are highlighted in the promotion of sustainability science in addressing environmental concerns.

Some recommendations for implementation during the workshop:

- To provide more sustainable platform for NGO especially environmental based on the loop of what you are doing, so can fill the gap with science between the (academia) and local community.
- 2. Hope a better coordination sharing of info on science that can benefit public in resource management.
- 3. In SDGs/Sustainability Science model to have a cross-cutting approach of respecting the community with indicator of how many of community (bottom up) proposals/suggestions become incorporated into SD projects (pilot or implemented) to validate their contribution.
- 4. Develop a web platform for universities, NGOs, research institutes to register interest to collaborate on specific SDGs for knowledge sharing, exchange, project.

- 5. All business must look at close loop and justify sustainability as part of culture integrated approach.
- 6. Should UNESCO establish a Sustainability Science Certification based upon agreed criteria for projects/programs.
- 7. Should we consider the integration of SDGs as a single system?
- 8. We should not make Sustainability Science to be elitist in the process.
- 9. With 17 SDGs, All UNESCO programs and projects touching on SD would qualify under one of the 169 SDG targets.
- 10. Define Sustainability Science to be trans-disciplinary, multi-stakeholder and problem-solving. Whatever Sustainability Science Criteria must value add to SD programs and projects by making them embrace the above 3 fundamental Sustainability Science criteria.
- 11. To include Sustainability Science in planning and delivering science projects.



# 06

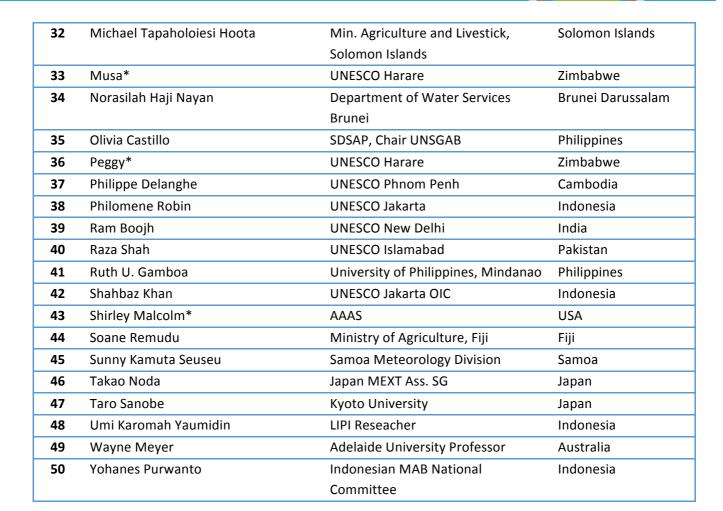
### **ANNEXES**





## PARTICIPANT LISTS (INTERNATIONAL)

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3	Alexander A. Lim	ASCC ST Division Head	Indonesia
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		Development	
6	Andre de Bussy	French MoFA & International	Indonesia
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		for Cooperation - ASEAN	
7	Ardito Kodijat	UNESCO Jakarta	Indonesia
8	Arnaud Zannou	UNDP Benin	Benin
9	Craig Hutton	University of Southampton	England
10	Denis Chang Seng	UNESCO Apia	Samoa
11	Eva*	UNESCO Ghana	Ghana
12	Eugenio Lemos	Timor Leste National Commission	Timor Leste
		for UNESO	
13	Hans Thulstrup	UNESCO Beijing	China
14	Hector Malano	Melbourne University Professor	Australia
15	Helmi	Andalas University Professor	Indonesia
16	Hideaki Ohgaki	Kyoto University Professor	Japan
17	Hubert Gijzen*	UNESCO Harare Head	Zimbabwe
18	Intan Windrasduhita	ASEAN Sec.	Indonesia
19	Irakli Khodeli	UNESCO Jakarta	Indonesia
20	John Crowley	UNESCO HQ	France
21	Katherine Muller-Marin	UNESCO Hanoi Vietnam	
22	Kazuhiko Takeuchi	UNU Senior Vice Rector	Japan
23	Kazuhito Fujiyama	International Center for Japan	
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24	Krista Pikkat	UNESCO Tashkent	Uzbekistan
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27	Li Zhongjie	Wuhan National Centre for China	
		Freshwater Fishery Engineering	
		Director	
28	Liam Ramsay Tuavi Kokaua	Te Ipukarea Society (TIS)	Cook Islands
29	Mabel Bungga*	UNESCO	Kenya
30	Manuka*	UNESCO Cairo	Egypt
31	Maria Iniguez de Heredia	UNESCO Phnom Penh	Cambodia



