United Nations
Educational, Scientific and
Cultural Organization

MINISTER OF HIGHER EDUCATION

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

ISTIC

JAK/2015/PI/H/12

PROMOTING INTERACTION AND KNOWLEDGE EXCHANGE BETWEEN UNESCO NATURAL SCIENCES RELATED CENTRES AND CHAIRS IN ASIA AND THE PACIFIC

Report on the Regional Workshop of UNESCO Natural Sciences related Centres and Chairs in Asia and the Pacific

United Nations
Educational, Scientific and
Cultural Organization

Malaysia
Funds-in-Trust

PROMOTING INTERACTION AND KNOWLEDGE EXCHANGE BETWEEN UNESCO NATURAL SCIENCES RELATED CENTRES AND CHAIRS IN ASIA AND THE PACIFIC

Report on the Regional Workshop of UNESCO Natural Sciences related Centres and Chairs in Asia and the Pacific

Produced in cooperation with:

1. Ministry of Education Malaysia (MoE)
2. Universiti Teknologi Malaysia (UTM)
3. International Science, Technology and Innovation Centre for South-South Cooperation Under the Auspices of UNESCO (ISTIC)
4. UNESCO Office, Jakarta

DATE: 26-27 May 2015

VENUE: Hotel Istana Kuala Lumpur City Centre, MALAYSIA

Edited and compiled by:

1. Zulkifli Yusop
2. Sharif Moniruzzaman Shirazi
3. Noorul Hassan Zardari
4. Joana Vitorica Onaindia
5. Nor Azizah Ismail
6. Fadzlin Md Sairan
7. Chew Teong Han
8. Mohd. Farid Rahmat

PROMOTING INTERACTION AND KNOWLEDGE EXCHANGE BETWEEN UNESCO NATURAL SCIENCES RELATED CENTRES AND CHAIRS IN ASIA AND THE PACIFIC

Report on the Regional Workshop of UNESCO Natural Sciences related Centres and Chairs in Asia and the Pacific

Produced in cooperation with:

1. Ministry of Education Malaysia (MoE)
2. Universiti Teknologi Malaysia (UTM)
3. International Science, Technology and Innovation Centre for South-South Cooperation Under the Auspices of UNESCO (ISTIC)
4. UNESCO Office, Jakarta

DATE: 26-27 May 2015

VENUE: Hotel Istana Kuala Lumpur City Centre, MALAYSIA

Edited and compiled by:

1. Zulkifli Yusop
2. Sharif Moniruzzaman Shirazi
3. Noorul Hassan Zardari
4. Joana Vitorica Onaindia
5. Nor Azizah Ismail
6. Fadzlin Md Sairan
7. Chew Teong Han
8. Mohd. Farid Rahmat

CONTENTS

ACKNOWLEDGMENTS

We would like to acknowledge the contribution of:

- Ministry of Education Malaysia (MoE) staff and contributors: Datin Paduka Ir. Dr. Siti Hamisah Tapsir, Mr. Muhammad Zainal Abidin Zainun.
- Malaysian National Commission for UNESCO staff and contributors: Mr. Mohd Khairul Adib Abd Rahman.
- Internatiomal Science, Technology and Innovation Centre for South-South Cooperation Under the Auspices of UNESCO (ISTIC) staff and contributors: Dato Ir. Lee Yee Cheong, Dato Dr. Samsudin Tugiman, Ms. Zarmila Zalmi Sabot.
- UNESCO Office in Jakarta staff and contributors: Shahbaz Khan, Joana Vitorica Onaindia, Tchadie Alain Michel, Dinanti Erawati, Sharizad Sulaiman, Soyun Kang.
- Universiti Teknologi Malaysia staff and contributors: Prof. Dr. Zulkifli Yusop, Prof. Dr. Arshad Ahmad, Assoc. Prof. Dr. Sharif Moniruzzaman Shirazi, Assoc. Prof. Dr. Shareeshivadasan A/L Chelliapan, Dr. Noorul Hassan Zardari, Mrs. Nor Azizah Ismail, Mrs. Siti Salamah Mohd Shihab, Mr. Mohd. Farid Rahmat, Mrs. Fadzlin Md Sairan, Mr. Chew Teong Han, Mr. Mohamad Fairuz bin Hamzah, Mr. Izad Imran Ismail, Ms. Nalina A/P Paramasivan, Mr. Muhammad Taufik Hashim, Mr. Mohd. Rafi Abu Bakar, Assoc. Prof. Zainuddin Abdul Razak, Ms. Nurul Farhana Sufian, Mrs. Mirahani Maris, Mr. Mohamad Hafiz Asrun, Mrs. Suriyani Yusoff.

BACKGROUND

The current year 2015 is a critical moment globally for the transition into the Post-2015 Development Agenda as new framework for global development efforts. With the mandate to promote international cooperation in education, science, culture, communication and information, UNESCO's contribution to the Post-2015 Development Agenda is essential. UNESCO is mobilizing all its strengths for building sustainable, inclusive, knowledgeable societies needed for the century ahead.

The draft of the Sustainable Development Goals (SDG) 'outcome document' includes 17 goals and 169 targets, where the universality of Science and its critical role for poverty eradication and sustainable development has been highlighted.

The programmes of UNESCO in Natural Sciences have been able to expand cooperation beyond the network of the traditional intermediaries – what may be called the "UNESCO Natural Sciences family": National Commissions, UNESCO Chairs, Category 2 Institutes and Centres, clubs and associations, National Committees of intergovernmental programmes and specialized networks, such as the Associated Schools Project Network.

Within this variety of partners, Category 2 Centres and Chairs play an important role as they expand the capacities and effectiveness to carry out activities, promote the outreach, impact and visibility at all levels, broaden the support base and mobilize resources and create synergies among all communities of UNESCO.

As part of the Post-2015 Development Agenda initiatives, the UNESCO Office, Jakarta (Regional Sciences Bureau for Asia and the Pacific) organized several events (international conference, workshop, forum and seminar) in May 2015 in Kuala Lumpur. This report presents the proceedings and main outcomes of the workshop on "Promoting Interaction and Knowledge Exchange Between UNESCO Natural Sciences Related Centres and Chairs in Asia and the Pacific".

UNESCO
is mobilizing all its strengths for building the sustainable, inclusive, knowledge societies needed for the century ahead.

MAIN ACTORS OF THE WORKSHOP

In Asia and the Pacific Region, the Category 2 Centres and Chairs have the capacity to provide a tangible contribution towards the realization of not only 'Natural Sciences' objectives and priorities as stated in the UNESCO Medium Term Strategy but also towards the implementation of the SDGs in the Post-2015 framework. The Category 2 Centres and Chairs can contribute by expanding and strengthening the UNESCO's global and regional outreach, and providing an collective impact, given that the competencies, scope of expertise, as well as training opportunities that they offer. Their dissemination is also an added value to strengthen North-South, South-South and triangular cooperation. In that regards, Category 2 Centres and Chairs from Africa will also contribute to the workshop.

Therefore, through the workshop, the Natural Sciences related Category 2 Centre and Chairs in Asia and the Pacific region are expected to share knowledge and experience in order to step forward to broaden perspectives as well as to scope strategic areas for cooperation.

MESSAGE OF ACTION

The workshop was organized in order to promote interaction and knowledge exchange for strengthening South-South cooperation between UNESCO Natural Sciences related Category 2 Centres and Chairs in Asia and the Pacific Region, and link with Africa. A strong and efficient Natural Sciences network in the region and globally will be critical to support the implementation of the Post-2015 Development Agenda framework in the upcoming years.

The following actions were the outcomes of the workshop:

- Provide an overview of UNESCO's Science Category 2 Centres and Chairs in Asia-Pacific and their contribution to programmes and activities of UNESCO in the Post-2015 Development Agenda framework.
- Identify potential gaps and overlaps among the Centres and Chairs in Asia-Pacific.
- Identify formats for collaboration and knowledge exchange on science research and sustainable development between the different stakeholders.
- Build networks for strengthening partnerships between the Category 2 Centres and Chairs in Asia-Pacific, in Africa, as well as among the Malaysian scientific network.
- Initiate reflection for the development of a regional strategy on funds raising and joint actions in the Asia-Pacific to support the Post-2015 Development Agenda.

WORKSHOP PRESENTATIONS

Below is the list of the presentations made during the Workshop. The slides of the presentations are given in Appendix 6.

Presentations from UNESCO Category 2 Centre for Natural Sciences:

1. *"International Science, Technology and Innovation Centre for South-South Cooperation Under The Auspices of UNESCO",* by Dato Dr. Samsudin Tugirman, Director of ISTIC, Malaysia.
2. *"Space Technology: A Powerful Tool for Smart Management of UNESCO Properties",* by Ms Liu Jie, International Centre on Space Technology for Natural and Cultural Heritage under the auspices of UNESCO (HIST), China.
3. *"An Introduction to ICQHS Activities, Plans and Potentials",* by Mr Majid Labbaf Khaneiki, International Centre on Qanat and Historic Hydraulic Structures (ICQHS), Iran.
4. *"Regional Centre for Integrated River Basin Management, Kaduna, Nigeria (A Category 2 UNESCO Water Centre)"* by Dr. Omogbemi Omolojo Yaya, RC-IRBM, National Water Resource Institute, Nigeria.
5. *"Asia Pacific Centre for Ecohydrology (APCE)"* by Mr. Hery Harjono, Category 2 Centre of UNESCO / Indonesian Institute of Sciences (LIPI), Indonesia.
6. *"International Knowledge Centre for Engineering Sciences and Technology (IKCEST)"* by Dr. Liu Chang, China.
7. *"Isfahan Regional Centre for Technology Incubators and Science Parks Development (IRIS)"* by Dr. Hasan Khakbaz, Advisor of President of ISTT, Iran.
8. *"UNESCO Category 2 Reginal Centre on Groundwater Resources, Education, Training and Research Institute in Kenya"* by Mr. Wilson M. Lekoomet, Kenya Water Institute (KEWI), Kenya.
9. *"HTCKL Work Related to Science and UNESCO"* by Dr. Mohamed Roseli Zainal Abidin, Humid Tropics Centre Kuala Lumpur (HTCKL), Department of Irrigation and Drainage Malaysia.

Presentations from UNESCO Chairs for Natural Sciences:

1. *"IPCC Fifth Assessment Report, Lima Climate Action High Level Session Lima Peru"* by Dr. Rajendra K. Pachauri, India.
2. *"Environmental Management and Infrastructure Development Engineering, Saitama University Japan"* by Prof. Dr. Matsumoto Yasunao, Japan.
3. *"UNESCO Chair on Water Reuse, University of Tehran"* by Prof. Dr. Mohammad-Hossein Sarrafzadeh, Iran.
4. *"Presentation on behalf of Professor Dr. M.S. Swaminathan, Hony, UNESCO Jaques Cousteau Chair for Ecotechnology for Sustainable Rural Development"* by Dr. P.C. Kesavan, M.S. Swaminathan Research Foundation, India.
5. *"UNESCO Chair in Water Resources - Sudan"* by Assoc. Prof. Dr. Sameh Kantoush, Disaster Prevention Research Institute, Kyoto University.
6. *"Ulugbek UNESCO Chair on Physics and Astronomy"* by Prof. Dr. B. Fayzullaev, Department of Physics, National University of Uzbekistan.

SUMMARY OF WORKSHOP PRESENTATIONS

Below are the brief summaries of the presentations made during the Workshop.

Title:	1. International Science, Technology and Innovation Centre for South-South Cooperation under the auspices of UNESCO.
Presenter:	Dato Dr. Samsudin Tugirman, Director of ISTIC, Malaysia.
Summary:	This presentation covered the following main points: Description of ISTIC Priority Programmes including: • STI Policy: Many South countries do not have STI Policy to guide national development, those that have do not pay enough attention to SMEs and women. ISTIC Partners – Korean Institute for S&T Policy Evaluation and Planning (KISTEP), UTM Perdana School. • Inquiry Based Science Education (IBSE) and Science, Technology, Engineering and Mathematics (STEM) Education: Assuring the supply pipeline of creative and discerning STI Professionals. ISTIC Partners with IAP SEP Council, Foundation La main a la pate, France. • Women in STI: Many South countries do not have policies on contribution of women in national development. ISTIC partners with NAM Institute for Empowerment of Women (NIEW), UN Women. • Maintenance of Infrastructure: Infrastructure project abound in the developing world, but there is little indigenous capacity to maintain them in good working order. ISTIC Partners with Engineeering Staff College of India (ESCI) Hyderabad, Institute of Engineers Malaysia (IEM). • Technoprenuership: Researchers need training in grant application writing and business plan formulation. ISTIC Partners with USAINS, Universiti of Science Malaysia (USM). ISTIC looks forward to strategic collaboration with other Category 2 Centres of UNESCO. Collaboration will be on win-win basis and sharing of resources. Recommend / Propose relevant participants to participate in future ISTIC programmes. Currently, ISTIC is establishing a collaboration with IRIS (Isfahan Regional Centre for Technology Incubators and Science Parks Development, under the auspices of UNESCO, Iran).

Title:	2. Space Technology: A Powerful Tool for Smart Management of UNESCO Properties.
Presenter:	Ms Liu Jie, International Centre on Space Technology for Natural and Cultural Heritage under the auspices of UNESCO (HIST), China.
Summary:	This presentation covered the following main points: • HIST is a Scientific Research Centre that assist developing countries with space technology to improve their capacity for conservation, management and sustainable development of World Heritage sites. • The task of HIST is also helping developing countries' policy makers and practitioners to strengthen capacity building on the use of space technologies for better conservation and management of the properties. • HIST research results have been used for education and publicity. • Currently HIST is facing a few challenges such as Advisory Bodies and States Parties that have limited capacity to use space technology. There is a lack of accurate boundary data. Despite a wealth of data and case studies, there is still a lack of robust data at appropriate spatial and temporal resolutions. HIST is in need for powerful computing capacity. HIST also needs to build on the momentum of individual case studies in order to mainstream the use of space technology at the institutional level. • Smart management of UNESCO properties would benefit from space technologies, particularly the development of Earth observation. • HIST would like to work closely with related space organizations and other international partners to make more significant contributions for the smart management of UNESCO properties.

Title:	3. An Introduction to ICQHS Activities, Plans and Potentials.
Presenter:	Mr Majid Labbaf Khaneiki, International Centre on Qanat and Historic Hydraulic Structures (ICQHS), Iran.
Summary:	This presentation covered the following main points: • Description of ICQHS mission to recognize the transfer of knowledge and experiences, promotion of information and capacities to all the aspects of Qanat technology and other historic hydraulic structure to fulfill sustainable development of water resources. • ICQHS focuses on study towards the Destructive Impacts of the Developmental Programmes on Qanats. It also does research on feasibility of generation of electricity out of Qanat water current. A study on new methods for building and maintaining Qanat and methodology of preparing Qanat Atlas with aid of GIS. • ICQHS also holds training courses on historic hydraulic structures, Qanat technology and training courses to acquaint the consulting engineers with nomination of historic hydraulic structures on the UNESCO World Heritage list. International training course on Qanat technology and preservation of historic hydraulic structures is also available. • ICQHS organized International Scientific gatherings on Traditional Knowledge for Water Resources Management and produced a publication on traditional knowledge for water resources management.

Title:	4. Regional Centre for Integrated River Basin Management, Kaduna, Nigeria (A Category 2 UNESCO Water Centre).
Presenter:	Dr. Omogbemi Omoloju Yaya, RC-IRBM, National Water Resource Institute, Nigeria.
Summary:	This presentation covered the following main points: 🕐 RC-IRBM objectives are to facilitate interaction among different scientific and institutional stakeholders and provide support to River Basin Development Authorities or Organizations in the West Africa Region. It also conducts and promotes hydro-informatics, integrated water resources management and socio-economic research. 🕐 RC-IRBM coordinates the implementation of cooperative research projects and studies with regional, federal and local authorities as well as private sectors. 🕐 Currently, RC-IRBM builds and runs networking for information sharing, knowledge exchange and capacity-building in Member States of the West Africa region; as well as organizes training courses, seminars and workshops.

Title:	5. Asia Pacific Centre for Ecohydrology (APCE).
Presenter:	Mr. Hery Harjono, Category 2 Centre of UNESCO / Indonesian Institute of Sciences (LIPI), Indonesia.
Summary:	This presentation covered the following main points: 🕐 APCE's focus is on ecological approach to water resources management, which provides sustainable water for the people by harnessing science and technology, education and culture. 🕐 APCE is committed to contribute towards overcoming current and important issues of national, regional and global interest such as poverty, disaster risk reduction and climate change mitigation and adaptation. 🕐 By 2021 APCE aims to develop excellent expertise in: ❖Relationships among ecological pattern and hydrological process; ❖Disturbance and dynamics in natural and anthropogenic ecology and hydrology; ❖Ecohydrological approaches to biodiversity conservation, environmental management and ecological restoration; ❖Integrating hydrology with ecological planning, design and architecture or reverse; ❖Transdisciplinary studies of regional sustainability from scopes of ecohydrology, ecology, culture (society) or integration of them.

Title:	6. International Knowledge Centre for Engineering Sciences and Technology (IK-CEST).
Presenter:	Dr. Liu Chang, China.
Summary:	This presentation covered the following main points: 🕐 IKCEST main task is to establish an international engineering and technology resources hub. IKCEST aims to cooperate with research institutes, enterprises and institutions of higher learning worldwide to build a widely connected international hub for engineering and technology, resources, thus laying a global data foundation from which to operate. 🕐 IKCEST also wants to establish a public data service platform, and to develop the technology for mining and analyzing knowledge from big data. 🕐 IKCEST would like to cooperatively build professional knowledge service, systems, and to build capacity in developing countries. 🕐 IKCEST will foster interdisciplinary engineering talents with big data processing ability. 🕐 IKCEST will assist UNESCO to fulfill its aims and support its action plans.

Title:	7. Isfahan Regional Centre for Technology Incubators and Science Parks Development (IRIS).
Presenter:	Dr. Hasan Khakbaz, Advisor of President of ISTT, Iran.
Summary:	This presentation covered the following main points: 🕐 ISTT mission intends to prepare the ground for the development of technology incubators and science parks in the region by providing consultations, training courses and capacity building. ISTT is also facilitating the international relations among science parks and incubators with their counterparts in the region. 🕐 Since its official establishment in May 2010, IRIS has developed different programmes and plans. Among them are: ❖ Organizing the official inauguration ceremony and inviting ECO countries ambassadors to attend; ❖ Formation of the secretariat of the Centre; ❖ Allocating a space in ISTT to IRIS and equipping it; ❖ Designing and developing the logo of the centre; ❖ Determining the Governing Board members and Directors of Centre with cooperation of UNESCO; ❖ Organizing seven meetings of Governing Board members and developing the work plan of the Centre; and ❖ Training Workshops (more than 40 National and International workshop with the attendance of international experts from Japan, South Korea, Germany, UK, Spain, Poland, Romania, Malaysia, China, Tunisia, Australia and etc)

Title:	8. UNESCO Category 2 Regional Centre on Groundwater Resources, Education, Training and Research Institute in Kenya.
Presenter:	Mr. Wilson M. Lekoomet, Kenya Water Institute (KEWI), Kenya.
Summary:	This presentation covered the following main points: 🕐 Kenya Water Institute (KEWI) objectives include the conduct of research, offering professional training, providing policy advise, facilitating technological transfer and promoting regional collaboration and exchange of experience. 🕐 KEWI is active in training on groundwater for both students and clients in Kenya and the region. KEWI is also doing geological surveys and pursuing degree programmes in Universities in Kenya. It is aimed at improving water / groundwater management capacity within the institution and the country. 🕐 Today, in collaboration with other partners (JKUAT and living Water African Region), KEWI is in the process of establishing a joint five year project whose purpose is to develop capacity for the drilling technology experts. Under this project about twelve experts will be trained at PhD level, twenty at master level and about 150 at advance diploma level. 🕐 Recently, UNESCO undertook a groundwater mapping project in Turkana, which culminated in the discovery of large ground water reservoirs. KEWI and the Category 2 Centre will play a major role in furthering this course and will serve as a hub for capacity development in water related matters in the East Africa Region.