<sup>\*</sup> Attended virtually via Video Conference From UNESCO Harare in Zimbabwe

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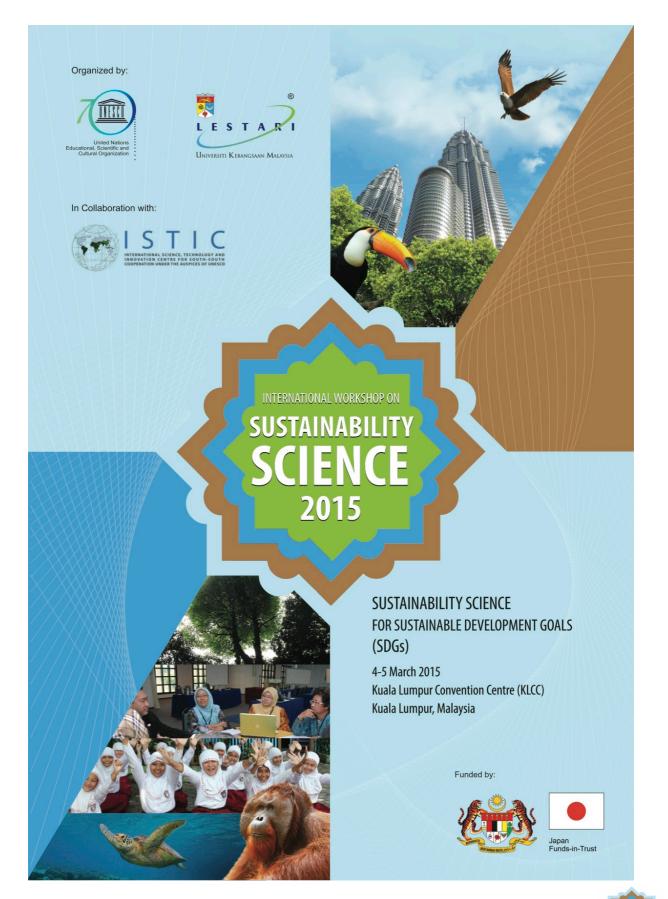


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#### Organized by:





#### In Collaboration with:





#### SUSTAINABILITY SCIENCE FOR SUSTAINABLE DEVELOPMENT GOALS (SDGs)

4-5 March 2015 Kuala Lumpur Convention Centre (KLCC) Kuala Lumpur, Malaysia

#### Funded by:





#### Supported by:















his event is part of follow up initiatives of the International Workshop on Sustainability Science "A Science Based Approach to Realize the Future We Want for All" held on 4 and 5 April 2013 in Kuala Lumpur, Malaysia; to develop a common understanding of the concrete concept of "sustainability science", to raise awareness about sustainability science among policymakers in the Asia and Pacific region and to position this as part of the national and regional science and technology policy. To this aim, UNESCO Jakarta is currently implementing the SHARP and STAR projects according to UNESCO's medium term strategy 37C/4 (2014-21).

SHARP (Science Harnessed for ASEAN Regional Policy) supported by Malaysian Funds in Trust aims to foster the attainment of the Internationally Agreed Development Goals, including the MDGs, by addressing the impacts of climate change on natural resources in the ASEAN. Through demonstration projects in the ASEAN member countries, it promotes the best environmental management principles and practices with a clear pathway to regional science policy.