Title:	9. HTCKL Work Related to Science and UNESCO.
Presenter:	Dr. Mohamed Roseli Zainal Abidin, Humid Tropics Centre Kuala Lumpur (HTCKL), Department of Irrigation and Drainage Malaysia.
Summary:	This presentation covered the following main points: 🕐 HTCKL objectives are to promote a conducive atmosphere for collaboration through technology and information exchange, education and science. HTCKL helps to increase scientific technologies knowledge about hydrological cycle thus increasing the capacity to better manage and develop the water resources in a holistic manner and to promote and increase scientific and technological knowledge about urban storm water management, ecohydrology, humid tropics and water education. 🕐 HTCKL initiatives provides the execution and implemention of the Post 2015 Development Agenda especially for Sustainable Development Goal No. 6: *Ensuring availability and sustainable management of water and sanitation for all.* 🕐 UNESCO-IHP Cross-Cutting Programmes related to HTCKL includes: ❖ UNESCO Switch-in-Asia: Urban Water Management; SWITCH – Sustainable Water Management Improves Tomorrow's Cities Health; ❖ AP Friends; Asia Pacific Flow Regimes from International Experimental and Network Data; ❖ UNESCO-HELP River basin (Langat River): Hydrology for the Environment, Life and Policy; ❖ Integrated Water Resources Management (IWRM). 🕐 In IHP-VII Strategic Plan 2014-2021, HTCKL is involved in: ❖ Water related Disasters and Hydrological Change; ❖ Addressing Water Scarcity Quality; ❖ Water and Human Settlements of the future; ❖ Ecohydrology, Engineering Harmony for a Sustainable World; and ❖ Water Education, Key for Water Security

Title:	10. IPCC Fifth Assessment Report, Lima Climate Action High Level Session, Lima Peru.
Presenter:	Dr Rajendra K. Pachauri, India (via teleconference).
Summary:	This presentation covered the following main points: Description of the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Continued warming increases the risk of severe, pervasive and irreversible impacts. Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development. People who are socially, economically, culturally, politically, institutionally or otherwise marginalized are especially vulnerable to climate change. Ambitious mitigation is affordable and translates into delayed but not foregone growth (entails losses in global consumption of median value 1.7% in 2030). Estimated costs on mitigation do not account for the benefits of reduced climate change. Many impact such as loss of human lives, cultural heritage and ecosystem services are difficult to value and monitor and thus they are poorly reflected in estimates of losses.

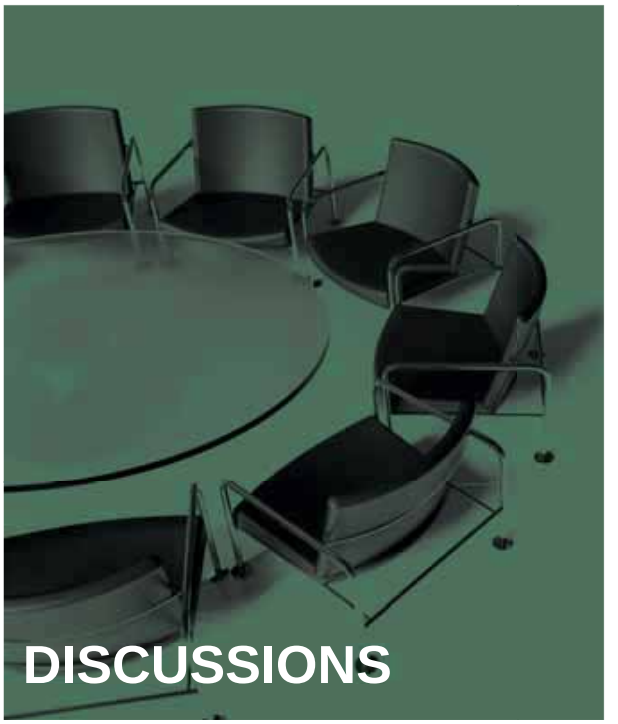
Title:	11. Environmental Management and Infrastructure Development Engineering, Saitama University Japan.
Presenter:	Prof. Dr. Matsumoto Yasunao, Japan.
Summary:	This presentation covered the following main points: Description of the UNESCO Chair at Saitama University Japan on Environmental Management and Infrastructure Development Engineering. The Chair's objective is to promote collaboration between the researchers and the research team of the university and other universities and institutions. It also attracts prospective students to our existing International Graduate Programme in Civil and Environmental Engineering. The Chair allows sharing of experience and knowledge in environmental management and infrastructure development engineering research and development. Saitama University Research Groups are as follows: ❖ Geotechnical and Geosphere Research Group; ❖ Earthquake Disaster Prevention Mitigation Group; ❖ Transporting & Planning Group; ❖ Structural Engineering Mechanics and Materials Group; and ❖ Hydraulic and Environment Engineering Group.

Title:	12. UNESCO Chair on Water Reuse, University of Tehran.
Presenter:	Prof. Dr. Mohammad-Hossein Sarrafzadeh, Iran.
Summary:	This presentation covered the following main points: The water crisis in the world involves: ❖ 1.1 billion people live without clean drinking water ❖ 2.6 billion people lack adequate sanitation ❖ 3900 children die every day from water borne diseases UNESCO Chair on Water Reuse, University of Tehran is involved in post graduate teaching programmes, training, research and institutional development (strengthening of information / library services, laboratories and etc.) Among its objectives are gathering the available expertise in the field of water reuse and facilitate information transfer. It also creates network between water institutions to facilitate exchange of experience and information nationally, regionally and internationally. Furthermore, it conducts and contributes to workshop and conferences of national, regional and international nature to push forward exchange of experience. University of Tehran is also engaged in producing technological developments for water reuse, saving water by recycling and ground water recharge. Developing low-cost methods for sanitary disposal of municipal wastewater. Activities to reduce pollution of rivers and other surface water and provide a reliable water supply to farmers.

Title:	13. Presentation on behalf of Professor Dr. M.S. Swaminathan, Hony. UNESCO Jaques Cousteau Chair for Ecotechnology for Sustainable Rural Development.
Presenter:	Dr. P.C. Kesavan, M.S. Swaminathan Research Foundation, India.
Summary:	This presentation covered the following main points: Green Revolution and the Paradox of Grain Mountains and Hungry Millions. ❖ Green Revolution (GR) provided food security at the national level; ❖ GR did not create more on-farm and off-farm livelihoods; ❖ GR not integrated with sustainable rural development; and ❖ GR is largely monocropping; loss of agrobiodiversity. Ecotechnology Revolution ❖ Blending frontier technology with traditional wisdom and ecological prudence. These then become eco-technologies with pro-nature, pro-poor and pro-women orientation; ❖ Ecotechnologies involve concurrent attraction to Ecology, Energy, Equility, Economics, Employment and Ethics; and ❖ Ecotechnologies are in action in MSSRF's Biovillages.

Title:	14. UNESCO Chair in Water Resources - Sudan.
Presenter:	Assoc. Prof. Dr. Sameh Kantoush, Disaster Prevention Research Institute, Kyoto University.
Summary:	This presentation covered the following main points: • UNESCO-CWR mission is to build, enhance and strengthen capacity for sustainable water resources development and management through education, research, consultancy and knowledge dissemination. • CWR also facilitate coordinate, collaborate, cooperate among universities, research institutes & centres at national, regional and international levels. • It also promotes integrated research system and multi-interdisciplinary approach. • UNESCO-CWR serves the local, regional "the Nile Basin, Eastern, Central Africa and Shared Aquifers" AWA International water community.

Title:	15. Ulugbek UNESCO Chair on Physics and Astronomy.
Presenter:	Prof. Dr. B. Fayzullaev, Department of Physics, National University of Uzbekistan.
Summary:	This presentation covered the following main points: • The Ulugbek UNESCO Chair promotes an integrated system of research, training, information and documentation in the field of Physics and Astronomy. • Development of the integration into postgraduate study programmes of new information and communication technologies. • Publication of new curricular materials in the field of Physics and Astronomy. • Organization of scientific conference and round-table discussions. • The Ulugbek UNESCO Chair is acting in close cooperation with Nuclear and Theoretical Physics Chair of Department of Physics, the Uzbekistan National University, Tashkent. Many courses are delivered jointly for common students. The UNESCO Chair invites international speakers to give talks at common seminars.



DISCUSSIONS

The second day of the workshop included a dialogue session, with breakout group discussions where each group discussed on the assigned topic and presented findings of their group deliberations. Three groups were formed for that purposes.

The topics assigned to the groups were:

1. Developing a UNESCO Family Strategic Plan for Asia and the Pacific,
2. Scoping UNESCO Chairs in Malaysia; and
3. Delivering together.

The group discussion was guided by a series of questions based on the topics assigned to each group.

The full reports of the group discussion are given in the Appendix 3.

GROUP 1: Developing a UNESCO Family Strategic Plan for Asia and the Pacific.

QUESTION 1: Which are the strengths of UNESCO and its Natural Sciences Family in Asia and the Pacific?

The Centres and Chairs under Natural Sciences Family are focused on very important issues relevant to the society and environment. The fields in which these Centres and Chairs focus include natural disasters, hydrology, food security, water resources, water and culture, eco-hydrology, ground water, oceanography, biology and etc.

Members of this discussion group suggested organizing a Regional Steering Committee meeting (RSC) every year hosted by member countries (International Hydrological Programme (IHP), National Committee and Category 2) and presentation of reports and cross cutting programmes (e.g. ASIA PACIFIC FRIEND, HELP BASIN, UNESCO SWITCH-URBAN WATER MANAGEMENT, INTEGRATED WATER RESOURCE MANAGEMENT (IWRM) POST 2015).

In addition, UNESCO Jakarta office has an important role to assist in creating more collaborative programmes and activities in knowledge sharing on scientific research and sustainable development between UNESCO Category 2 Centres and Chairs and their stakeholders. There were consensus of building networks for strengthening partnership between the UNESCO Centres in Asia and the Pacific with the Malaysian scientific network. This collaboration will result in funds raising strategies / funding mechanism and joint research activities among the partners (Paris Link).

QUESTION 2: How to build a strong and an efficient regional sciences network?

UNESCO Centres and Chairs shall utilize a variety of interactive tools and approaches to maintain a sustainable internal communication with sufficient frequency of updates between Asia and the Pacific regional science network.

Currently, UNESCO has developed an integrated collaborative platform for the UNESCO Water Network using existing UNESCO's UNESTEAM shared point based platform. This platform shall serve as the primary mechanism for sharing feedback, information, documents and news within the network.

The establishment of groups of professionals in diverse fields of natural sciences will allow members of Centre and Chairs to remain up-to-date and encourage collaboration within these networks, e.g. International Hydrological Programme (IHP), Intergovernmental Oceanographic Commission (IOC), Man and the Biosphere Programme (MAB). An active participation in this common communication platform is highly encouraged to ensure timely updates and content quality.

The group discussion also suggested setting up twinning programmes between Chairs and Centres with the aim of advanced research, training and programme development, e.g. Integrated Water Resource Management (IWRM) which will promote remote sensing application to climate change studies within Southeast Asia countries and China. This initiative will encourage cooperation through transfer of knowledge across borders.

Centres could also facilitate and organize national and regional training, short courses and knowledge sharing workshop that can essentially strengthen particular fields by training human resources and applying state-of-the-art technologies and tools, e.g. training the field of eco-hydrology.

Staff Exchange programme was also suggested since it has always built bridges between disciplines and the scientists. The exchange will aim to stimulate cutting edge research and sharing scientific knowledge.

Collaborative engagement in enhancing communication and information sharing between members is important especially to maintain a high level of engagement with members' stakeholders. It was suggested to make significant efforts to establish an effective communication channel, e.g. website to convey progress, exchange knowledge or success stories to adverse impact.

QUESTION 3: How can UNESCO support the Natural Sciences Category 2 Centres and Chairs?

UNESCO has made significant efforts to facilitate collaboration with various UN Agencies such as Intergovernmental Panel on Climate Change (IPCC), United Nations Development Programme (UNDP) and other UN Programmes.

The Centres and Chairs expressed a desire to network and collaborate with one another and expressed interest in establishing a mechanism for cooperation. They would like to see UNESCO take a leading role in bringing them together, so they can further develop cooperation mechanism between themselves and increase the visibility of their partnership. This however has a cost implication, so funding mechanisms need to be explored.

GROUP 2: SCOPING UNESCO CHAIRS IN MALAYSIA.

QUESTION 1: Which are the key strengths of Malaysian science stakeholders?

This group mainly discussed on the strengths and weaknesses of UNESCO Natural Sciences Centres and Chairs in Malaysia. The group categorized different fields of natural sciences research according to the strengths and the weaknesses of the Malaysian stakeholders. The Malaysian stakeholders have reasonably good exposure to few areas including sustainable energy, water resources, climate change, disaster risk reduction, urban environment, ecological economics and water-energy-food nexus.

The group agreed that Malaysia is relatively competent in water resource management and climate change. In water resource management, Malaysia has numerous government agencies including Department of Irrigation and Drainage (DID), Economic Affairs Unit (UPEN), Ministry of Energy, Green Energy and Water (KETTHA), National Water Services Commission (SPAN) who work hand-in-hand with water companies e.g. Syarikat Bekalan Air Selangor Sdn. Bhd. (SYABAS) etc.

As for climate change, strong collaborations exist among universities (Universiti Teknologi Malaysia (UTM), Universiti Kebangsaan Malaysia (UKM), Universiti Sains Malaysia (USM), Universiti Malaya (UM) and Universiti Malaysia Terengganu (UMT)), Malaysian Meteorological Department, National Hydraulic Research Institute of Malaysia (NAHRIM), the Ministry of Natural Resources and Environment (MNRE) and Ministry of Energy, Green Energy and Water (KETTHA).

QUESTION 2: How can Malaysia contribute to a strong and efficient regional science network?

Strategic partnership with UNESCO family centres (e.g. Category 2 Centres) should be established or enhanced to enable higher level of knowledge exchange, resources sharing and human capital development. Such efforts will result in more significant achievements in addition to wider coverage of activities and collaboration.

The deliberation of this group also resulted in suggestions of having a clear and generic strategy that should be based on multidisciplinary, problem-solving and outcome-based approach at local and regional levels. They also highlighted that the academic institutions have an active and leading role in solving natural resources problems and the solutions can be in line with Malaysian Higher Education Blueprint-2015 by emphasizing on the quadruple helix.

The group also demanded for establishing and implementing a Sustainability Science Network and programme across region. Ultimately, all collaborations, networking, strategies and activities must be in line with SDGs to ensure effective outcome on regional and global scale.

QUESTION 3: How can UNESCO Natural Sciences family support Malaysian stakeholders to deliver the Post 2015 Development Agenda?

UNESCO Science family can support through development and implementation of Sustainable Sciences Network across region and programme. Furthermore, the UNESCO family can act as a “big brother” to bring together existing centres and chairs to promote cooperation especially in the form of technology and knowledge transfer.

Funding is also essential, not only to the Malaysian stakeholders but also to other parties in which the UNESCO Science family can support by facilitating funding mechanism.

GROUP 3: DELIVERING TOGETHER

Question 1: What are the key areas for cooperation in Sciences in the Post-2015 Development Agenda framework?

There are four key areas to be focused on. The first one is biodiversity and ecology conservation. With intense development, loss of biodiversity and ecology are inevitable. However, critical areas for biodiversity and ecology protection should be identified and protected. The cooperation in this aspect should inform stakeholders and policy makers in the importance of conserving such areas, leading to a more sustainable development.

Next is the renewable energy. In years to come, traditional energy sources such as petroleum and coal would be depreciated and before that happens, renewable energy should receive utmost attention. The cooperation in this area should be amplified and promoted as the next evolution of energy sources, not just alternative. Such effort would also enable technological transfer to help achieve renewable energy target. Renewable energy should be marketed as affordable, reliable, sustainable and modern energy for all.

Transboundary water is also an important issue to be highlighted. The issue become very complicated when there is more than one country claiming rights to water sources (especially lake and river water basin). Transboundary cooperation should exist to solve the issue without political influence and violence.

A larger entity such as a river commission could be established to hold talks, draft legal agreements and discuss this transboundary issue for the sake of survival.

The last issue is food security and livelihoods. Specific projects need to address food security and livelihood issues especially concerning rural communities. Critical issues that directly related to food security such as food source availability, clean water access and power (energy) access need to be investigated. However, food production should not only address the issue of demands but also retain the essential ecological integrity of production systems.

Question 2: How to implement joint activities in sciences to support the SDGs?

Action plans should be devised in broader coverage to reach the goals of SDGs. Among those shortlisted were research activities, community programmes and education programmes. Such activities or programmes should be knowledge transfer programmes so that it would be a win-win scenario for the different parties. For example, research in water quality issue would improve the livelihood of the community. The governance aspect should also be emphasized. For example, awareness programme specifically for women and youth, as well as gender equality. Apart from professional, women and youth should be engaged in community-based sciences to increase the awareness and also knowledge. A specific web portal should also be established to act as knowledge centre and particularly as a gateway to connect to the modern youth. Massive open online course (MOOCs) should also be encouraged as part of the freely available education for the masses.

Question 3: How to link Asia and the Pacific with Africa to support South-South cooperation in Sciences?

The most important aspect to link between these different entities is the structural arrangement (committees). Such solid structure should include secretariat and/or taskforce for joint cooperation. The establishment of these secretariat with representative from each regions of interest will ensure seamless and more efficient “bring-it-together” collaborative efforts.

To ensure accurate and up-to-date information dissemination, a web portal should be available and frequently updated so that all participants in all regions are aware of such efforts and activities. With proper support and promotion, this portal will even reach out to more potential participants (visibility) and collaborators, especially from untapped regions or countries.

CONCLUSIONS AND RECOMMENDATIONS

• The current 15 UNESCO Natural Sciences related Category 2 Centres and 28 UNESCO Natural Sciences related Chairs in Asia and the Pacific Region are focusing on very important issues relevant to the society and environment. The fields in which these Centres and Chairs are focusing include: historical hydraulic structures, humid tropic hydrology and water resources, ecohydrology, urban water management, erosion and sedimentation, biotechnology, space technologies for cultural and natural heritage, geochemistry and others. These Centres and Chairs are aligned with the 17 SDGs, e.g. poverty reduction, food security, education quality, gender equity, sustainable management of water, affordable energy, sustainable economic growth, sustainable industrialization, resilient and sustainable cities, ecosystem protection, and global partnership.

• The workshop successfully achieved the targets of creating more collaborative programmes and activities of knowledge sharing on scientific research and sustainable development between UNESCO Category 2 Centres and Chairs. There was consensus of building networks for strengthening partnerships between the UNESCO Centres in Asia-Pacific, Africa and the Malaysian scientific network. This collaboration will result in fund raising strategies and joint research activities among the partners. It was agreed that the investment in science, food and water security, renewable energy, water and natural resources management, disaster risk reduction and resilience to climate change will achieve regional and global peace and prosperity. It is revealed that the UNESCO Centres and Chairs are coordinating in implementing the collaborative research projects and studies with regional, federal and local authorities as well as with the private sector. The individual sectors and the society as whole are the main beneficiaries of the joint projects completed under these Centres and Chairs. However, few regions and countries are still lacking of such platforms where joint research and collaborative projects can be carried out and benefits can be transferred to the society and individual sectors. Some of the areas of research identified in the workshop include disaster risk reduction and management, sustainability science and water demand management.

- There was a suggestion on creating a new Chair in Malaysia regarding Disaster Risk Reduction and Management (DRRM). The government is concerned about different types of disasters like flood, landslide, earthquake, tsunami and the associated of those disasters in Malaysia. The proposed Chair will be the most effective response to mitigate any types of catastrophe in Malaysia through collaboration among the different Centres and Chairs in South-South cooperation.

  Practice of reducing disaster risks can be done through systematic efforts by collaboration and research among the different Chairs of UNESCO worldwide. Reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and other natural resources, improving preparedness and early warning for the natural disaster events can be achieved by strong relationship of South-South cooperation.

- It was also suggested to create a new Category 2 Centre in Malaysia on Sustainability Science (CMSS). UNESCO Natural Sciences Family can support the Malaysian science stakeholders by developing and implementing a sustainability science network and programme across region, by promoting cooperation with existing Centres and Chairs by technology and knowledge transfer and by facilitating funding mechanisms. It is thus, recommended to have a UNESCO Category 2 Centre on Sustainability Science in Malaysia.

  The proposed Centre can be established in Malaysia for developing joint projects with the existing Regional Centres and the Malaysian scientific network. Sustainability science is an emerging field of interdisciplinary research that fosters shared prosperity and poverty alleviation while protecting the environment. This field draws from multiple disciplines of the natural, social, medical and engineering sciences, from the professions and from practical field experience in business, government, and civil society.

• Final Recommendations and contribution to the “Kuala Lumpur Statement”:

1. The UNESCO Natural Sciences related Category 2 Centres and Chairs in Asia and the Pacific Region are highly encouraged to build a strong regional science network to promote interaction, knowledge sharing and joint activities.
   - A good example is the cooperation between ISTIC (Malaysia) and IRIS (Iran) in technopreneurship training for research scientists and engineers, in Iran in 2015.
   - Iranian UNESCO chairs and centres will create a web-based network for coordination and cooperation between them, including periodic meetings to find common fields of interest and define joint projects. If this model works in Iran, it will be expanded to UNESCO centres and chairs the other regions.
2. The network of UNESCO Natural Sciences related Category 2 Centres and Chairs in Asia and the Pacific region will encourage active links with Africa to strengthen the South-South and triangular cooperation in STI.
   - For example HTCKL (Malaysia) and RC-IRBM (Nigeria) active engagement and joint programmes on water resources management.
3. The UNESCO Regional Science Bureau for Asia and the Pacific will continue to mobilize and provide necessary support to the UNESCO’s Natural Sciences family in the region for the successful delivery of the Sustainable Development Goals in the Post-2015.

APPENDIX 1 - Workshop Programme

The Workshop Programme is as follows:

Day 1: 26 May 2015		
12 :30 -13.30	*Registration and lunch at Taman Sari Outlet*	
[Session 1] Opening		
13:30 – 14:30	Opening, welcome remarks and Souvenir Presentation	1. Dato Ir. Lee Yee Cheong, Chairman, ISTIC Governing Board 2. Prof. Mohamed H. A. Hassan, Chairman, Council of the United Nations University (UNU 3. Prof. Dr. Ahmad Fauzi Ismail, Deputy Vice Chancellor (Research and Innovation) Universiti Teknologi Malaysia 4. Mr. Shahbaz Khan, OIC UNESCO Office Jakarta 5. Mr. Mohd Khairul Adib bin Abdul Rahman, Secretary General of The Malaysian National Commission for UNESCO
[Session 2] Setting the scene		
14:30-14:45	UNESCO Natural Sciences Regional Support Strategy 2014-2021	Mr. Shahbaz Khan, OIC UNESCO Office, Jakarta
14:45-15:00	Malaysian Higher Education Blueprint	Prof. Dato' Ir. Dr. Mohd Saleh Jaafar, Adviser / Consultant on Malaysia Higher Education Blueprint
15:00-15:15	Post-2015 Development Agenda and STI	Dato Ir. Lee Yee Cheong, Chairman, ISTIC Governing Board
15:15-15:45	Group photo and *Coffee break at Urban Hotel Lobby*	
[Session 3] Introduction to UNESCO Category 2 Centres		
15:45-17:00	Presentations from Directors of UNESCO Category 2 Centres for Natural Sciences	Dato Samsudin, ISTIC, Malaysia Ms Jie, HIST, China Mr Labbaf, ICQHS, Iran Dr Yaya, RC-IRBM, Nigeria Mr Harjono, APCE, Indonesia Dr Chang, IKCEST, China Dr Khakbaz, IRIS, Iran Mr Lekoomet, KEWI, Kenya Dr Roseli, HTCKL, Malaysia

[Session 4] Introduction to UNESCO Chairs		
17:00-17:50	Presentations from UNESCO Chairs for Natural Sciences	Dr Pachauri, India Dr Matsumoto, Japan Prof. Sarrafzadeh, Iran Dr Kesavan, India Dr Kantoush, Sudan Dr Fayzullaev, Uzbekistan
17:50-18:30	Q&A Discussion	
20:00	*Welcome Dinner at Mahkota 3 (Istana Hotel)*	*By UTM*

Day 2: 27 May 2015		
08:00-08:30	*Arrival and installation at Safir (1) meeting room*	
[Session 5] Breakout Dialogue		
08:30-09:30	1. Developing a UNESCO Natural Sciences Family Strategic Plan for Asia and the Pacific 2. Scoping UNESCO Chairs and Category 2 Centres in Malaysia 3. Delivering Together	Moderators: 1. Prof. Dr. Zulkifli Yusop (UTM) 2. Prof. Dr. Arshad Ahmad (UTM) 3. Assoc. Prof. Dr Marlinda (UNITEN)
09:30-10:00	Reporting from Breakout Dialogue	Rapporteurs from each breakout discussion 1. Assoc. Prof. Dr. Sharif Moniruzzaman Shirazi (UTM) 2. Dr. Noorul Hassan Zardari (UTM) 3. Assoc. Prof. Dr. Shareeshivadasan A/L Chelliapan (UTM)
10:00-10:15	*Coffee break at Safir Foyer*	
[Session 6] Key-findings		
10:15-11:00	Discussion	Moderator Prof. Dr. Zulkifli Yusof, UTM
[Session 7] Closing		
11:00-11:10	Conclusions: Plan of action and follow-up	Mr. Shahbaz Khan, OIC UNESCO Office, Jakarta
11:10-11:30	Closing Remarks	1. Dr. Mohamed Roseli Zainal Abidin, Director of Humid Tropics Centre, Kuala Lumpur (HTCKL) 2. Flavia Schlegel, UNESCO Assistant Director General for Natural Sciences
12:00	*Lunch at Taman Sari Outlet*	

APPENDIX 2 – Concept note

Promoting Interaction and Knowledge Exchange between UNESCO Natural Sciences related Centres and Chairs in Asia and the Pacific

Background

The current year 2015 is a critical moment globally for the transition into the Post-2015 Development Agenda as new framework for global development efforts. With the mandate to promote International cooperation in education, the sciences, culture, communication and information, UNESCO's contribution to the Post-2015 Development Agenda is essential. UNESCO is mobilizing all its strengths for building the sustainable, inclusive, knowledge societies needed for the century ahead.

The draft of the Sustainable Development Goals (SDG) 'outcome document' includes 17 goals and 169 targets, where the universality of Science and its critical role for poverty eradication and sustainable development has been highlighted. As stated by the UNESCO Director-General in the High Level Segment of ECOSOC, "*investment in science is investment in food and water security, renewable energy, disaster risk reduction and resilience to climate change. It is about peace and prosperity for all*." Moreover, networking will be critical in the implementation of the Post-2015 Development Agenda, since the proposed SDG no. 17 refers to "strengthen the means of implementation and revitalize the global partnership for sustainable development".

The programmes of UNESCO in Natural Sciences have been able to expand their cooperation beyond the network of the traditional intermediaries – what may be called the "UNESCO Natural Sciences family": National Commissions, UNESCO Chairs, Category 2 Institutes and Centres, clubs and associations, National Committees of intergovernmental programmes and specialized networks, such as the Associated Schools Project Network. Within this variety of partners, Category 2 Centres and Chairs play an important role as they expand the capacities and effectiveness to carry out activities, promote the outreach, impact and visibility at all levels, broaden the support base and mobilize resources and create synergies among all communities of UNESCO.

UNESCO Category 2 Centres and Chairs are independent of UNESCO and are associated with the Organization through individual arrangements, as approved by the UNESCO governing body - the General Conference -. These Centres and Chairs perform research, advanced training, contribute to the execution of UNESCO's programmes and increase the participation of national and regional institutions in UNESCO's work.

In Asia-Pacific Region, the Category 2 Centres and Chairs have the capacity to provide a tangible contribution towards the realization of not only 'Natural Sciences' objectives and priorities as stated in the UNESCO Medium Term Strategy but also towards the implementation of the SDGs in the Post-2015 framework. The Category 2 Centres and Chairs can contribute by expanding and strengthening the UNESCO's global and regional outreach, and providing a collective impact, given the competencies, scope of expertise, as well as training opportunities that they offer. Their dissemination is also an added value to strengthen North-South, South-South and triangular cooperation.

Scope of the workshop

This workshop is organized in order to promote interaction and knowledge exchange for strengthening South-South cooperation between Natural Sciences Category 2 Centres and Chairs in the Asia-Pacific region. A strong and efficient Science network in the region will be critical to support the implementation of the Post-2015 Development Agenda in the upcoming years.

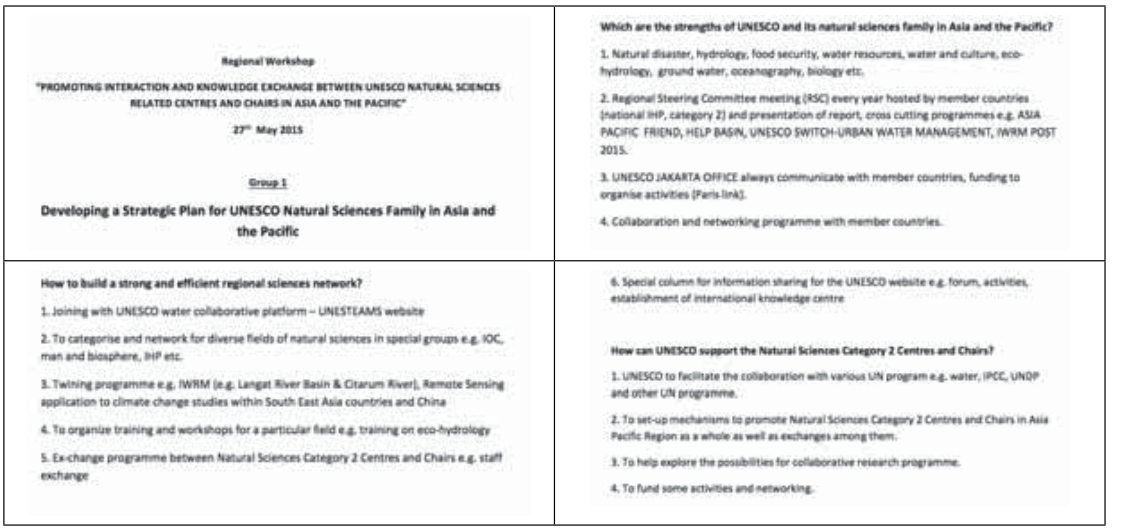
The following actions will be the outcomes of the workshop:

- Providing an overview of UNESCO's Medium Term Strategy globally and the Regional Bureau's Science Support Strategy in the Asia-Pacific (2014-2021).
- Providing an overview of UNESCO's Natural Sciences Category 2 Centres and Chairs in Asia-Pacific and their contribution to programmes and activities of UNESCO in the Post-2015 Development Agenda framework.
- Identify potential gaps and overlaps among the Centres and Chairs.
- Identify formats for collaboration and knowledge exchange on science research and sustainable development.
- Building networks for strengthening partnerships between the Category 2 Centres and Chairs in Asia-Pacific and Africa.
- Initiate reflection for the development of a regional strategy on funds raising and joint actions to support the Post-2015 Development Agenda.

This workshop is organized with the valuable support of the Malaysian Funds-in-Trust.

APPENDIX 3 – Outcomes from Breakout Discussion

GROUP 1: Developing a Strategic Plan for UNESCO Natural Sciences Family in Asia and the Pacific



Regional Workshop

"PROMOTING INTERACTION AND KNOWLEDGE EXCHANGE BETWEEN UNESCO NATURAL SCIENCES RELATED CENTRES AND CHAIRS IN ASIA AND THE PACIFIC"

27th May 2015

Group 1

Developing a Strategic Plan for UNESCO Natural Sciences Family in Asia and the Pacific

Which are the strengths of UNESCO and its natural sciences family in Asia and the Pacific?

1. Natural disaster, hydrology, food security, water resources, water and culture, eco-hydrology, ground water, oceanography, biology etc.

2. Regional Steering Committee meeting (RSC) every year hosted by member countries (national IHP, category 2) and presentation of report, cross cutting programmes e.g. ASIA PACIFIC FRIEND, HELP BASIN, UNESCO SWITCH-URBAN WATER MANAGEMENT, IWRM POST 2015.

3. UNESCO JAKARTA OFFICE always communicate with member countries, funding to organise activities (Paris link).

4. Collaboration and networking programme with member countries.

How to build a strong and efficient regional sciences network?

1. Joining with UNESCO water collaborative platform – UNESTEAMS website

2. To categorise and network for diverse fields of natural sciences in special groups e.g. IOC, man and biosphere, IHP etc.

3. Twining programme e.g. IWRM (e.g. Langat River Basin & Citarum River), Remote Sensing application to climate change studies within South East Asia countries and China

4. To organize training and workshops for a particular field e.g. training on eco-hydrology

5. Ex-change programme between Natural Sciences Category 2 Centres and Chairs e.g. staff exchange

6. Special column for information sharing for the UNESCO website e.g. forum, activities, establishment of international knowledge centre

How can UNESCO support the Natural Sciences Category 2 Centres and Chairs?

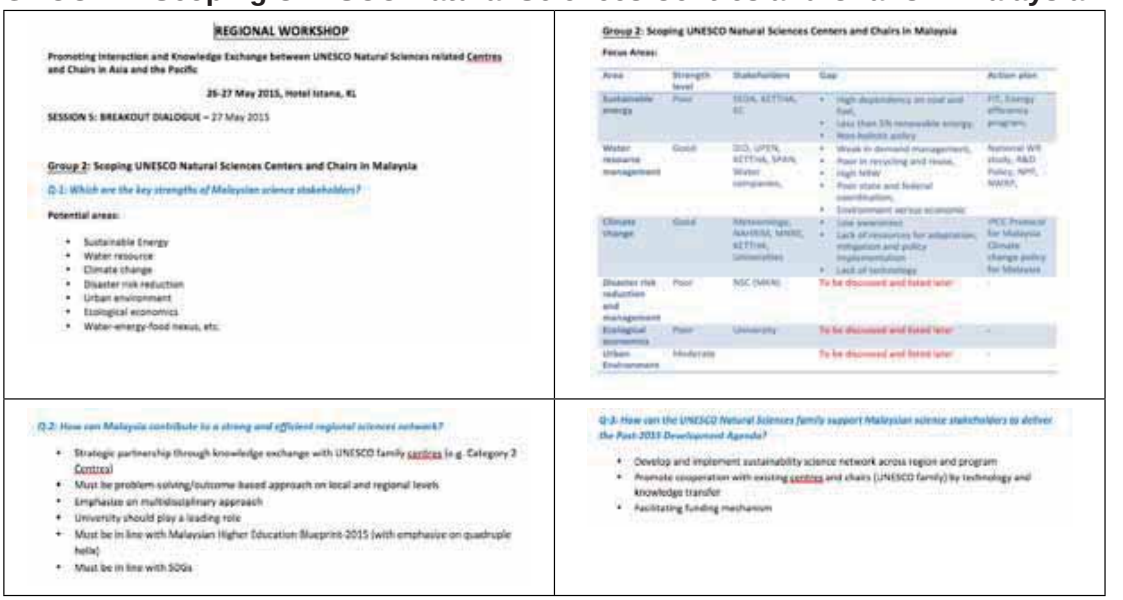
1. UNESCO to facilitate the collaboration with various UN program e.g. water, IPCC, UNDP and other UN programme.

2. To set-up mechanisms to promote Natural Sciences Category 2 Centres and Chairs in Asia Pacific Region as a whole as well as exchanges among them.

3. To help explore the possibilities for collaborative research programme.

4. To fund some activities and networking.

GROUP 2: Scoping UNESCO Natural Sciences Centres and Chairs in Malaysia



REGIONAL WORKSHOP

Promoting Interaction and Knowledge Exchange between UNESCO Natural Sciences related Centres and Chairs in Asia and the Pacific

26-27 May 2015, Hotel Istana, KL

SESSION 5: BREAKOUT DIALOGUE – 27 May 2015

Group 2: Scoping UNESCO Natural Sciences Centers and Chairs in Malaysia

Q-1: Which are the key strengths of Malaysian science stakeholders?

Potential areas:

- Sustainable Energy
- Water resource
- Climate change
- Disaster risk reduction
- Urban environment
- Ecological economics
- Water-energy-food nexus, etc.

Group 2: Scoping UNESCO Natural Sciences Centers and Chairs in Malaysia

Focus Areas:

Area	Strength level	Stakeholders	Gap	Action plan
Sustainable energy	Poor	SEDA, KETTHA, EC	• High dependency on coal and fuel, • Less than 5% renewable energy, • Non-holistic policy	FIT, Energy efficiency programs,
Water resource management	Good	DID, UPEN, KETTHA, SPAN, Water companies,	• Weak in demand management, • Poor in recycling and reuse, • High NRW • Poor state and federal coordination, • Environment versus economic	National IWR study, R&D Policy, NPP, NWRP,
Climate change	Good	Meteorology, NAHRIM, MMD, KETTHA, Universities	• Low awareness • Lack of resources for adaptation, mitigation and policy implementation • Lack of technology	IPCC Protocol for Malaysia Climate change policy for Malaysia
Disaster risk reduction and management	Poor	NSC (MKN)	To be discussed and listed later	-
Ecological economics	Poor	University	To be discussed and listed later	-
Urban Environment	Moderate		To be discussed and listed later	-

Q-2: How can Malaysia contribute to a strong and efficient regional sciences network?