On a broader scale, STAR (Sustainability Transformation Across the Region), funded by Japanese Fund-in-Trust, aims to deliver a clear understanding of sustainability science outcomes at the regional policy levels through establishment of a platform as a depository of sustainability science best practices and development of a regional strategy and tools. STAR develops 3 pilot projects to showcase sustainability science principles and applications.

These projects are aligned with the UNESCO Regional Bureau's Science Support Strategy, which identifies four Strategic Themes: Water for People and the Environment; Climate Change and Environmental Resources; Science Policy, Innovation and Capacity Building; and Disaster Preparedness and Mitigation, as the focus science areas towards a sustainable society.

In the above context, UNESCO Jakarta with the support of Malaysian Funds-in-Trust (MFIT) and Japanese Fundsin-Trust (JFIT), and in collaboration with the National University of Malaysia, especially with the Institute for Environment and Development (LESTARI) and other institutions such as International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC), Regional Humid Tropic Hydrology and Water Resources Centre for South-East Asia and the Pacific (HTC) Kuala Lumpur, UNESCO-IHP Malaysia, Ministry of Education Malaysia (MOE), Malaysian National Commission for UNESCO (MNCU) and National Council of Professors (MPN) is organizing an International Workshop on Sustainability Science for Sustainable Development Goals (SDGs), 4-5 March 2015 in Kuala Lumpur, Malaysia. It will bring together key stakeholders and scientists to discuss the current status of sustainability science, globally, and in the Asia-Pacific region with regard to already established networks of experts, their approaches and methodologies. They will elaborate recommendations on how to implement

the solutions science offers to key challenges to Post-2015 Development Agenda. On this basis, the High Level Science Policy Dialogue will discuss policy guidelines and a strategy for cooperation on Sustainability Science.

The workshop will also offer a focus on Environmental Sustainability in the ASEAN. The strategies implemented by ASEAN members will be presented in sessions attended by ASEAN-UNESCO Committees, Science and Technology Division of ASEAN Socio-Cultural Community Department, and ASEAN key stakeholders. A special session on the KRABI Initiative will draw from ASEAN policy makers and scientists on ASEAN experience in implementing Sustainability Science policies. The expected outcome is to initiate a dialogue on a policy paper that should identify at least five national science policy interventions focusing on demonstration pilot projects for environmental sustainability for the integration of social and environmental aspects in the ASEAN Plan of Action on Science and Technology – Implementation Framework 2016-2020.



# **3JECTIVES**

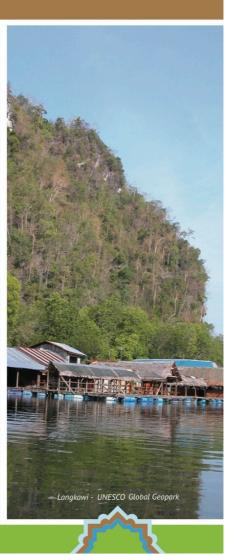
# PECTED OUTPUT



- ◆ To develop and strengthen science to policy interfaces;
- To institute a high-level dialogue on the role of Science to address challenges to the Post-2015 Development Agenda in the region;
- To develop a regional framework and tools to implement sustainability science within the framework of UNESCO-ASEAN MOU;
- To initiate a dialogue on a policy paper and strategy on Environmental Sustainability in the ASEAN to introduce it to the next ASEAN Plan of Action on Science and Technology 2016-2020. It will be strategically developed based on the seven priority areas in the ASEAN – UNESCO FAC in narrowing development gaps as well as addressing the threats.



- Development of science strategies for the attainment of the Internationally Agreed Development Goals and responding to the challenges addressed under the emerging post-2015 Development Agenda.
- Review current situation and gap analysis between existing science policy and the needs of the ASEAN communities for realizing ASEAN Vision 2020.
- Initiate a dialogue on a policy paper to integrate social and environmental aspects in the ASEAN Plan of Action on Science and Technology – 2016-2020.
- Provision of a policy basis for future cooperation on environmental sustainability among ASEAN countries and UNESCO's network.