- Strategic partnership through knowledge exchange with UNESCO family centres (e.g. Category 2 Centres)
- Must be problem-solving/outcome-based approach on local and regional levels
- Emphasize on multidisciplinary approach
- University should play a leading role
- Must be in line with Malaysian Higher Education Blueprint 2015 (with emphasize on quadruple helix)
- Must be in line with SDGs

Q-3: How can the UNESCO Natural Sciences family support Malaysian science stakeholders to deliver the Post-2015 Development Agenda?

- Develop and implement sustainability science network across region and program
- Promote cooperation with existing centres and chairs (UNESCO family) by technology and knowledge transfer
- Facilitating funding mechanism

GROUP 3: Delivering Together

UTM

Delivering Together

GROUP 3

Rapporteur
Assoc. Prof. Dr. SM Shirazi
Centre for Environmental Sustainability and Water Security
Universiti Teknologi Malaysia (UTM)

www.utm.my innovative • entrepreneurial • global

UTM **GROUP MEMBERS**

Prof. Dr. Arshad Ahmad**
Prof. Dato Dr. Rashidah Shuib
Prof Khairuddin Mohamad
Prof. Dr. Abdul Rahim Mohd Yusoff
Mr. Wilson Maili Lekoomet
Dr. Hasmahzaiti Omar
Prof. Dr. Jahangir Mirza
Assoc. Prof. Dr. SM Shirazi
Assoc. Prof. Dr Faridah Noor Mohd Noor
Dr. Sobri Harun
Prof Abu Bakar

www.utm.my innovative • entrepreneurial • global

UTM

What are the key areas for cooperation in Sciences in the Post-2015 Development Agenda framework?

How to implement joint activities in sciences to support the SDGs?

How to link Asia and the Pacific with Africa to support South-South cooperation in Sciences?

www.utm.my innovative • entrepreneurial • global

FRAMEWORK

- Guided by the SDGs Post 2015 development
- Noted central focus of SDGs:
  > symbiotic relationships:
  health, gender
- Participatory and dialogue
- Focus on women and youth
- Gender

UTM **General issues**

Health
Poverty
Youth
Sustainable Energy
Gender Issue
Curriculum Development for water resources engineering technology
Groundwater Development
Community Development – Participatory Approach
Mapping of Biodiversity
Food Security in terms of Irrigation and groundwater
Mitigation of extreme events
Traditional water Knowledge – Rainwater harvesting

www.utm.my innovative • entrepreneurial • global

Specific projects

❖**Sustainable and clean, safe water supply from various sources:**

- Research
- Community projects
- Education
- Portal :
  > knowledge dissemination
  > using cyber to connect education programmes
  e.g MOOCS
- Governance

UTM Specific projects

- ❖Biodiversity and Ecology Conservation
- ❖Renewable Future Energy
- ❖Transboundary Water
- ❖Food Security and Livelihood

www.utm.my innovative • entrepreneurial • global

UTM Action Plan

- Research
- Community program
- Education program
- Portal
- Governance
  - Taskforce
  - Awareness program (Target Audience – Women and Youths)

www.utm.my innovative • entrepreneurial • global

UTM How to link South-South and Africa

- Structure e.g secretariat/ task force for joint cooperation
- Specifically managed portal for this cooperation

www.utm.my innovative • entrepreneurial • global

APPENDIX 4 – Slides for Closing Session with Minister

Presentation on Workshop Outcomes and Recommendation to Minister of Education II Malaysia
by
Prof. Dr. Zulkifli bin Yusof

Zulkifli Yusop F.ASc
Universiti Teknologi Malaysia
zulyusop@utm.my

60 Participants; 21 countries (Nigeria, Iran, China, India, Uzbekistan, Iran, Japan, Indonesia Sudan)

3 main presentations by
Mr Shabaz Khan of UNESCO Jakarta
UNESCO National Science Strategy

Prof Dato' Ir Mohd Salleh Jaafar
Malaysia Higher Education Program

Dato Ir Lee Yee Cheong
Post 2015 Development Agenda and STI

9 Presentations by UNESCO Category 2 Centre for Natural Sciences

6 presentations by UNESCO chairs

The address three questions

1. Developing a Strategic Plan for UNESCO Natural Sciences Family in Asia and the Pacific
2. **Scoping UNESCO Natural Sciences Centers and Chairs in Malaysia**
3. Delivering Together

Through break up sessions in just One Hour

Water issues getting increasingly complex
e.g Dam construction

Areas of concern for Malaysia

Area	Strength level	Stakeholders	Gap	Action plan/initiative
Sustainable energy	Poor	SEDA, KETTHA, EC	• High dependency on coal and fuel, • Less than 5% renewable energy, • Non-holistic policy	FIT, Energy efficiency program,
Water resource management	Good	DID, SPEN, KETTHA, SPAN, Water companies,	• Weak in demand management, • Poor in recycling and reuse, • High NRW • Poor state and federal coordination, • Environment versus economic development	National WR study, R&D Policy, NWRP,
Climate change	Good	Meteorology, NAHRIM, MMRE, KETTHA, Universities	• Low awareness • Lack of resources for adaptation, mitigation and policy implementation • Lack of technology	IPCC Protocol for Malaysia Climate change policy for Malaysia
Disaster risk reduction and management	Poor	NSC (MKN), DID	• Inadequate prediction technology • Ineffective early warning system • No Umbrella policy • Poor planning and coordination at local scale	Integrated Flood Management, Center of excellent
Ecological economics	Poor	University , Government Agency	• Lack of expertise • Poor understanding among policy makers	

Suggested Areas for Chair or Category Centre

1. Sustainability Science
2. Disaster and Risk Management
3. Water Demand Management

APPENDIX 5 – List of Workshop Participants

Foreign Participants			
NO.	**COUNTRIES**	**PARTICIPANTS NAME**	**ADDRESS**
1	JAPAN	DR. YASUNAO MATSUMOTO	UNESCO Chair on Environmental Management and Infrastructure Development Engineering
2	CHINA	MS. LIU JIE	International Centre on Space Technologies for Natural and Cultural Heritage (HIST)
3	CHINA	DR. LIU CHANG	International Knowledge Centre for Engineering Sciences and Technology
4	INDONESIA	MR. HERY HARJONO	Asia-Pacific Centre for Ecohydrology (APCE)
5	INDONESIA	DR IGNASIUS SUTAPA	Asia-Pacific Centre for Ecohydrology (APCE)
6	IRAN	PROF. MOHAMMAD HOSSEIN SARRAFZADEH	UNESCO Chair on Water Reuse at the University of Tehran
7	NIGERIA	DR. OMOGBEMI OMOLOJU YAYA	Regional Centre for Integrated River Basin Management (RC-IRBM)
8	IRAN	MR. MAJID LABBAF KHANEIKI	International Centre on Qanats and Historic Hydraulic Structures (ICQHS)
9	SUDAN	PROF. SAMEH KANTOUSH	On behalf of UNESCO Chair in Sudan (Dr. Abdalla)
10	INDIA	PROF. P. C. KESAVAN	UNESCO-Cousteau Ecotechnie Chair for Ecotechnology
11	KENYA	MR. WILSON LEKOOMET	Kenya Water Institute
12	UZBEKISTAN	DR. BIRUNIY FAYZULLAEV	UNESCO Chair on Physics and Astronomy
13	IRAN	DR. HASAN KHAKBAZ	Isfahan Regional Centre for Technology Business Incubators & Science Parks Development (IRIS)
14	INDONESIA	ALAIN MICHEL TCHADIE (UNESCO JA-KARTA)	UNESCO Jakarta
15	INDONESIA	DINANTI ERAWATI (UNESCO JAKARTA)	UNESCO Jakarta
16	INDONESIA	JOANA VITORICA (UNESCO JAKARTA)	UNESCO Jakarta
17	INDONESIA	MR. SHAHBAZ KHAN (UNESCO JAKARTA)	UNESCO Jakarta

Centre Of Excellence (CoE) IPT			
NO.	**INSTITUTION**	**PARTICIPANTS NAME**	**ORGANIZATION**
1	USM	DR NOOR ADELYNA MOHAMMED AKIB	Centre for Global Sustainability Studies 5th Floor, Hamzah Sendut Library (New Wing) Universiti Sains Malaysia 11800 Pulau Pinang
2	USM	PROF. DR. HASLAN BIN ABU HASSAN	Centre for Education & Training in Renewable Energy Energy Efficiency & Green Technology Universiti Sains Malaysia 11800 Pulau Pinang
3	UKM	PROF. DR. ABU BAKAR MOHAMED	Future of Energy Universiti Kebangsaan Malaysia 43600 UKM Bangi Selangor
4	UKM	DR. RAHMAH EL-FITHRI	Institute for Environment and Development (LESTARI) Universiti Kebangsaan Malaysia 43600 UKM Bangi Selangor
5	UM	DR. SUGUMARAN MANICKAM	Institute of Biological Sciences Fakulti Sains Level 2, Komplex Pengurusan Penyelidikan dan Inovasi Universiti Malaya 50603 Kuala Lumpur
6	UM	DR. AZIDAH ABDUL AZIZ	Institute of Biological Sciences Fakulti Sains Level 2, Komplex Pengurusan Penyelidikan dan Inovasi Universiti Malaya 50603 Kuala Lumpur
7	UM	DR. HASMAHZAITI OMAR	Institute of Biological Sciences Fakulti Sains Level 2, Komplex Pengurusan Penyelidikan dan Inovasi Universiti Malaya 50603 Kuala Lumpur
8	UKM	PROF. DATO' DR. KAMARUZZAMAN SOPIAN	Solar Energy Research Institute Department of Mechanical and Materials Engineering Universiti Kebangsaan Malaysia 43600 UKM Bangi Selangor
9	UMK	DR. CHAN HOY YEN	Solar Energy Research Institute Department of Mechanical and Materials Engineering Universiti Kebangsaan Malaysia 43600 UKM Bangi Selangor

Centre Of Excellence (CoE) IPT			
NO.	**INSTITUTION**	**PARTICIPANTS NAME**	**ORGANIZATION**
10	UNITEN	PM. DR. MARLINDA ABDUL MALEK	Department of Civil Engineering Universiti Tenaga Nasional Jalan IKRAM-UNITEN 43000 Kajang Selangor
11	UMT	DR. MOHD ASAMUDIN B. A. RAHMAN	Pusat Pengajian Kejuruteraan Kelautan Universiti Malaysia Terengganu (UMT) 21030 Kuala Terengganu Terengganu
12	USM	PROF. DATO' DR. RASHIDAH BINTI SHUIB	Pusat Penyelidikan Wanita & Gender (KANTAI) Blok C02 Universiti Sains Malaysia 11800 USM Pulau Pinang
13	UNISZA	PROF. DR. MOHD EKHWAN BIN TORIMAN	Universiti Sultan Zainal Abidin (UNISZA) Kampus Gong Badak 21300 Kuala Terengganu
14	UM	PM. DR. FARIDAH NOOR MOHD NOOR	Department of English Language, Faculty of Language & Linguistics University of Malaya 50603 Kuala Lumpur
15	UKM	PROF. DATO' DR. MAZLIN BIN MOKHTARI	Institute for Environment and Development (LESTARI) Universiti Kebangsaan Malaysia 43600 UKM Bangi Selangor

Higher Institution Centre of Excellence (HiCoe)			
NO.	**INSTITUTION**	**PARTICIPANTS NAME**	**ORGANIZATION**
1	UMT	PROF. DR. ZULFIGAR BIN YASIN	Institut Oceanografi dan Sekitaran (INOS) Universiti Malaysia Terengganu 21030 Kuala Terengganu
2	UM	PROF. DR. HEW WOOI PING	Pusat Pengkhususan Tenaga Kuasa Termaju (UMPEDAC) Tingkat 4, Wisma R&D UM Universiti Malaya Jalan Pantai Baru, 59990 Kuala Lumpur
3	USM	PROF. DR. NOR AZAZI ZAKARIA	River Engineering and Urban Drainage Research Centre (REDAC) Engineering Campus, Universiti Sains Malaysia Seri Empangan, 14300 Nibong Tebal

Centre Of Excellence (CoE) UTM			
NO.	**INSTITUTION**	**PARTICIPANTS NAME**	**ORGANIZATION**
1	UTM	PM. DR. SOBRI BIN HARUN	Department of Hydraulic and Hydrology Faculty of Civil Engineering Universiti Teknologi Malaysia 81310 UTM Johor Bahru
2	UTM	PROF. DR. ARSHAD BIN AHMAD	Institute of Future Energy Level 2, Block N29, Faculty of Chemcial Engineering Universiti Teknologi Malaysia 81310 UTM Johor Bahru
3	UTM	PROF. DR. JAHANGHIR MIRZA	UTM Construction Research Centre Level 1, Block C09 Faculty Of Civil Engineering Universiti Teknologi Malaysia 81310 UTM Johor Bahru
4	UTM	PROF. DR. MADZLAN BIN AZIZ	Research Alliance in Frontier Materials Level 2, Sultan Ibrahim Chancellery Building Universiti Teknologi Malaysia 81310 UTM Johor Bahru
5	UTM	PROF. DR. ABDUL RAHIM B HJ MOHD YUSOF	Research Institute for Sustainable Environment (RISE) Level 2, Sultan Ibrahim Chancellery Building Universiti Teknologi Malaysia 81310 UTM Johor Bahru
6	UTM	PROF. DR. ZULKIFLI BIN YUSOP	Research Alliance in Resources Sustainability Level 2, Sultan Ibrahim Chancellery Building Universiti Teknologi Malaysia 81310 UTM Johor Bahru
7	UTM	DR IRINA SAFITRI ZEN	Institute Sultan Iskandar Level 4, Dewan Sultan Iskandar Universiti Teknologi Malaysia 81310 UTM Johor Bahru

Representatives			
NO.	**INSTITUTION**	**PARTICIPANTS NAME**	**ORGANIZATION**
1	UM	PROF. DR. ZANARIAH ABDULLAH	Faculty of Science Universiti Malaya 50603 Kuala Lumpur
2	UPM	PM. DR. HALIMAH MOHAMED KAMARI	Faculty of Science Universiti Putra Malaysia 43400 Serdang Selangor
3	UTHM	PM. DR. ALONA CUEVAS LINATOC	Universiti Tun Hussein Onn Malaysia Parit Raja, Batu Pahat 86400 Johor
4.	MOE	SHARIZAD SULAIMAN	Malaysian National Commission for UNESCO
4	UPNM	PROF. DR. FAUZIAH BINTI HAJI ABDUL AZIZ	Centre for Research Management & Innovation Universiti Pertahanan Nasional Malaysia Kem Sungai Besi 57000 Kuala Lumpur

UTM Official Invitation			
NO.	**INSTITUTION**	**PARTICIPANTS NAME**	**ORGANIZATION**
1	UTM	PROF. DATUK IR. DR. WAHID OMAR	Vice-Chancellor Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru
2	UTM	PROF. DR. AHMAD FAUZI ISMAIL	Deputy Vice-Chancellor (Research & Innovation) Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru

UTM Secretariat			
NO.	**INSTITUTION**	**SECRETARIAT NAME**	**ADDRESS**
1	UTM	NOR AZIZAH BINTI ISMAIL	Office of Deputy Vice Chancellor (Research and Innovation) Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru
2	UTM	MOHD FARID BIN RAHMAT	Office of Deputy Vice Chancellor (Research and Innovation) Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru
3	UTM	FADZLIN BINTI MD SAIRAN	Office of Deputy Vice Chancellor (Research and Innovation) Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru
4	UTM	CHEW TEONG HAN	Office of Deputy Vice Chancellor (Research and Innovation) Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru
5	UTM	MOHAMAD FAIRUZ BIN HAMZAH	Office of Deputy Vice Chancellor (Research and Innovation) Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru
6	UTM	IZAD IMRAN BIN ISMAIL	Office of Deputy Vice Chancellor (Research and Innovation) Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru
7	UTM	NALINA A/P PARAMASIVAN	Office of Deputy Vice Chancellor (Research and Innovation) Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru
8	UTM	MUHAMMAD TAUFIK BIN HASHIM	Office of Deputy Vice Chancellor (Research and Innovation) Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru

APPENDIX 6

Presentation on International Science, Technology and Innovation Centre for South-South Cooperation Under The Auspices of UNESCO
by
Dato Dr. Samsudin Tugirman, Director of ISTIC, Malaysia

ISTIC Management Structure

ISTIC Programmes

Under the Overarching Framework of UN Millennium Development Goals (MDG), UN Sustainable Development Goals (SDG) and WSSD WEHAB (Water, Energy, Health, Agricultural and Biodiversity Management), ISTIC has emphasized on Institutional and Human Resources Capacity Building in South Countries.

ISTIC Priority Programmes:

- **STI Policy, emphasized national STI Policy formulation implementation and monitoring, including the role of women**
- **Inquiry Based Science Education (IBSE) and Science, Technology, Engineering and Mathematics (STEM) Education;**
- **Women in STI**
- **Maintenance of Infrastructure**
- **Technoprenuership**

Rationale for ISTIC Priority Programmes

➢**STI Policy**
Many South countries do not have STI Policy to guide national development , those that have do not pay enough attention to SMEs and women. ISTIC Partners: Korean Institute for S&T Policy Evaluation and Planning (KISTEP), UTM Pentana School

➢**Women in STI**
Many South countries do not have policies on contribution of women in national development. ISTIC Partners: NAM Institute for Empowerment of Women (NIEW), UN Women

➢**Maintenance of Infrastructure**
Infrastructure projects abound in the developing world, but there is little indigenous capacity to maintain them in good working order. ISTIC Partner: Engineering Staff College of India (ESCI) Hyderabad, Institute of Engineers Malaysia (IEM)

➢**Technoprenuership**
Researchers need training in grant application writing and business plan formulation. ISTIC Partner : USAINS, University of Science Malaysia, MTDC

➢**Inquiry Based Science Education (IBSE)**
Assuring the supply pipeline of creative and dispersing STI professionals. ISTIC Partners: IAP SEP Council, Fondation La main a la pate, France

ISTIC Programmes

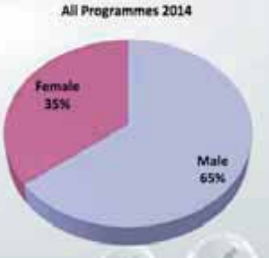
As of April 2015

Programme	Program Count	Participants	Countries	Partners
STI Policy	23	690	77	KISTEP; PAPC; MOST); IESCO; IOB
Women in STI	2	220	22	NIEW; MOST:
IBSE / STEM	20	624	52	LAMAP; SECAM; FUS; IAP SEP Council; MOE; Malaysia NatCom; QITEP in Science
Maintenance of Infrastructure	9	333	50	ESCI; IEM; COIB; EIM; ERIT; COREN
Technoprenuership	12	359	50	USAINS; TWAS; FUS; ICDS; CARISCIENCE; NCSTE/MTDC/YACHAY
Briefings to ED / UNESCO	3	130	60	Malaysian Permanent Delegation to UNESCO & UNESCO Paris
ISTIC 5th Anniversary Conference	1	250	87	MOST); MOE; NatCom; IOM; USAINS; IOS; ASM
	52	2434		

KISTEP - Korean Institute for S&T Policy Evaluation and Planning
PAPC - PHMA Asia Pacific Consulting, Malaysia
TWAS - The World Academy of Sciences, Italy
NIEW - NAM Institute for Empowerment of Women, Malaysia
LAMAP - La Main a la Pate Fondation, France
SECSAM - Regional Centre for Education in Science and Mathematics
ESCI - Engineering Staff College of India
IEM - The Institution of Engineers, Malaysia
ASM - Academy of Sciences Malaysia
CARISCIENCE - The Network of R&D Institutions in the Basic Sciences in the Caribbean
MTDC - Malaysia Technology Development Corporation
COIB - Construction Industry Development Board Malaysia
USAINS - of University of Science Malaysia, Malaysia
FUS - Future University Sudan
MOST) - Ministry of Science, Technology and Innovation, Malaysia
MOE - Ministry of Education, Malaysia
NatCom - National Makaysia Commission for UNESCO
IOM - Islamic Development Bank
IBSE/STEM - Islamic Educational, Scientific and Cultural Organization
ASM - Academy of Sciences Malaysia
QITEP in Science - [illegible]
YACHAY - City of Knowledge, Ecuador
NSCTE - National Center in Science and Technology Evaluation

Participation by Region

Participation by Gender



ISTIC Publications

European Discoveries

The Discoveries in Islamic Countries

When the Earth Rumbles

ISTIC in collaboration with TWAS (The World Academy of Sciences) has published two volume of Innovations in Science and Technology in Developing Countries.

Memorandum of Understanding (MoU)

KISTEP Korea Institute of S&T Evaluation and Planning

FONDATION La main à la pâte
POUR L'ÉDUCATION À LA SCIENCE

ISTIC's Strategic Partners

56 Local and International organizations

ISTIC Programmes 2015

ISTIC- UNESCO INTERNATIONAL CONFERENCE / FORUM / SEMINAR ON UN POST 2015 AGENDA

Malaysia UNESCO Day
Hari UNESCO Malaysia 2015
22-24 May 2015, Kuala Lumpur, Malaysia

Governing Board Meeting
ISTIC Governing Board Meeting
25 May 2015, Kuala Lumpur, Malaysia

IBSE / STEM
International Science Technology Engineering Mathematics (STEM) High Level Policy Forum in "Evidence-Based Science Education in Developing Countries"
26-27 May 2015

Women in STI
International Forum on Harnessing Women's Talents in Science, Technology and Innovation
25-26 May 2015

ISTIC Programmes 2015

STI Policy
ISTIC Certified Training Programme on Science, Technology and Innovation (STI) Policy and Management for Developing Countries (ICPS)
17-24 August 2015, Kuala Lumpur, Malaysia

KISTEP-ISTIC Science and Technology Policy Programme for High Level Policy Maker
23-27 November 2015, Jeju Island, Korea

Technopreneurship
Training Workshop on Technopreneurship for Latin American Countries
16-20 March 2015, Quito, Ecuador

Training Workshop on Technopreneurship for South Countries
5-9 October 2015, Kuala Lumpur, Malaysia

ISTIC-TWAS STI Competition "Successful Innovation in Science & Technology in Developing Countries
10-11 October 2015, Kuala Lumpur, Malaysia

Maintenance of Infrastructure
Training Workshop on Maintenance of Infrastructure
30 March – 2 April 2015, Kuala Lumpur, Malaysia

ISTIC Programmes 2015

Inquiry-Based Science Education (IBSE)
Training Workshop on Developing Thinking Skills in Science Education for Sustainable Development
14-18 September 2015, Bogor, Indonesia

Training Workshop on Innovative Teaching & Learning of Science through IBSE for Teacher Trainers
26-30 October 2015, Negeri Sembilan, Malaysia

Women in Science, Technology and Innovation
Training Workshop on Developing Woman's Talents in the Science, Technology and Innovation
3-6 August 2015, Kuala Lumpur, Malaysia

Briefing to Permanent Delegation to UNESCO 2015
Briefing to Permanent Delegation to UNESCO Paris,
8-10 September 2015, Paris, France

Collaboration with the Category-2 Centre

- ISTIC looks forward to strategic collaboration with other Category-2 Centres of UNESCO.
- Collaboration on win-win basis, sharing of resources
- Recommend/Propose relevant participants to participate in ISTIC programmes.
- Currently we are establishing collaboration with IRIS (Isfahan Regional Center for Technology Incubators and Science Parks Development, under the auspices of UNESCO)

ISTIC Website

ISTIC Official Website
http://istic-unesco.org

ISTIC Website

ESTABLISHMENT "I DO, I DISCOVER"
LA MAIN A LA PATE MIRROR WEBSITE IN ENGLISH

http://istic-ibse.org

RECOGNITION

French Development Bank Highlighting ISTIC

For Malaysia, ISTIC represents a symbolic recognition of its singular political position and the quality of its training institutions among myriad innovation-oriented governmental agencies – from small and medium enterprises (SME) to local government administrations.

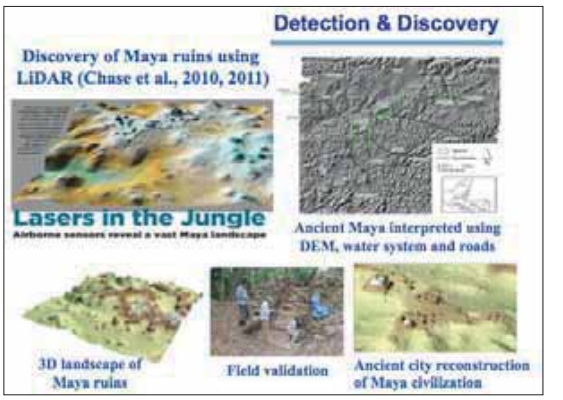
Malaysia's prominence also proves strategic for UNESCO: the country is an excellent interlocutor for multilateral cooperation with the South.

According to UNESCO's Director General, I. Bokova, "Malaysia has made science, technology and innovation a cornerstone of its development strategy." UNESCO's global recognition of Malaysia's distinctive South-South cooperation has great value for this emerging country.

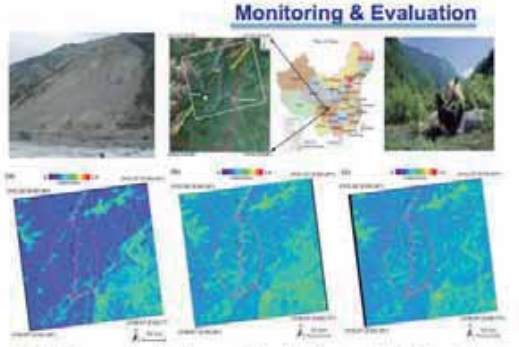
"We are small, but we continue to harbour very big dreams," commented Dr. Lee Yee Cheong, Chairman of the governing board of ISTIC at the institution's fifth anniversary ceremony in May 2013.

APPENDIX 7

Presentation on *"Space Technology: A Powerful Tool for Smart Management of UNESCO Properties"*
by
Ms Liu Jie, International Centre on Space Technology for Natural and Cultural Heritage under the auspices of UNESCO (HIST), China



Monitoring & Evaluation



InSAR for assessing Wenchuan earthquake deforestation in Sichuan Giant Panda Site (20.66% destroyed, 3% recovery rate)

Documentation & Conservation

Interactive digital sites using Virtual Reality Technique

Forbidden City

Shanhai Gate of Great Wall

Ancient Yangzhou , the Grant Canal

Open Initiative

In 2001, UNESCO and ESA jointly launched the "Open Initiative on the use of space technologies to support the World Heritage Convention".

The Main Goals:

1. Space for World Heritage sites (From Space 2 Place)
2. Space for the people managing the sites (Space 4 People)
3. Space for our young generation (Space 4 Young Generation)

2. HIST: A New Platform for UNESCO Properties

On 24 July, 2011, *the International Centre on Space Technologies for Natural and Cultural Heritage* under the auspices of UNESCO was established in Beijing.

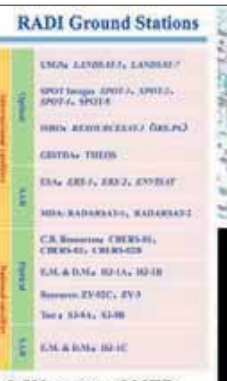
The center is hosted by and built on the premises of Institute of Remote Sensing and Digital Earth (RADI) . Its aim is to provide technical services to UNESCO and its less developed member states on using space technologies for UNESCO properties, namely World Heritage Sites, World Biosphere Reserves and Global Geoparks.

Institute of Remote Sensing and Digital Earth(RADI), Chinese Academy of Sciences

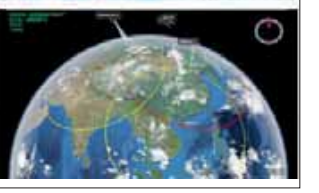
RADI is one of the world's best Earth Observation institutions. Staffed by 1200 researchers and graduate students , it possesses large scientific facilities, including two remote sensing airplanes and three satellite ground stations, able to receive satellite remote sensing data that geographically cover 70% of Asia.

Hosting Institute

RADI Ground Stations

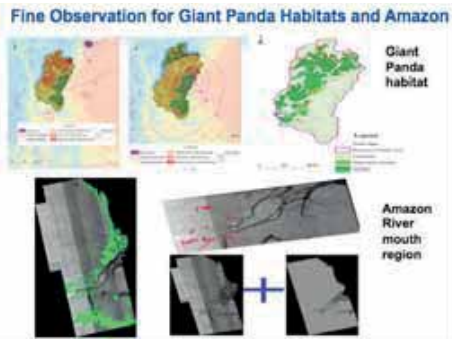


2.5M scenes,300TB



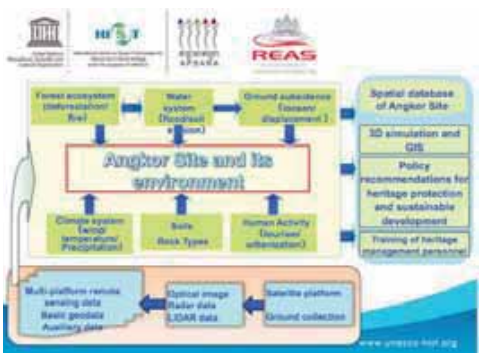

Tasks of HIST
• Scientific Research: Assisting developing countries with space technologies to improve their capacity for the conservation, management and sustainable development of World Heritage.
• Capacity Building: help developing countries' policy makers and practitioners to strengthen capacity building on the use of space technologies for better conservation and management of the properties;
• Education and Publicity: The research results will be used for education and publicity.


Atlas of Remote Sensing for World Heritage: China


Fine Observation for Giant Panda Habitats and Amazon
Giant Panda habitat
Amazon River mouth region


Smart Management of Cultural Heritage Sites in Italy and China
Land subsidence in Luoyang City
Hangu Gate by Terrestial LIDAR
Longmen Grottoes 3D modeling
Suspected relics along Silk Road


Remote Sensing for Environment of Angkor Site
➢ MOU between HIST and APSARA during the 37th session of the UNESCO World Heritage Committee in Phnom Penh, June 2013
➢ Cambodian Deputy Prime Minister H. E. Dr. Sok An met with the HIST/RADI delegation


REAS
Angkor Site and its environment
Spatial database of Angkor Site
3D simulation and GIS
Policy recommendations for heritage protection and sustainable development
Training of heritage management personnel


Low-cost "virtual ground station" for Smart Management
➢ 2Mbits Internet connection
➢ two computers and a large monitor or TV screen
➢Distributing real time quick-look imagery of high resolution
RADI's three stations receive data from satellites covering 70% of Asia
Installed in Kirgizstan, Mongolia, Belgrade, and Cambodia

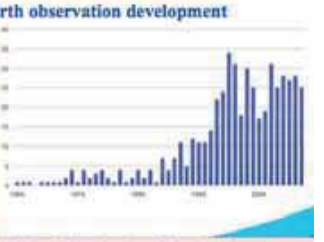

Capacity Building
October 2012, the 1st International Workshop on Space Technologies for Management and Conservation of World Heritage took place in Beijing. 20 people from 15 developing countries in Asia participated in the Workshop.

Huangshan Dialogue on UNESCO Designated Places and Sustainable Development

In collaboration with RADI, World Heritage Center, MAB Program of UNESCO and the Global Geopark Network assisted by UNESCO, HIST organized the Huangshan Dialogue at a World Heritage Site and Global Geopark - Huangshan, China from 26-30 May 2014. The Dialogue is the first ever international event that addresses the challenges to and prospects for the conservation and sustainable development of UNESCO designated places.

The way forward

Opportunity: Earth observation development



Up to 2011, 514 satellites launched since 1964

Satellite Missions (1962-2012)

3. The way forward

Challenges

- Advisory Bodies and States Parties have limited capacity to use space technologies.
- There is a lack of accurate boundary data.
- Despite a wealth of data and case studies, there is still a lack of robust data at appropriate spatial and temporal resolutions.
- Need for powerful computing capacity
- Need to build on the momentum of individual case studies in order to mainstream the use of space technologies at the institutional level.

Earth Observation Road of China

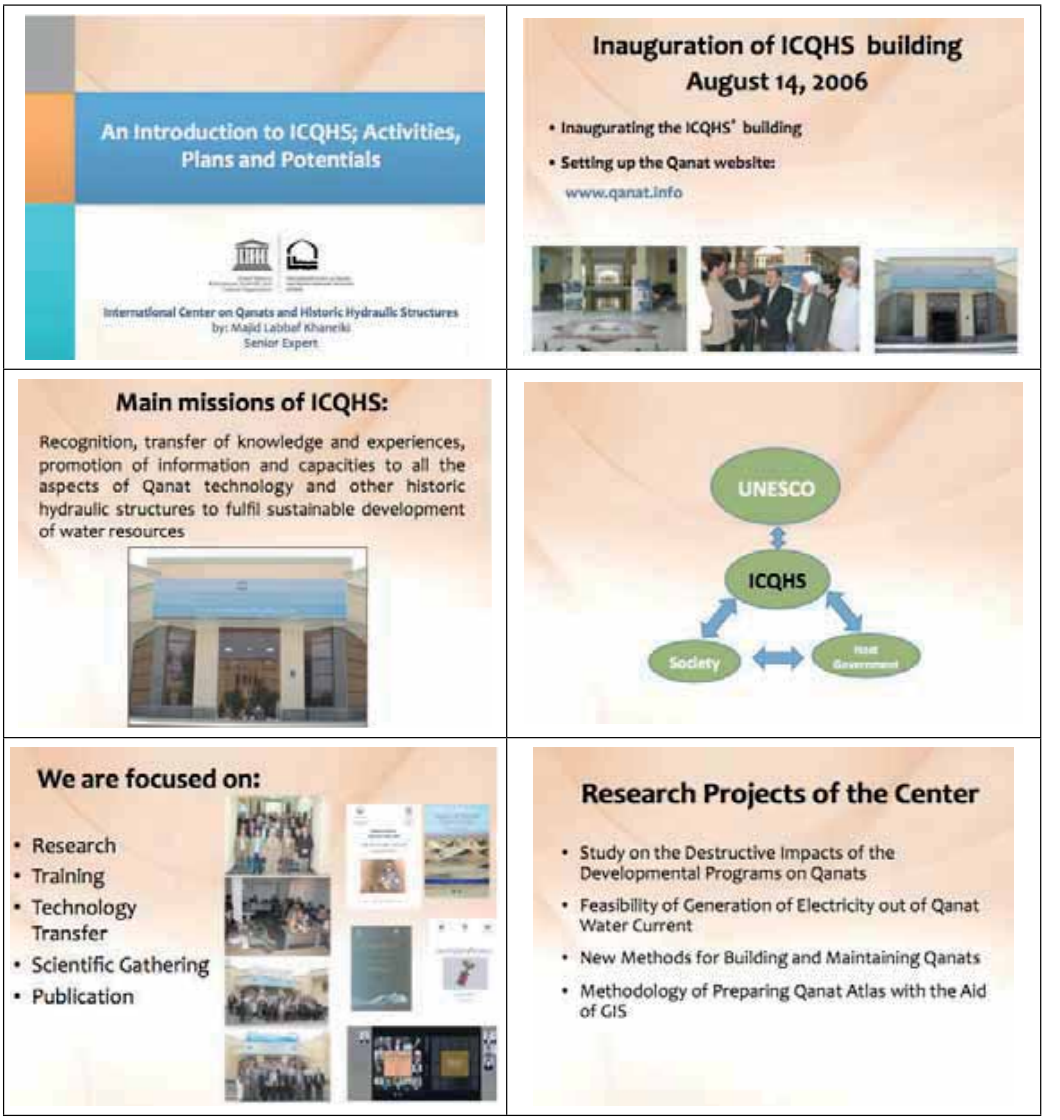
Summary

Smart management of UNESCO properties would benefit from space technologies, particularly the development of Earth observation.

HIST would like to work closely with related space organizations and our international partners to make more significant contribution for the Smart management of UNESCO properties.