#### **DATE, VENUE & FORMAT**

The workshop will be held on 4th - 5th of March 2015 in Kuala Lumpur, Malaysia. The workshop will be organized over 2 days and consist of an opening, presentations, discussions, reporting, conclusions and closing. The first day will focus on SHARP and STAR Projects inception and discussion on approaches, methodologies and best practices at the field level. It will bring together scientists to discuss Sustainability Science and the Post-2015 Development Agendas, through multidisciplinary approaches and frameworks and offer recommendations. The second day will consist of a high level Science Policy and the Post-2015 Development Agenda in the ASEAN, drawing from the recommendations and strategies elaborated during the first and second days, to discuss on a policy paper. The work language of the workshop will be in English

#### **PARTICIPANTS**

The workshop will bring together around 150 expected participants, both national and international. Ministry of Science and Technology, Ministry of Education of ASEAN member countries, representatives from ASEAN Secretariat, Committees and Working Groups, UNESCO Programme Specialists, UNESCO science family and National Committees in Asia and the Pacific, partners of STAR and SHARP projects and key stakeholders from higher education, science and policy.





#### **PROGRAMME**

#### DAY 1 - Wednesday 4 March 2015

Time	Theme	Speakers	Affiliation
8:00 - 9:00	Registration		
9:00 -10:00		Prof. Datuk Dr. Noor Azlan Ghazali	UKM Vice Chancellor
	Opening Remarks and introduction to the meeting	Mr. Takao Noda	Japan MEXT As. SG
		Dr. Alexander A. Lim	ASCC ST Division Head
		Prof. Dr. Shahbaz Khan	UNESCO Jakarta OIC
10:00 - 10:30	South-South Cooperation to Deliver the SDGs	Dato' Ir. Lee Yee Cheong	ISTIC Chairperson
10:30 - 10:45	Group Photo and Press Release		
10:45 -11:00	Coffee Break		
		Chair: Dato' Dr. Samsudin Tugiman	ISTIC Director
	Keynotes Session 1:	Prof. Kuniyoshi Takeuchi	ICHARM Advisor
	Setting the Scene (SDGs & South South	Prof. Wayne Meyer	Adelaide University Professor
11.00- 12.20	Cooperation)	Prof. Hector Malano	Melbourne University Professor
	(15min each ppt + Q&A)	Dr. Mohamed Roseli bin Zainal Abidin	HTC-Kuala Lumpur Director
	, , , ,	O&A	THE Rusta Europui Director
	A Focus on Climate Change: Brief Introduction		French MoFA and International
2:20 - 12:30	to Bangkok Regional Workshop	Mr. André de Bussy	Development - Regional Counselor for
	on Climate Change	,	Cooperation-ASEAN
2:30 - 14:00	LUNCH	Į.	
		Chair: Prof. Dato' Dr. Mazlin bin Mokhtar	UKM Deputy Vice Chancellor
		Dr. Olivia Castillo	SDSAP, Chair UNSGAB
		Prof. Li Zhongjie	Wuhan National Centre for Freshwater
	Panel Session 2: Learning from Pilots and Models (10min each + discussion)	Prof. Li Zifoligjie	Fishery Engineering Director
		Assoc. Prof. Dr. Ruth U. Gamboa	School of Management, University of t Philippines-Mindanao
14.00-15.30		Mr. Yohanes Purwanto	Indonesian MAB National Committee
11.00 15.50		Mr. Mohd Nizam Mohd Nasir	Geopark & Conservation Division, Langkawi Development Authority (LAI
		Prof. Dr. Mohd Ekhwan Toriman	University Sultan Zainal Abidin (UniSZ Deputy Vice Chancellor
		Prof. Kazuhito Fijuyama	International. Center for Biotechnolog Osaka University
		Panel Discussion	
		Facilitator: Prof. Dr. Shahbaz Khan	UNESCO Jakarta OIC
5:30 - 16:30	Panel Session 3: UNESCO Focus on Sustainability Science (Discussion assisted by posters)	Katherine Muller-Martin, Krista Pikkat, Kristine Tovmasyan, Raza Shah, Hans Thulstrup, Ram Boojh, Philippe Delanghe, Denis Chang Seng, Irakli Khodeli, Ardito Kodijat	UNESCO Field Offices
6:30 - 16:45	Coffee Break		1
		Chair: Prof. Wayne Meyer	Adelaide University Professor
	Panel Session 4: Sustainable Science for Evidence based Decision Making (10min each + discussion)	Ms. Alice Lim	Department of Water Sciences, Public Works - Ministry of Development, Brunei Darussalam
		Dr. Ali Chavoshian	RCUWM-Tehran Director
6:45 - 18:00		Prof. Hideaki Ohgaki	Kyoto University Professor
		Prof. Dr. Fredolin T. Tangang	IPCC, Vice-chair WG I
		Dato' Ir. Hanapi Mohamad Noor	River Basin Zone Management Division Director, DID Malaysia
		Prof. Dr. Anthony Capon	UNU-IIGH Director
		Panel Discussion	ONO HON DIRECTOR
	W	Prof. Dr. Shahbaz Khan	UNESCO Jakarta OIC
8:00 - 18:30	Wrap-up Session of Day 1		