APPENDIX 8

Presentation on *"An Introduction to ICQHS Activities, Plans and Potentials"* by Mr Majid Labbaf Khaneiki, International Centre on Qanat and Historic Hydraulic Structures (ICQHS), Iran



Holding Training Courses

Qanat Training Center

Holding Training Courses

- Training course on historic hydraulic structures
- Training course on qanat technology – stage 1
- Training course on qanat technology – stage 2

Holding Training Courses

- Training course to acquaint the consulting engineers with nomination of historic hydraulic structures on the UNESCO world heritage list
- International Training course on qanat
- Training course on necessity of preservation of historic hydraulic structures

Holding the Scientific Gatherings

International Conference on Traditional Knowledge for Water Resources Management

Publication

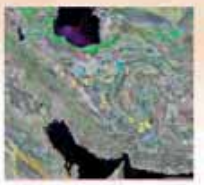
- The book of "qanat from practitioners' point of view"
- A survey on the qanats of Bam from engineering point of view
- The book of Veins of Desert
- Proceedings of the conference on transboundary waters and international laws (Persian version)

Publication

- The book of Kerman qanat practitioners
- The book of Qanat in its Cradle
- Proceedings of the International conference on traditional knowledge for water resources management

Study Projects

- Nomination of qanats of Iran on the UNESCO world heritage list
  - ❑ Qanat of Qasabe: Gonabad
  - ❑ Qanat of Ebrahimabad: Arak
  - ❑ Qanat of Vazvan and Mozdabad: Isfahan
  - ❑ Qanat of Arvaneh: Ardestan
  - ❑ Qanat of Moein: Ardestan
  - ❑ Qanat of Zarch: Yazd
  - ❑ Qanat of Hassanabad: Yazd
  - ❑ Qanat of Gohar rig: Kerman
  - ❑ Qanat of Akbarabadi: Bam
  - ❑ Qanat of Ghanbar abad and Sheykhi: Bam



Study Projects

- Compiling the school texts regarding qanat knowledge (acquainting the students with qanat heritage)
- Preparing the comprehensive guidelines for determining the qanat buffer zone and setting out a relevant system
- Documenting the information of the selected qanats of Yazd province
- Incorporating the modern technologies into qanat construction
- Preparing a methodology for qanat encyclopedia (in Persian and English)
- Footprint of culture in the development and maintenance of qanats

Compatibility of ICQHS activities with the 8th phase of IHP (2014-2021)

- Theme 2: Groundwater in a changing environment

Focal area 2-1	Focal area 2-2	Focal area 2-3	Focal area 2-4
Enhancing sustainable groundwater resources management	Addressing strategies for management of aquifers recharge	Adapting to the impacts of climate change on aquifer systems	Promoting groundwater quality protection

- Theme 3: Addressing Water Scarcity and Quality

Focal area 3-2	Focal area 3-3
Dealing with present water scarcity and developing foresight to prevent undesirable trends	Promoting tools for stakeholders involvement and awareness and conflict resolution

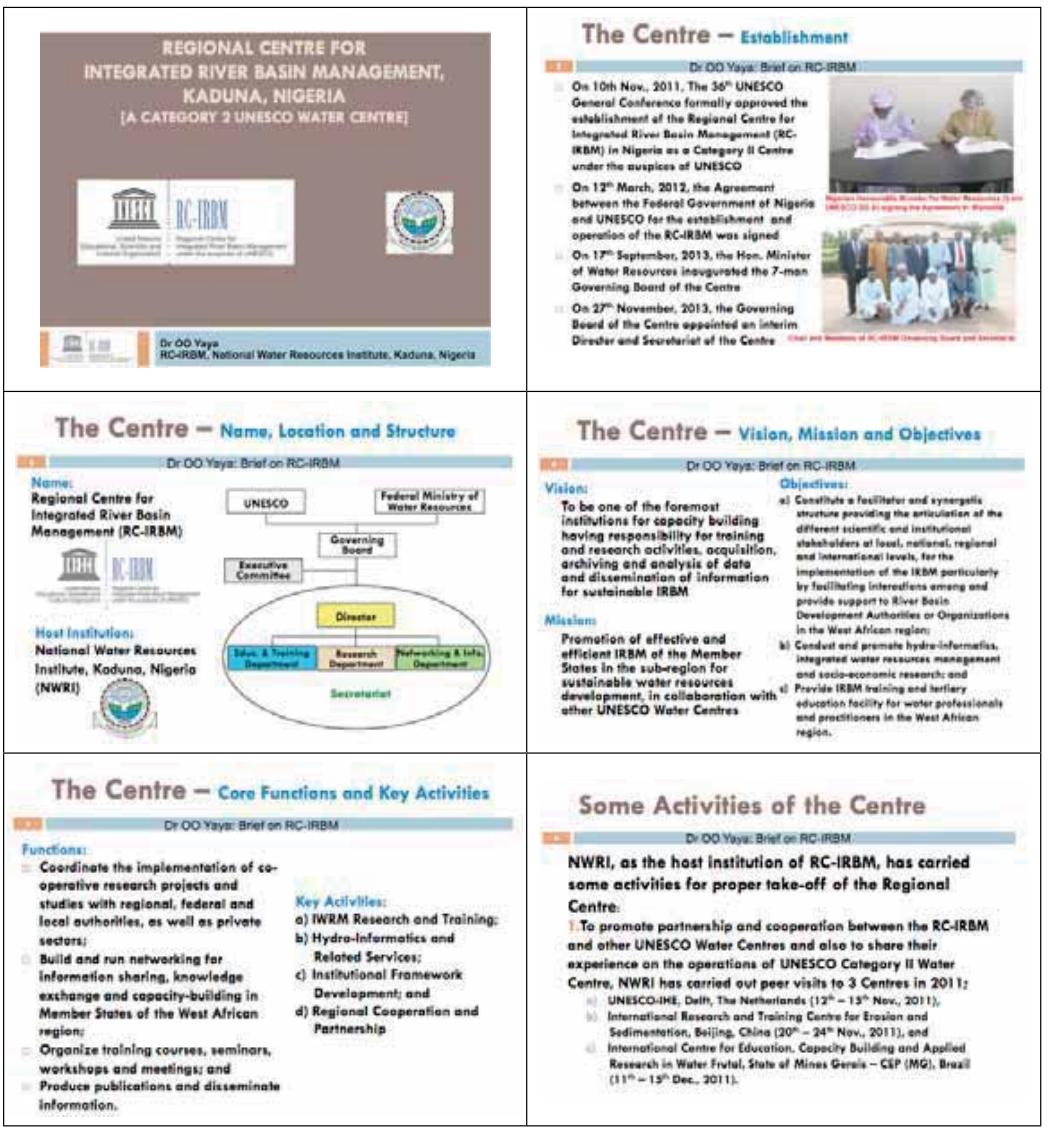
Potentials of ICQHS:

- Holding workshops on preservation and maintenance of Qanat and other historic hydraulic structures and the lessons from which we can still learn to cope with such new problems as climate change
- Holding training courses on the traditional water knowledge
- Conducting research and study projects in cooperation with international organizations
- Organizing field courses for university students at international level
- Advising students' thesis
- Holding short term courses on historic hydraulic structures in universities

Thank you for your attention

APPENDIX 9

Presentation on *"Regional Centre for Integrated River Basin Management, Kaduna, Nigeria (A Category 2 UNESCO Water Centre)"*
by
Dr. Omogbemi Omolojo Yaya, RC-IRBM, National Water Resource Institute, Nigeria



Some Activities of the Centre

Dr OO Yaya: Brief on RC-IRBM

2. Strengthen collaboration and partnership between Training and Research Institutions in Nigeria by supporting the activities of the National Water Resources Capacity Building Network (NWRCBNet);

University of Ilorin has started running the MSc. (IWRM) Curriculum developed by the Centre

Some Activities of the Centre

Dr OO Yaya: Brief on RC-IRBM

4. Promoting and supporting multi-disciplinary and inter-agency studies on Reservoir Sedimentation, Downstream Impact Assessments and Development of Reservoir Operational Codes for Major Reservoirs in Nigeria;

Some Activities of the Centre

Dr OO Yaya: Brief on RC-IRBM

3. Supporting WRM Training and Education through:
   a) Hosting UNESCO-IHP "International Seminar on "Modular Curriculum Development of Water Education for Integrated Water Resources Management" held from 28th to 30th June, 2011;
   b) Hosting UNESCO-IHP "International Workshop on Implementing Modular Curricula for Tertiary, Technical and Vocational Education in Integrated Water Resources Management (21-24 May, 2012);

Some Activities of the Workshop

Dr OO Yaya: Brief on RC-IRBM

a) Development of the course content for Master's Degree Programme in Integrated Water Resources Management (IWRM); and
b) Development of post-graduate diploma course contents in the areas of Integrated Water Resources Management (IWRM), Sanitation and Hygiene Promotion, Gender Mainstreaming in WRM, Water Quality Management, Irrigation and Drainage Technology, Dams and Reservoir Management, Hydrogeology and Drilling Technology, River and Watershed Hydraulics, and IWRM at the river basin level.

Some Activities of the Centre

Dr OO Yaya: Brief on RC-IRBM

5. Hosting the Secretariat of the Africa HELP (Hydrology for Environment, Life and Policy) Basins Coordination Unit
   a. Identified Gurara Basin in Central Nigeria as a potential Help Basin;
   b. Developed a Concept Note on Gurara River Basin Water Allocation Studies and made contacts with Jaroslav Cerni Institute (JCI), Belgrade, Serbia for collaboration; and
   c. Started contacts with European Regional Centre for Ecohydrology (ERCE), Lodz, Poland and International Center for Integrated Water Resources Management (ICIWaRM), Washington D.C., U.S.A for possible collaboration on Ecohydrology/ Ecological Engineering using the Gurara Basin

6. Developed an MoU with Foundation for Conservation of Nigerian Rivers (FCNR), a Nigerian NGO for collaboration and partnership on (i) capacity development, applied research and expert services; and (ii) Postgraduate Programs on IRBM

Some Activities of the Centre

Dr OO Yaya: Brief on RC-IRBM

7. Organized a 2-day Workshop in collaboration with UNESCO Regional Office, Abuja on Strengthening the UNESCO-IHP and MAB National Committees for Effective Water Governance, Biosphere Reserve Management and Biodiversity from 26th to 27th March, 2013.

Some Activities of the Centre

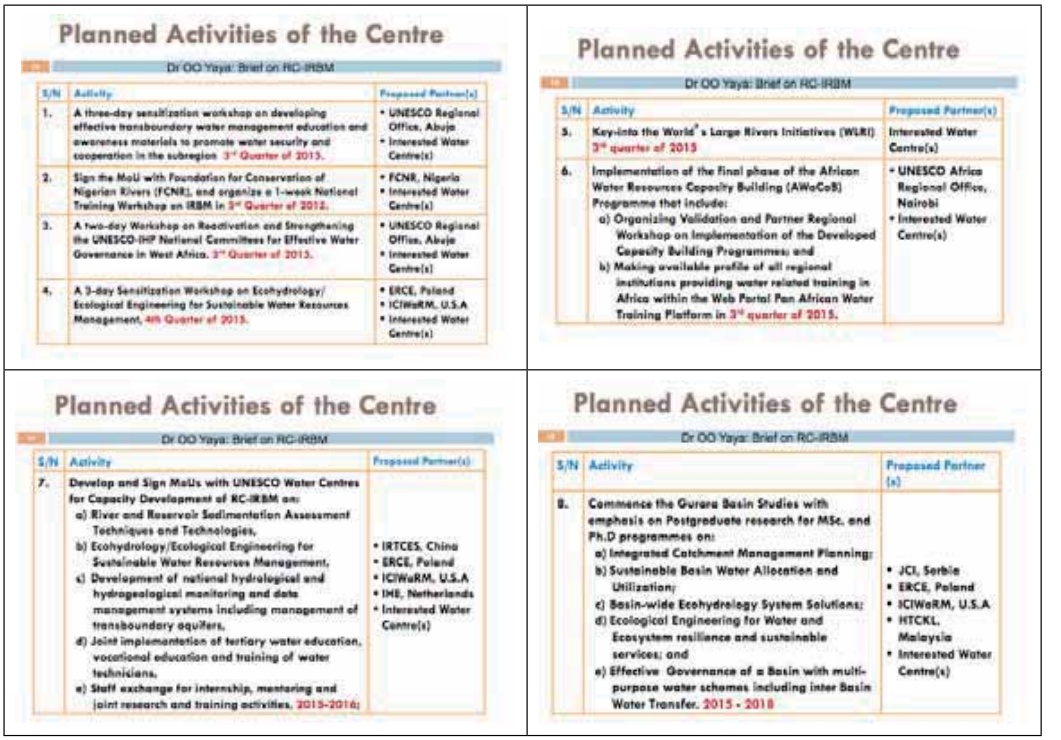
Dr OO Yaya: Brief on RC-IRBM

- Coordinated the African Water Resources Capacity Building (AWaCaB) Programme in which capacity gaps in Water resources management were assessed in 7 African countries from August 2013 to September, 2014 by National Experts and Regional Reviewers

Some Activities of the Centre

Dr OO Yaya: Brief on RC-IRBM

- Organized a Sensitization Workshop in collaboration with UNESCO Regional Office, Abuja on Transboundary Water Security and Cooperation in the West African sub-Region for Ministries in Nigeria, Ghana, Cote d Ivoire, Benin and Togo responsible for Water Resources as well as IHP National Committees, River Basin Organizations (RBOs), Academia, the Media and Government Agencies mainly from Nigeria.


Planned Activities of the Centre
Dr OO Yaya: Brief on RC-IRBM
S/N
Activity
Proposed Partner(s)
1.
A three-day sensitization workshop on developing effective transboundary water management education and awareness materials to promote water security and cooperation in the subregion 3rd Quarter of 2013.
• UNESCO Regional Office, Abuja
• Interested Water Centre(s)
2.
Sign the MoU with Foundation for Conservation of Nigerian Rivers (FCNR), and organize a 1-week National Training Workshop on IRBM in 3rd Quarter of 2013.
• FCNR, Nigeria
• Interested Water Centre(s)
3.
A two-day Workshop on Reactivation and Strengthening the UNESCO-IHP National Committees for Effective Water Governance in West Africa. 3rd Quarter of 2013.
• UNESCO Regional Office, Abuja
• Interested Water Centre(s)
4.
A 3-day Sensitization Workshop on Ecohydrology/ Ecological Engineering for Sustainable Water Resources Management, 4th Quarter of 2013.
• ERCE, Poland
• ICIWaRM, U.S.A
• Interested Water Centre(s)
Planned Activities of the Centre
Dr OO Yaya: Brief on RC-IRBM
S/N
Activity
Proposed Partner(s)
5.
Key-into the World's Large Rivers Initiatives (WLRI) 3rd quarter of 2015
Interested Water Centre(s)
6.
Implementation of the final phase of the African Water Resources Capacity Building (AWaCaB) Programme that include:
a) Organizing Validation and Partner Regional Workshop on Implementation of the Developed Capacity Building Programmes; and
b) Making available profile of all regional institutions providing water related training in Africa within the Web Portal Pan African Water Training Platform in 3rd quarter of 2015.
• UNESCO Africa Regional Office, Nairobi
• Interested Water Centre(s)
Planned Activities of the Centre
Dr OO Yaya: Brief on RC-IRBM
S/N
Activity
Proposed Partner(s)
7.
Develop and Sign MoUs with UNESCO Water Centres for Capacity Development of RC-IRBM on:
a) River and Reservoir Sedimentation Assessment Techniques and Technologies,
b) Ecohydrology/Ecological Engineering for Sustainable Water Resources Management,
c) Development of national hydrological and hydrogeological monitoring and data management systems including management of transboundary aquifers,
d) Joint implementation of tertiary water education, vocational education and training of water technicians,
e) Staff exchange for internship, mentoring and joint research and training activities, 2013-2016;
• IRTCES, China
• ERCE, Poland
• ICIWaRM, U.S.A
• IHE, Netherlands
• Interested Water Centre(s)
Planned Activities of the Centre
Dr OO Yaya: Brief on RC-IRBM
S/N
Activity
Proposed Partner (s)
8.
Commence the Gurara Basin Studies with emphasis on Postgraduate research for MSc. and Ph.D programmes on:
a) Integrated Catchment Management Planning;
b) Sustainable Basin Water Allocation and Utilization;
c) Basin-wide Ecohydrology System Solutions;
d) Ecological Engineering for Water and Ecosystem resilience and sustainable services; and
e) Effective Governance of a Basin with multi-purpose water schemes including inter Basin Water Transfer. 2015 - 2018
• JCI, Serbia
• ERCE, Poland
• ICIWaRM, U.S.A
• HTCKL, Malaysia
• Interested Water Centre(s)

APPENDIX 10

Presentation on *"Asia Pacific Centre for Ecohydrology (APCE)"*
by
Mr. Hery Harjono, Category 2 Centre of UNESCO / Indonesian Institute of Sciences (LIPI), Indonesia

OUR APPROACH

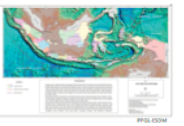
1. Quantification of Source
2. Technological innovation based on Ecohydrology and Socio-Cultural Approach.
3. Increasing Awareness through cultural values adoption

Water Resources in Indonesia

- Related to its natural settings, the existence of water resources in Indonesia are associated with
  - Volcanic chain: Catchment area are relatively small (western part of Sumatra, Java, Bali, Nusa Tenggara, Banda arc, North Molluca).
  - Continental shelf: Large peatlands areas in Sunda Shelf: Eastern part of Sumatra an Kalimantan) and In Sahul shelf (South Papua).
  - Small islands (volcanic islands and coral reefs)

Demography

1. Indonesia consists of about 17.000 islands with five main Islands (Sumatra, Java, Kalimantan, Sulawesi and Papua) and more than 400 ethnics
2. Population: Indonesia 237.6 millions (Java: 136,6; Sumatra: 47.7; Sulawesi: 17.4; Kalimantan: 13.8; Papua: 3.6; Bali-NT: 13.1; Others: 5.5)
3. Indonesia: Urban 37%, Rural 67%. Java: Urban 46%, Rural 54%; Bali: Urban 60%, Rural 40%; NTB: Urban 47%, Rural 53% (BPS, 2010)
4. Main issues: Big cities (Urban area), Urbanized islands, Peat lands, and small Island



DEMOSITE I: SAGULING RESERVOIR

- Ecohydrology demonstration site at the downstream area of Cibitung River catchment and its land cover types situation (Paddy field, tourism spot, settlement and home industries, farmland and forest)
- It represents 4P (Public, People and Private participation)

Demosite II: Community Base Development

Problem of water resources in Islamic boarding school

- Indonesia : 26.000 Pondok Pesantren (islamic boarding school :IBS)
- Mostly located at rural area
- It cover around 26.000.000 people related in IBS
- Case study : Ar-Risalah IBS
  - Number of people : 850
  - Needs of clean water : 85 m3/day
- Problem of wastewater
  - 85 m3/day discharged directly to the environment
  - High degree of pollution
- Urgent to be solved : how to procure and manage clean water an waste water in islamic boarding school

ACTIVITIES

Appropriate Ecotechnology

Semi Arid Area (In Timor)

Artifical Wetland

Touching the heart of "Islamic Community"

International IHP Cource

Hindu Balinese Subak Community

Collaboration

INTERNATIONAL

- UNESCO Jakarta Office
- CATEGORY II CENTRE
  - HTCKL, Malaysia
  - RCUWM, Iran
  - ICHARM, Japan
- ILEC, Japan
- UQ - Australia

NATIONAL

- Indonesian Institute of Sciences (LIPI)
- Ministry of Public Work (PU)
- Ministry of Environment and Forestry (
- Local government
  - DI Yogjakarta
  - Bintan
- Universities
  - UGM, IPB, UNIMOR, UNPARA, UNLAM

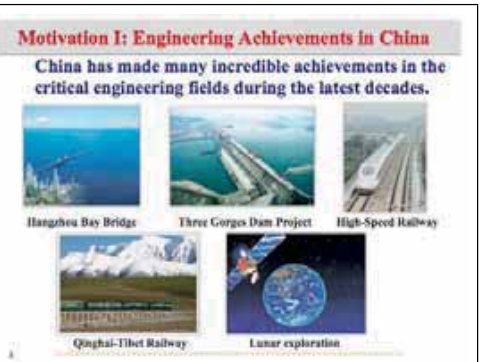
Message from the Past

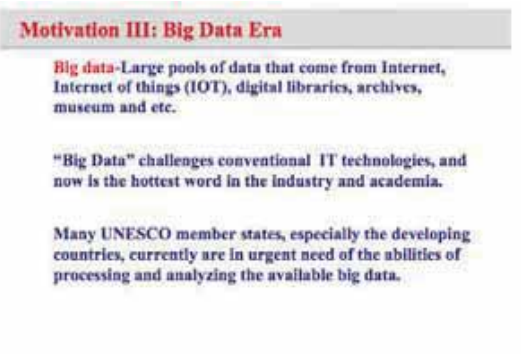
First Jakarta city dug well (1627)

Courtesy of Fajar Lubis

APPENDIX 11

Presentation on *"International Knowledge Centre for Engineering Sciences and Technology (IKCEST)"*
by
Dr. Liu Chang, China





Signing and Unveiling Ceremony of IKCEST

The Signing and Unveiling Ceremony of International Knowledge Centre for Engineering Sciences and Technology (IKCEST) under the Auspices of UNESCO was held in Beijing on June 2, 2014.

Main Task I: to establish an international engineering and technology resources hub

IKCEST will cooperate with research institutes, enterprises and institutions of higher learning worldwide to build a widely connected international hub for engineering and technology resources, thus laying a global data foundation from which to operate.

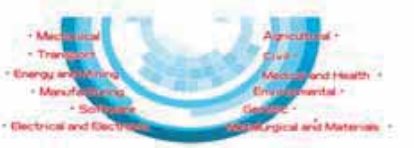
Main Task II: to establish a public data service platform, and to develop the technology for mining and analyzing knowledge from big data

The public data service platform provides the engineering and technology resources hub with technology support, data connections, data management and development, as well as other technological services.

In addition, it serves to develop ground-breaking technology for large data mining and improvements in data-mining and policy-making ability.

Main Task III: to cooperatively build professional knowledge service systems, and to build capacity in developing countries

On the basis of the engineering science and technology resources hub and the public data service platform, IKCEST will pool engineering and technology institutions in different fields to focus on sustainable development and especially on promoting capacity-building for developing countries..



Main Task IV: to foster interdisciplinary engineering talents with big data processing ability

IKCEST will establish a training department, formulate and implement training plans for engineers and managerial staff to enhance their abilities for developing as well as operating and maintaining professional knowledge systems.

Main Task V: to assist UNESCO to fulfill its aims and support its action plans

IKCEST will cooperate with UNESCO's network of Category 1 and Category 2 institutes and centres in support of the organization's efforts towards the attainment of the UN Millennium Development Goals (MDGs) – and in support of peace building, poverty elimination and sustainable development in a globalized world.

- *UN Literacy Decade Program*
- *Decade of Education for Sustainable Development*
- *International Association of Hydrological Sciences*
- *Man and the Biosphere Programme*
- *International Geoscience Programme*
- *Information for All Programme*
- *Sustainable Development of Small Island Developing States*
- *International Basic Sciences Programme*
- *Memory of the World Programme*
- *Local and Indigenous Knowledge Systems*
- .....

What we can do for you and with you:

Provide a information sharing and knowledge service platform

Initial progress in China (CKCEST)

www.ckcest.cn (17 sub-systems so far)

www.ikcest.org

International Conference on Big Data (to be held in November 2015)

International Training Workshops on Big Data (to be held in December 2015)

International Exchanges and cooperation (Signing of MoU)

Contact IKCEST!

liuchang@cae.cn

Please contact IKCEST for further cooperation. ^_^

Now please enjoy the video on the overview of IKCEST.

We sincerely look forward to cooperating with you!

Let's join hands in supporting the Post-2015 development agenda!

APPENDIX 12

Presentation on *"Isfahan Regional Centre for Technology Incubators and Science Parks Development (IRIS)"*
by
Dr. Hasan Khakbaz, Advisor of President of ISTT, Iran

Mission

This regional center intends to prepare the ground for the development of technology incubators and science parks in the region through providing consultations, training courses and capacity building. The center is also going to facilitate the international relations among science parks and incubators with their counterparts in the region.

Objectives of the Center

- Conducting capacity-building
- Providing technical assistance
- Facilitating knowledge transfer
- Supporting research
- Networking
- Information exchange and dissemination

IRIS Activities (Major Activities)

Since of its official establishment in May 2010, IRIS has developed different programs and plans among them the following have already been realized and operational:

- Organizing the official inauguration ceremony
- Inviting ECO countries ambassadors to attend the inauguration ceremony
- Formation of the secretariat of the center
- Allocating a space in ISTT to IRIS and equipping it
- Designing and developing the logo of the center
- Determining the Governing Board members and Director of the center with the cooperation of UNESCO

IRIS Activities (Major Activities)

- Formation of the Governing Board
- Organizing seven meetings of Governing Board members and developing the work plan of the center
- Training Workshops (more than 40 National and International workshops with the attendance of international experts from Japan, South Korea, Germany, UK, Spain, Poland, Romania, Malaysia, China, Tunisia, Australia, etc)
- Designing the website of the center
- Designing and publishing the English and Persian brochures of the center

IRIS Activities (Major Activities)

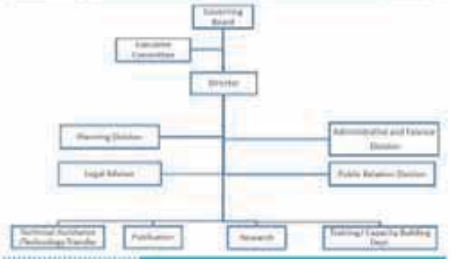
- International Conference on STPs (2011)
- Introducing the center and publicizing its activities in international events and associations including IABP, ASPA, WTA, etc.
- Sheikh Bahai Technopreneurship Festival (Annually)
- Joint Activities with other countries
- Cooperation Agreements
- Administration, Secretariat, website, brochure, logo, building, etc

Geographic Scope of the Center

- At first stage it covers ECO countries. (Including Tajikistan, Turkmenistan, Kyrgyzstan, Uzbekistan, Turkey, Afghanistan, Pakistan, Azerbaijan, Kazakhstan and Iran)

In the second stage it will be expanded to a wider international scope.

The structure of the center



The Governing Board Members

Dr. Vahid Ahmadi
Deputy Minister of Science, Research & Technology, Iran
Chairperson of IRIS

Dr. Lidia Brito
Director of UNESCO Sci. Policy & Sustainable Dev. Division
Representative of Director-General of UNESCO

Dr. Mehdi Keshmiri
President of Isfahan Science & Technology Town (ISTT)

The Governing Board Members

Dr. Herbert Chen
COO of TusPark, Director of IASP China Office- China
Member of IRIS GB

Dr. Mohd Yusoff Sulaiman
President of MiGHT- Malaysia
Member of IRIS GB

Prof . Deog Seong Oh
World Technopolis Association (WTA), Secretary General- S. Korea
Member of IRIS GB

The structure of the center

Dr. Mohammad Javad Omidi
ISTT Vice President for Technology Development
Director of IRIS

Dr. Yaolan Nur
Senior Specialist, Sci. Policy & Sustainable Dev. Div., UNESCO
UNESCO representative

Ms. Mozhgan Yazdanpour
Director of ISTT International Affairs Dept.
Director of IRIS International Affairs Dept.

IRIS Board Meeting

Meeting	Date	Location
1st Meeting	May 2010	Isfahan-Iran
2nd Meeting	May 2010	Isfahan-Iran
3rd Meeting	Nov. 2011	Isfahan-Iran
4th Meeting	Nov. 2012	Kuala Lumpur, Malaysia
5th Meeting	May 2013	Isfahan-Iran
6th Meeting	May 2014	Isfahan- Iran
7th Meeting	May 2015	Tehran- Iran

IRIS International Relations

International Associations & Organizations

IASP

MiGHT

IRIS Future Plans For International Relations

International Associations & Organizations

ISTIC

ASPA-IASP 2011 ISFAHAN

November 2011 - Isfahan, IRAN

- A joint event by IRIS, IASP, ASPA, and ISTT and with collaboration of UNESCO
- The theme of the conference: "The Role of STPs in Regional Development Plans"
- 426 Participants from more than 20 Countries

Visitors to IRIS and ISTT

Prof. Gretchen Kalonji, UNESCO ADG for Science Sector
May 2015

ASPA-IASP 2011 ISFAHAN Conference

International training Workshop in Malaysia

IRIS Training Workshop in Putrajaya, Kuala Lumpur, Malaysia
Organized with the cooperation of MIGHT
8-9 November, 2012 - Kuala Lumpur

MiGHT

Visitors to IRIS and ISTT

Delegation from China Science and Technology Exchnge Center (CSTEC)
May 13, 2015

Visitors to IRIS and ISTT

Madam Flavia Schlegel, UNESCO ADG for Science Sector
May 20, 2015

IRIS Future Plans

- IRIS Training Workshops during Sheikh Bahai Festival
- Training workshop in Pakistan
- Training workshop in Ecuador
- Business Matching for k-based companies in Kazakhstan and Iran
- Business matching with Chinese companies
- Business matching with Korean companies
- Cooperation and partnership with Oman Technopark
- MOU with ISTIC and organizing a joint event
- MOU with African Union and PAN African University
- Publishing IRIS Newsletter
- Organizing a pitching competition and idea show

Visitors to IRIS and ISTT

For more information about IRIS, please visit our website at:
www.unesco-iris.com

My email address:
khakbaz@istt.ir

APPENDIX 13

Presentation on *"UNESCO Category 2 Regional Centre on Groundwater Resources, Education, Training and Research Institute in Kenya"*
by
Mr. Wilson M. Lekoomet, Kenya Water Institute (KEWI), Kenya

UNESCO CATEGORY II REGIONAL CENTRE ON GROUNDWATER RESOURCES, EDUCATION,

TRAINING AND RESEARCH INSTITUTE IN KENYA

PRESENTATION FOR WORKSHOP HELD IN KUALA LUMPUR, MALAYSIA BETWEEN THE 26TH AND 27TH MAY, 2015

By: Wilson M. Lekoomet
Senior lecturer
Kenya Water Institute

Introduction

- In March, 2013 the Government of Kenya (GOK) and UNESCO officially signed an agreement to create a UNESCO Category II regional centre on groundwater resources, education, training and research.
- The centre hosted in KEWI will act as a regional platform for education, research and training on groundwater resources. The centre will be conducting research, offering professional training, providing advice, facilitating technological transfer and promoting regional cooperation and exchange experience.

Introduction Cont.

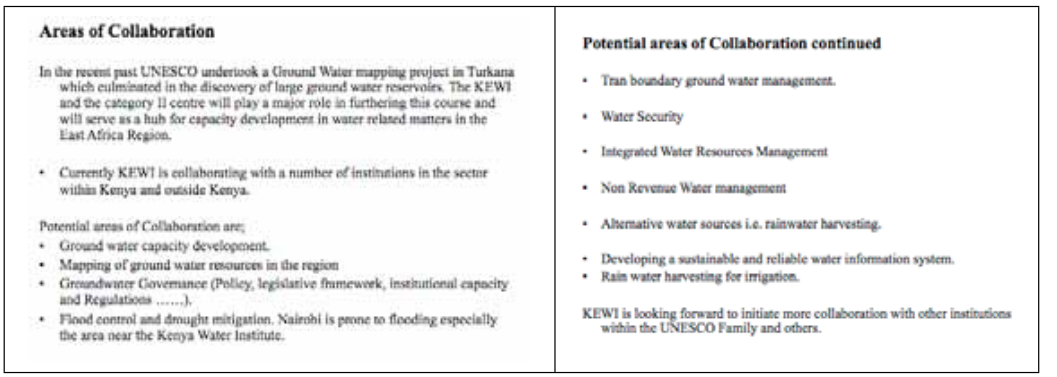
- Some key objectives of the centre include the conduct of research, offering professional training, providing policy advise, facilitating technological transfer and promoting regional collaboration and exchange of experience.
- The specific agreement was signed in March, 2013, however there has been a delay in the operationalisation of the centre activities due to some reforms in the state corporations in Kenya.
- In March 2013 the Kenya government initiated a reform process which is meant to streamline all state corpoporations. This process involves streamlining, and merging of state corporations with a view of improving their efficiencies.
- The state corporation advisory committee (SCAC) has concluded the process and it is anticipated that in due course the centre will be operationalized. The ministry of Environment, Water and Natural Resources is expediating the signing up of the legal documents so as to ensure that the centre is operationalized ASAP.

Centre's of activities

- In the meanwhile, although the centre has not been operationalized Kenya Water Institute (KEWI) has been undertaking a number of activities on behalf of the centre. Some of these activities are;
- Training in groundwater for both the regular students and other clients (short courses) for different clients in Kenya and the region.
- Consultancy services to different clients in kenya.
- Hydro geological surveys for the different clients) in Kenya and the region.
- Capacity building of water experties i.e. Currently a number of KEWI staff are pursuing degree programmes in different Universities in Kenya. This is aimed at improving water ground water Management capacity within the institution andmthe country.So far Seven (7) staff are undertaking undergraduate, seven are undertaking their MSc, while three (3) are undertaking their PhDs.

Centre's of activities cont.

- KEWI was a major partner and contributed in the sponsoring of the National WaterSummit heldmin october, 2014 inTurkana and presented a paper on "Research and capacity building in the water sector" in kenya.
- KEWI has identified an office for the centre, where the coordination of the center's activities will be done.
- In the meanwhile, as we await the commencement of the center's operations a senior officer has been identified to coordinate the center's activities.
- KEWI played a major role in cultural celebrations held at KICC, Nairobi organized by KNATCOM in November, 2014.
- KEWI participated in the Kenya National Commission for UNESCO collaboration marking the 50 years of Kenya and UNESCO collaboration held between 24th November, 2014 and 28th November, 2014 held in Paris.
- The construction of a water resource centre, which will act as a hub for water Resources Research and training is ongoing. The resource center is going to host the offices of the UNESCO Category II center.
- In January, 2015 ten (10) KEWI staff members undertook a tailor made training in groundwater in Naivasha funded by the Netherlands Fellow ship programme (Niche – Nuffic programme).
- In collaboration with other partners (JKUAT and living Water African Region), KEWI is in the process of establishing a joint five year project whoose purpose is to develop capacity for the drilling technology experts. Under this project about twelve experts will be trained at phd level, twenty at master level andmabout 150 at advanced diploma level.



Areas of Collaboration

In the recent past UNESCO undertook a Ground Water mapping project in Turkana which culminated in the discovery of large ground water reservoirs. The KEWI and the category II centre will play a major role in furthering this course and will serve as a hub for capacity development in water related matters in the East Africa Region.

- Currently KEWI is collaborating with a number of institutions in the sector within Kenya and outside Kenya.

Potential areas of Collaboration are;

- Ground water capacity development.
- Mapping of ground water resources in the region
- Groundwater Governance (Policy, legislative framework, institutional capacity and Regulations ……).
- Flood control and drought mitigation. Nairobi is prone to flooding especially the area near the Kenya Water Institute.

Potential areas of Collaboration continued

- Tran boundary ground water management.
- Water Security
- Integrated Water Resources Management
- Non Revenue Water management
- Alternative water sources i.e. rainwater harvesting.
- Developing a sustainable and reliable water information system.
- Rain water harvesting for irrigation.

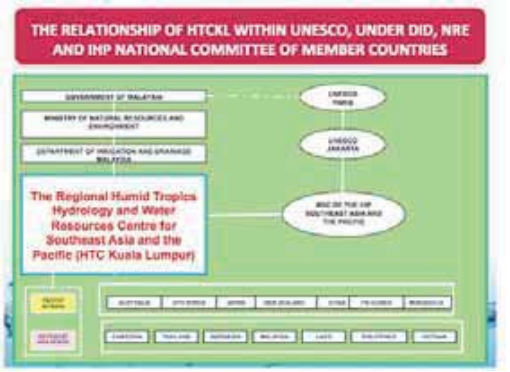
KEWI is looking forward to initiate more collaboration with other institutions within the UNESCO Family and others.

APPENDIX 14

Presentation on *"HTCKL Work Related to Science and UNESCO"*
by
Dr. Mohamed Roseli Zainal Abidin, Humid Tropics Centre Kuala Lumpur (HTCKL), Department of Irrigation and Drainage Malaysia


Transformation in HTC: (Since June 2009)
Under UNESCO and DID
Decide on Focal Area
Integrated Water Resources Management (IWRM), Urban Stormwater Management, Ecohydrology, River Waste Water Management, Humid Tropics and Water Education
The scope of activities includes applied research, advising, continuing education and software development.
Obligations and functions
to coodinate the implementation of cooperative hydrological and water resources research projects and activities;
to network with IHP National Committees and other similar centres for exchange of scientific and technical information on research results;
to organize training courses, seminars, workshops and meetings for knowledge and technology transfer; and
to produce related hydrological and water resources publications and media for distributions.
TRANSFORMATION, ASPIRATION VALUE, CREATIVITY, INNOVATION


HTCKL ORGANIZATION CHART
Men: 7 no.
Ladies: 7 no.
Total: 14 no.


THE RELATIONSHIP OF HTCKL WITHIN UNESCO, UNDER DID, NRE AND IHP NATIONAL COMMITTEE OF MEMBER COUNTRIES
The Regional Humid Tropics Hydrology and Water Resources Centre for Southeast Asia and the Pacific (HTC Kuala Lumpur)

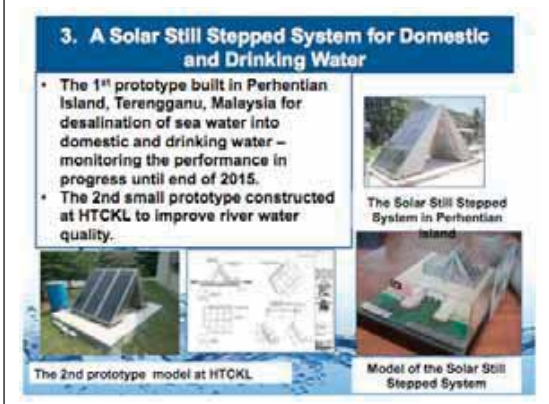

IHP-VIII Strategic Plan 2014-2021
Cognizant of the lead role played by the International Hydrological Programme (IHP) for almost four decades in the development of hydrology as a science and integrated water resources management tools at the global level.
HTCKL involved in Theme I, III, IV, V and VI


UNESCO-IHP CROSS-CUTTING PROGRAMMES RELATED TO HTCKL
1. UNESCO SWITCH-in-Asia: Urban Water Management; SWITCH – Sustainable Water Management Improves Tomorrow's Cities Health.
2. AP FRIEND: Asia Pacific Flow Regimes from International Experimental and Network Data.
3. UNESCO-HELP River Basin (Langat River): Hydrology for the Environment, Life and Policy.
4. Integrated Water Resources Management (IWRM)
5. Promoting and Implementing Post-2015 Sustainable Development Agenda especially for Sustainable Development Goal No 6: Ensure availability and sustainable management of water and sanitation for all.
The SWITCH-in-Asia initiative provides an integrated and innovative concept towards the development of sustainable water management in urban areas.