#### **PROGRAMME**

#### DAY 2 - Thursday 5 March 2015

Time	Theme	Speakers	Affiliation
8:00 - 8:30	Registration		
8:30 - 9:00	The Role of Sustainability Science in Advancing the Future Earth Initiative and the SDGs	Prof. Kazuhiko Takeuchi	UNU Senior Vice-Rector
9:00 - 09:30	Protecting Global Biodiversity and Post 2015 Agenda	Prof. Tan Sri Dr. Zakri Abdul Hamid	Science Advisor to the Prime Minister of Malaysia
		Chair: Prof. Kuniyoshi Takeuchi	ICHARM Advisor
		Prof. Dr. Ir. Helmi	Andalas University Professor
		Ms. Umi Karomah Yaumidin	LIPI Researcher
		Dr. Craig Hutton	University of Southampton, Researcher
		Dr. Denis Chang Seng	UNESCO PS for Sciences
	Panel Session 5:	Mr. Liam Ramsay Tuaivi Kokaua	Te Ipukarea Society (TIS)
9:30-11:00	Practicing Sustainability Science at Community level	Mr. Soane Remudu	Ministry of Agriculture, Fiji
Branch and Company and Company Company	(7 min each + discussion)	Mr. Sunny Kamuta Seuseu	Samoa Meteorology Division
	(7 min euch + discussion)	Mr. Michael Tapaholoiesi Hoota	Min. Agriculture and Livestick, Solomon Islands
		Mr. Eugenio Lemos	Timor Leste National Commission for UNESCO
		Emeritus Prof. Chamhuri Siwar	LESTARI-UKM Principal Fellow
		Panel Discussion	
11:00 -11:15	Coffee Break		
	Fish Bowl Session 6, assisted by posters	Each group: 1 facilitator + 1 rapporteur + 3 - 4 persons core discussion + all participants split into groups	
11.15-12:30	Group 1: Polishing the Concept of Sustainability Science	Ms. Krista Pikkat, Ms. Philomene Robin	UNESCO
F-100 - 1 - 100 - 11 - 11 - 11 - 11 - 11	Group 2: Promoting Sustainability Science through Pilots	Ms. Katherine Muller-Marin, Ms. Maria Iniguez de Heredia	UNESCO
	Group 3: Upscaling Sustainability Science	Prof. Dr. Shahbaz Khan, Ms. Joana Vitorica	UNESCO
12.30-14.00	LUNCH		
14:00 - 14:30	Presentations from Fish Bowl Discussions	Facilitators/Rapporteurs	
	Video Conference Session 7: Roadmap to Implement Sustainability Science Across Asia and the Pacific with Linkages to Africa	Chair: Prof. Hector Malano	Melbourne University Professor
		Prof. Hubert Gijzen	UNESCO Harare Head
03320333		Dr. Arnaud Zannou	UNDP Benin
14.30-16:00		Prof. Robert Nzengwa	University of Douala - Dean
		Mr. Alain Michel Tchadie	UNESCO Jakarta Consultant
		Panel Discussion with Video Conference	
16:00 - 16:30	Coffee Break		
	Final Session	Facilitator: Ai Sugiura	UNESCO Jakarta
	Summary, Conclusions and Wrap up	Prof. Dr. Shahbaz Khan	UNESCO Jakarta OIC
		Mr. Takao Noda	Japan MEXT As. SG
16:30-17:00		Mr. Mohd Khairul Adib bin Abd. Rahman	MNCU SG
		Prof. Kazuhiko Takeuchi	UNU Senior Vice-Rector
		Dato' Ir. Lee Yee Cheong	ISTIC Chairperson
		Prof. Dato' Dr. Mazlin bin Mokhtar	UKM Deputy Vice Chancellor





UNESCO Regional Science Bureau for Asia and the Pacific Cluster Office to Brunei Darussalam, Indonesia, Malaysia, the Philippines, and Timor Leste

The UNESCO Regional Science Bureau for Asia and the Pacific Cluster Office to Brunei Darussalam, Indonesia, Malaysia, the Philippines, and Timor Leste based in Jakarta works as a laboratory of ideas and a standard-setter, disseminates and shares information and knowledge, and promotes international partnerships, in the fields of education, science, culture and communication in the Asia and Pacific region. The Office works to reflect on the role of UNESCO as a catalyst for change by empowering people's capacities. The office covers two dimensions; (1) As a Cluster Office, it represents UNESCO in Brunei Darussalam, Indonesia, Malaysia, the Philippines, and Timor Leste in all UNESCO fields of competence: Education, Culture, Social and Human Sciences, Communication and Information and Natural Sciences and (2) As a Regional Bureau for Science, it covers Asia and the Pacific Region, through its programmes in Freshwater, Oceans, Basic and Engineering Sciences, Earth Sciences, and Coastal zones and Small Islands. [http://www.unesco.org/jakarta/]



The Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM)

The Institute for Environment and Development, better known as LESTARI, was established on 1st October 1994 as an independent multi-dicipinary research institute within the structure of Universiti Kebangsaan Malaysia (National University of Malaysia), to build a foundation and framework for research and training in the areas of environment, economic and social sustainibilities, sustainibility science and governance and Langkawi Research. It was formed to fulfill the aspirations of the university, as envisioned by the United Nations Conference and Environment and Development (UNCED) held in Rio de Janiero, Brazil, to realise the goals of sustainable development through research and capacity building. LESTARI was also established to serve as a reference centre capable of dealing with environment and developmen issues, assisting government in formulating poicies based on research of a holistive and balance kind. The development function is directed towards enhancing human resource private sectors. The main thrust of the programmes at LESTARI are research and development, postgraduate education, training and technical assistance. This is supported by publications, conferences, seminars, dialogues and outreach programmes. [http://www.ukm.my/lestari]





International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC)

The creation of the International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC) is a follow up of the Doha Plan of Action which has been adopted by the Head of States and Government of the Group of 77 and China, during the meeting in Doha, Qatar, from 12 to 16 June 2005 on the occasion of the Second South Summit of the Group of 77. The Summit urged UNESCO to develop and implement a programme for South-South cooperation in science and technology with the objective of facilitating the integration of a developmental approach into national science and technology and innovation policies, capacity building in science and technology through providing policy advice and exchange of experience and best practices, and creating a problem solving network of centres of excellence in developing countries as well as supporting the exchange of students, researchers, scientists and technologists among developing countries. As reflected by its name, the Centre will act as an international platform for South-South cooperation in science, technology and innovation and make use of the network of the G77 plus China and the Organization of the Islamic Conference. The overall goal of the Centre is to increase in the capacity for management of science, technology and innovation throughout developing countries. [www.istic-unesco.org]



#### Malaysian Funds-in-Trust (MFIT)

The Government of Malaysia and the United Nations for Education, Sciences, Culture and Communications Organization (UNESCO) signed a Memorandum of Understanding (MOU) on 15 November, 2011 under the "Malaysia UNESCO Cooperation Programme" (MUCP). The MOU under MUCP was signed by H.E. Tan Sri Abdul Aziz Zainal, Ambassador of Malaysia to France, on behalf of the Government of Malaysia and Mrs. Irina Bokova, Director-General of UNESCO. The signing took place at the Headquarters of UNESCO, Paris, France. The MOU under MUCP was initiated in 2009 by the Honorable Dato' Sri Najib Tun Razak, Prime Minister of Malaysia who announced at the 35th General Conference of UNESCO, the establishment of Malaysian Cooperative Trust Fund which will be contributed to "enhance South-South cooperation for capacity building in education and science for the benefit of the Least Developed Countries, Small Island States in Asia and the Pacific and in support of the Priority Africa agenda of UNESCO. The Malaysian Fund-in-Trust provided a launching grant of USD 5 Million, followed by a contribution of USD 1 Million annually. Programmes under this fund will be identified in cooperation with UNESCO, particularly with the UNESCO Regional Offices in Bangkok and Jakarta, and the Malaysian National Commission for UNESCO in the Ministry of Education. Under this initiative Malaysia will provide teachers training facility at pre service, in service, school administration and management. Towards this end, about 300 places will be provided annually at all levels.

[http://www.unesco.org/new/en/jakarta/about-this-office/funds-in-trust/]



Japanese Funds-in-Trust (JFIT)

Japan Funds-in-Trust

In recognition of the important role of science and technology for sustainable development, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan has contributed UNESCO in the form of the Japanese Funds-in-Trust (JFIT) in order to strengthen UNESCO activities in the field of science in Asia and the Pacific region since the 1970's. Over the years, it has supported important activities in areas of science capacity building and intergovernmental science programmes, including Man and the Biosphere (MAB) Programme, International Hydrological Programme (IHP), Science and Technology Policy, and Engineering Science Programme in the region. The programme successfully conducted and produced tangible outcomes such as the development of the Pacific MAB network, the IHP Nagoya Training Course, the Biotechnology Training Course, and the Science and Technology Camps for Children. In 2007, MEXT introduced a new method for scientific fields related to JFIT. It selected "Global Challenges" as the programme focus, and established the "JFIT for Scientific Programmes on Global Challenges in Asia and the Pacific Region." This new JFIT scheme aims at providing assistance to the implementation of activities in the field of natural sciences, and special attention should be given to activities relating to water resources, their associated ecosystems, marine sciences and international basic sciences which have been selected as principal priority in this fields, as well as to human resources development in the field through regional co-operation underlining a catalytic role for the member states of UNESCO in the region. [http://www.unesco.org/new/en/jakarta/natural-sciences/japanese-funds-in-trusts-jfit/]



#### Ministry of Education Malaysia (MOE)

The Ministry of Education (MOE) is responsible for Malaysian educational matters from pre-school up to higher education since May 2013. The MOE's mission is preserving quality education system for developing individual potential to meet national aspirations. The current minister is Tan Sri Dato' Hj. Muhyiddin bin Hj. Mohd. Yassin who is also Deputy Prime Minister of Malaysia and Dato' Seri Idris bin Jusoh who served as Minister II. MOE consists of three departments, 38 divisions and supported by each state of education department. There are also other government agencies involved in education under the jurisdiction of MOE, namely the Institute of Language and Literature (DBP), Malaysian Examination Council (MPM) and Education Performance and Delivery Unit (PADU). [http://www.moe.gov.my/]



National Commision for Malaysia

#### Malaysian National Commission for UNESCO (MNCU)

Malaysian National Commission for UNESCO (MNCU) was established by the Government of Malaysia in 1966 under the purview of the Ministry of Education and its secretariat is based at the Policy and International Relations Division (PIRD) in Ministry's headquarters, Putrajaya. The National Commission is chaired by the Minister of Education himself. Its members comprise individuals to UNESCO fields of competence in education, science, culture, social science and communication. The MNCU exists in fulfillment of Malaysia's obligation as a member state of UNESCO for the purpose of constituting the main channel of co-operation between UNESCO and Malaysian expertise in the areas of its mandate and Managing Malaysia's relationship with UNESCO. (www.unesco.org.my)



Regional Humid Tropics Hydrology & Water Resources Centre for South-East Asia and the Pacific (HTC) Kuala Lumpur

UNESCO Regional Humid Tropics Hydrology & Water Resources Centre for South-East Asia and the Pacific (HTC) Kuala Lumpur established in 1999. HTC KL aims to promote collaboration among countries in the region through technology and information exchange, education and science. HTC KL objectives are to promote a conducive atmosphere for collaboration among countries in the regions of Southeast Asia and the Pacific through technology and information exchange, education and science and to increase scientific and technological knowledge about hydrological cycle, thus increasing the capacity to better manage and develop the water resources in a holistic manner. HTC KL provides quality services such as research and development, water education, publications trainings. HTC KL functions are to standardize project's implementation and cooperation especially in the hydrological and water resources study, to establish a powerful networking between all the agencies in the National IHP and its continent and worldwide center in the exchange of scientific and technical information, to conduct and conduct appropriate courses, trainings, seminars, workshops and meetings to generate technology ideas and to publish and distribute hydrological and water resources-related articles.[http://www.unesco.org/new/en/natural-sciences/environment/water/ihp/water-centres/]

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#### UNESCO-IHP MALAYSIA

The International Hydrological Programme (IHP), UNESCO's intergovernmental scientific co-operative programme in water resources, is a vehicle through which Member States can upgrade their knowledge of the water cycle and thereby increase their capacity to better manage and develop their water resources. It also aims at the improvement of the scientific and technological basis for the development of methods for the rational management of water resources, including the protection of the environment. IHP's primary objectives are to act as a vehicle through which Member States, cooperating professional and scientific organizations and individual experts can upgrade their knowledge of the water cycle, thereby increasing their capacity to better manage and develop their water resources, to develop techniques, methodologies and approaches to better define hydrological phenomena, to improve water management, locally and globally, to act as a catalyst to stimulate cooperation and dialogue in water science and management, to assess the sustainable development of vulnerable water resources and to serve as a platform for increasing awareness of global water issues. [www.h2o.water.gov.my/ihp]



National Council of Professors (MPN) Natural Resources and Environment

National Council of Professors (MPN) is a social collective platform that was created for the first time in Malaysian history to be an umbrella of valuable human capital who are highly educated with exceptional additional value, I.e. the professor. MPN are responsible for contributing ideas, propose strategies and organizes action for the good of the people based on experience and knowledge. In general, MPN's objectives are to collect and facilitate the government in mobilizing academics and professional expertise of the professors, collectively, for the purpose to support the development agenda and programmes of the country for national sustainability. One cluster that is championing the sustainability science is the Natural Resources and Environment Cluster. (www.majlisprofesor.gov.my/)

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### INTERNATIONAL WORKSHOP on SUSTAINABILITY SCIENCE for SUSTAINABLE DEVELOPMENT GOALS (SDGs)

4-5 March 2015 Kuala Lumpur Convention Centre (KLCC) Kuala Lumpur, Malaysia

#### Supported by:





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