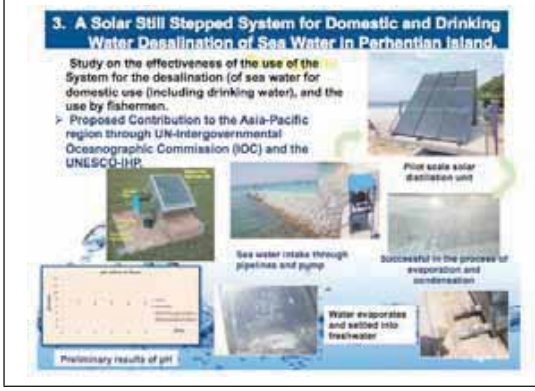

1. INTEGRATED STORMWATER MANAGEMENT ECOHYDROLOGY (ISME) IN HTCKL
Monitoring the performance completed in December 2012
Under SWITCH-In-Asia

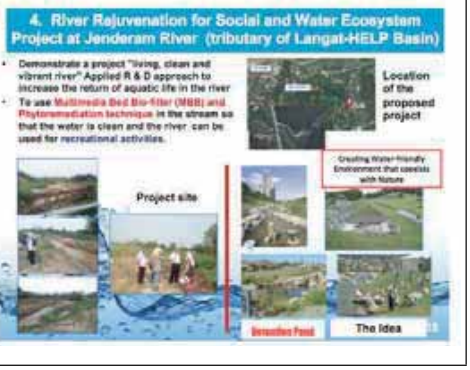

Integrated Stormwater Management Ecohydrology Project at HTCKL officiated by HE Irina Bokova, Director General UNESCO on 21 May 2013
Releasing fish in HTC's constructed


2. PROPOSED UPSCALING BIOTECHNOLOGY SME AT LANGAT-HELP RIVER BASIN
Under SWITCH-in-Asia and Langat-HELP River Basin
PROPOSED MINI WATER FRONT PARK

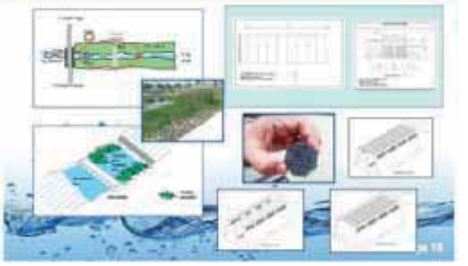

3. A Solar Still Stepped System for Domestic and Drinking Water
The 1st prototype built in Perhentian Island, Terengganu, Malaysia for desalination of sea water into domestic and drinking water – monitoring the performance in progress until end of 2015.
The 2nd small prototype constructed at HTCKL to improve river water quality.
The Solar Still Stepped System in Perhentian Island
The 2nd prototype model at HTCKL
Model of the Solar Still Stepped System


3. A Solar Still Stepped System for Domestic and Drinking Water - small prototype constructed at HTCKL


3. A Solar Still Stepped System for Domestic and Drinking Water Desalination of Sea Water in Perhentian Island
Study on the effectiveness of the use of the System for the desalination (of sea water for domestic use (including drinking water), and the use by fishermen.
Proposed Contribution to the Asia-Pacific region through UN-Intergovernmental Oceanographic Commission (IOC) and the UNESCO-IHP.
Pilot scale solar distillation unit
Sea water intake through pipelines and pump
Successful in the process of evaporation and condensation
Water evaporates and settled into freshwater
Preliminary results of pH


4. River Rejuvenation for Social and Water Ecosystem Project at Jenderam River (tributary of Langat-HELP Basin)
Demonstrate a project "living, clean and vibrant river" Applied R & D approach to increase the return of aquatic life in the river
To use Multimedia Bed Bio-filter (MBB) and Phytoremediation technique in the stream so that the water is clean and the river can be used for recreational activities.
Location of the proposed project
Project site
The Idea

4. Using Multimedia Bed Biofilter (MBB) in Stream Channel to Improve River Water Quality



Construction Photos of 1st Phase

5. Phytoremediation: A Green Technology to Remove Environmental Pollutants Using Vetiver Grass

- One of the phytoremediation measure to improved river water quality is to use vetiver grass as shown by the figures.
- HTCKL will carry out laboratory study and field study on the effectiveness of the vetiver grass

6. Reused of Alum Sludge

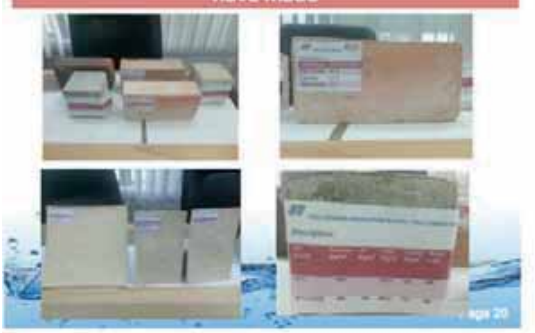
- Alum sludge, the by-product from water treatment plant could contaminate water resources due to improper dumping.
- Alum sludge reused:
  - for brick manufacturing; (soil protection erosion bricks, building construction bricks, walking pavement)
  - for clay roof tiles manufacturing;
  - for pottery, etc.
  - HTCKL with a University partner is carrying out a novel approach to reuse alum sludge in manufacturing of soil protection bricks/blocks and building material using admixtures and the thermal curing

BENEFIT OF THE RESEARCH

This research will benefit in terms of providing a novel ingredient of raw material for soil protection bricks/ bricks and building material manufacturers. As such, the research will contribute to the following:

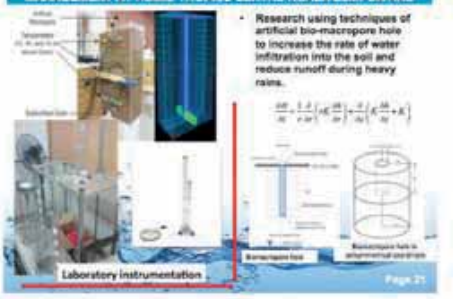
- To reduce the pollution which cause by alum sludge
- To solve the problem of disposal of alum sludge which face by water treatment plant
- To contribute efforts towards green technology that will have direct positive impacts towards the environment, manufacturer as well as the consumer.
- To give the manufacturers an alternative choice for selecting raw material (clay or alum sludge).

6. Reused of Alum Sludge : The product that we have made



7. STUDY ON ARTIFICIAL BIO-MACROPORE FOR STORMWATER MANAGEMENT AT HUMID TROPICS CENTRE KUALA LUMPUR AND

- Research using techniques of artificial bio-macropore hole to increase the rate of water infiltration into the soil and reduce runoff during heavy rains.

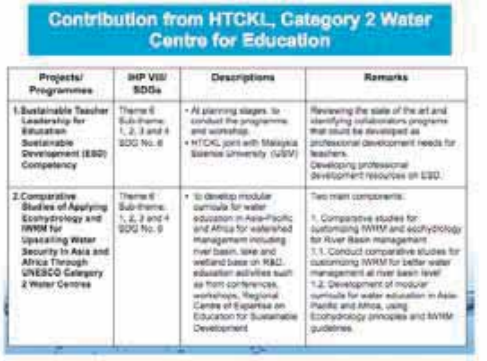



7. STUDY ON ARTIFICIAL BIO-MACROPORE FOR STORMWATER MANAGEMENT AT HUMID TROPICS CENTRE KUALA LUMPUR AND
Infiltration measurements
HTC 3a


8. Study On Performance of Gross Pollutant Trapping Devices Vs. Life Cycle Cost and Gross Pollutant Management Strategies Knowledge Database


8. Study On Performance of Gross Pollutant Trapping Devices Vs. Life Cycle Cost and Gross Pollutant Management Strategies Knowledge Database

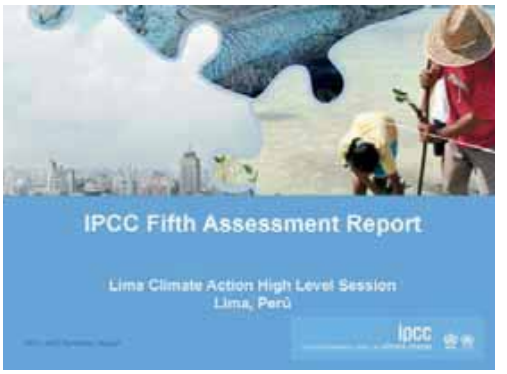

9. Integrated Stormwater Management Eco Hydrology Design Aid and Database System
PROVIDE TOTAL SOLUTIONS
EXAMPLE OF METHODOLOGY FLOWCHART

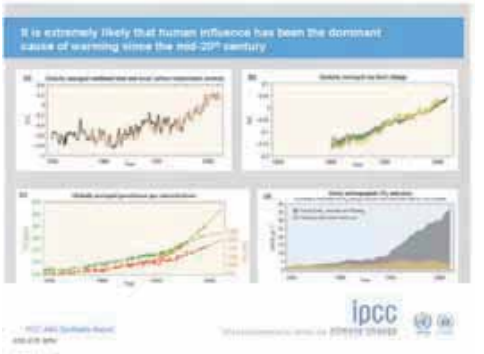

Contribution from HTCKL, Category 2 Water Centre for Education
Projects/ Programmes
IHP VIII/ SDGs
Descriptions
Remarks
1.Sustainable Teacher Leadership for Education Sustainable Development (ESD) Competency
Theme 6 Sub-theme: 1, 2, 3 and 4 SDG No. 4
• At planning stages, to conduct the programme and workshop.
• HTCKL joint with Malaysia Science University (USM)
Reviewing the state of the art and identifying collaborators programs that could be developed as professional development needs for teachers.
Developing professional development resources on ESD.
2.Comparative Studies of Applying Ecohydrology and IWRM for Upscaling Water Security in Asia and Africa Through UNESCO Category 2 Water Centres
Theme 6 Sub-theme: 1, 2, 3 and 4 SDG No. 6
• to develop modular curricula for water education in Asia-Pacific and Africa for watershed management including river basin, lake and wetland base on R&D, education activities such as from conferences, workshops, Regional Centre of Expertise on Education for Sustainable Development
Two main components:
1. Comparative studies for customizing IWRM and ecohydrology for River Basin management
1.1. Conduct comparative studies for customizing IWRM for better water management at river basin level
1.2. Development of modular curricula for water education in Asia-Pacific and Africa, using Ecohydrology principles and IWRM guidelines

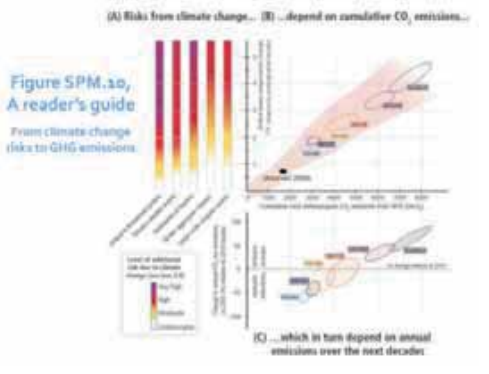

THANK YOU
DR. HJ. MOHAMED ROSELI BIN ZAINAL ASIDIN
Email: drroseli@water.gov.my
H/P: +6019 2709677
website: http://htckl.water.gov.my
HUMID TROPICS CENTRE KUALA LUMPUR

APPENDIX 15

Presentation on *"IPCC Fifth Assessment Report, Lima Climate Action High Level Session Lima Peru"*
by
Dr. Rajendra K. Pachauri, India








Evaluation of costs and limitations
Ambitious mitigation is affordable and translates into delayed but not foregone growth (entails losses in global consumption of median value 1.7 %in 2030)
Estimated costs of mitigation do not account for the benefits of reduced climate change
Many impacts, such as loss of human lives, cultural heritage, and ecosystem services, are difficult to value and monetize, and thus they are poorly reflected in estimates of losses
ipcc
Climate change and equity
Issues of equity, justice, and fairness arise with respect to mitigation and adaptation.
Different past and future contributions to the accumulation of GHGs in the atmosphere
Varying challenges and circumstances
Different capacities to address mitigation and adaptation
Options for equitable burden-sharing can reduce the potential for the costs of climate action to constrain development.
ipcc
The window for action is rapidly closing
65% of our carbon budget compatible with a 2° C goal already used
Total Carbon Budget:
2900
GtCO2
Amount Used 1870-2011:
1900
GtCO2
Amount Remaining:
1000
GtCO2
ipcc
IPCC Fifth Assessment Report
Synthesis Report
ipcc

APPENDIX 16

Presentation on *"Enviromental Management and Infrastructure Development Engineering, Saitama University Japan"*
by
Prof. Dr. Matsumoto Yasunao, Japan

Introduction of UNESCO Chair on Environmental Management and Infrastructure Development Engineering, Saitama University, Japan

Location of Saitama University

UNESCO Chair at Saitama U.

- On Environmental Management and Infrastructure Development Engineering
- Established in 1997
- Objectives:
  - To promote collaboration between the researchers and the research team of the university and other universities and institutions
  - To attract prospective students to our existing International Graduate Program on Civil and Environmental Engineering
  - To share experiences and knowledge in environmental management and infrastructure development engineering through research and education

International Graduate Program on Civil and Environmental Engineering

- The program started in 1992
- All education is given in English
- Students enroll for
  - Master's & Doctoral Programs
- Scholarships (Travel cost, Tuition fee, Living expenses)
  - Ministry of Education, Culture, Sports, Science and Technology (MEXT) – 7 per annum
  - Asian Development Bank (ADB-JSP) – 11 per annum
  - World Bank (JJ/WBGSP) – 4+ per annum
  - Others
- Total enrollment (till April 2015):
  - Approximately 500 students from 26 countries

Academic Staff Organisation

(As of 1 April, 2015)

Personnel	Total	GRR	EDPM	SEMM	HEE	TP
Professor	10	3	2	3	1	1
Associate Professor	7	3	1	3	1	0
Assistant Professor	9	2	1	2	2	2
Total	26	8	4	7	4	3

GRR: Geotechnical and Geosphere Research Group
EDPM: Earthquake Disaster Prevention & Mitigation Group
SEMM: Structural Engineering, Mechanics and Materials Group
HEE: Hydraulic and Environmental Engineering Group
TP: Transportation & Planning Group

Research Groups

Geotechnical and Geosphere Research Group

Earthquake Disaster Prevention & Mitigation Group

Transportation & Planning Group

Research Groups

Structural Engineering, Mechanics and Materials Group

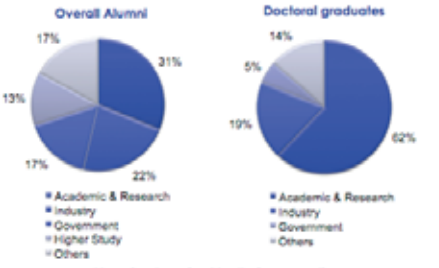
Hydraulic and Environmental Engineering Group

Number of Students in CEE

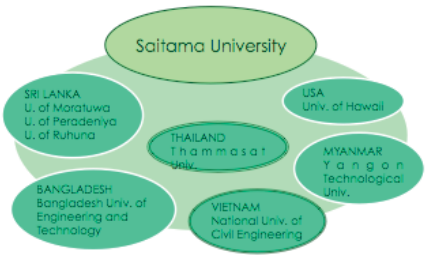
Nationality	Undergraduate	Master	Doctor
Japanese	330	48	2
Foreign	9	27	20
Total	339	75	22

(As of 1 May, 2014)

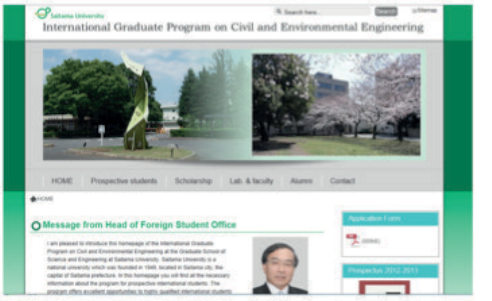
Employment after graduation



International Collaborative Graduate Program (ICGP)

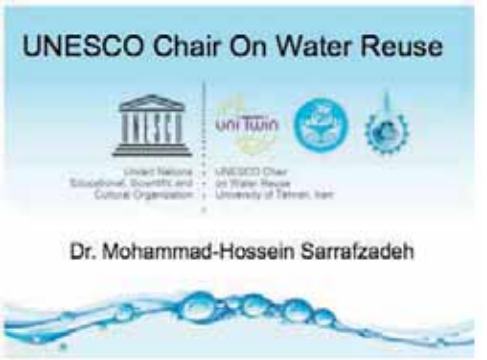


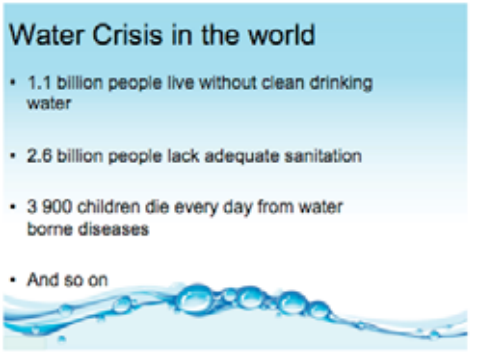
More detailed information available at http://www.civil.saitama-u.ac.jp/fso/

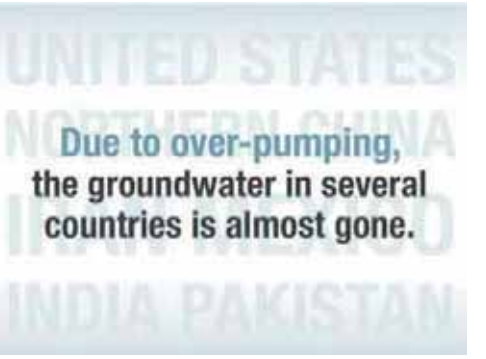


APPENDIX 17

Presentation on *"UNESCO Chair on Water Reuse, University of Tehran"*
by
Prof. Dr. Mohammad-Hossein Sarrafzadeh, Iran







Types of Activities we do

- Post graduate teaching program
- Training
- Research
- Institutional development (strengthening of information/ library services, laboratories, etc.)

Objectives

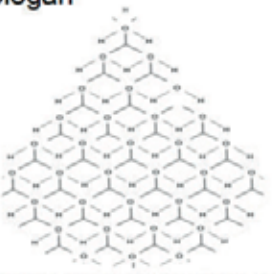
- **Development Objectives (Long-term)**
  - Gathering the available expertise in the field of water reuse and facilitate information transfer
  - Creation of networks between water institutions to facilitate exchange of experience and information nationally, regionally and internationally.
  - Conduct and contribute to workshops and conferences of national, regional and international nature to push forward exchange of experience

Objectives

- Specific Objectives (Short-term)
  - **Technological developments for water reuse**
  - **Save water (by recycling and groundwater recharge)**
  - **Low-cost methods for sanitary disposal of municipal wastewater**
  - **Reducing pollution of rivers and other surface water**
  - **Provides a reliable water supply to farmers**

Our Strategy

Our Slogan



Water for Peace and Cooperation Not War and Disintegration

Our activities

Celebrating World and National Water Day:
Water and sustainable development

Publicize our water research works

- Annual conference on water reuse
- Research journal on water reuse (Persian language)
- Participate in Research exhibitions

Publicize our water research works …

- Session on Desalination Technologies in collaboration with Water Institute and Scientific Deputy of President
- Professional workshop on "Water reuse role on preventing environmental harmful effects" during 4th environmental engineering exhibition

Other kind of activities …

- "Light & Water" Photography competition 2015 (International year of Light)

United Nations Educational, Scientific and Cultural Organization

International Year of Light 2015

Other kind of activities …

- The group of environmentalists named:

"Ghatreh"

Means droplet

Future events

- 12th International Conference on Membrane Science and Technology (Nov. 2015)
- Water, Sustainable Development, and Healthy Life summit (in collaboration with "Advancement of Science and Technology in the Islamic World Secretary")

March 2016

Questions and expectations from such workshop:

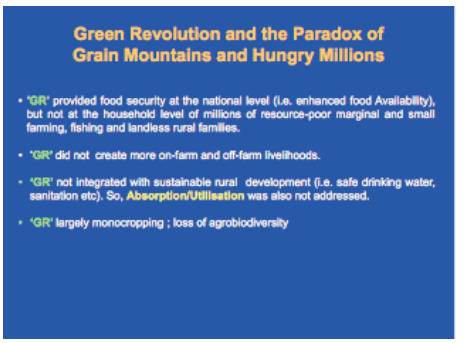
1. How could things be done differently - tomorrow - in water sector with the help of UNESCO?
2. What are the obstacles or challenges related to water cooperation instead water war and the role of UNESCO to solve them?
3. What are the skills and capacities required within the UNESCO water family to keep peace and prevent water conflicts?
4. How UNESCO interventions can make development activities more sustainable in regards to water?

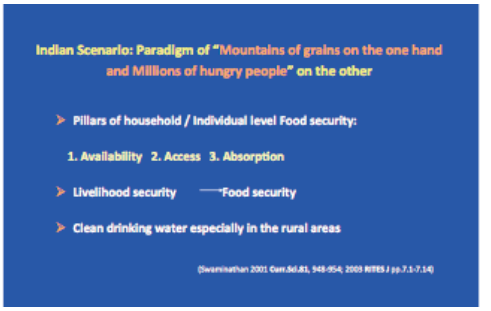
APPENDIX 18

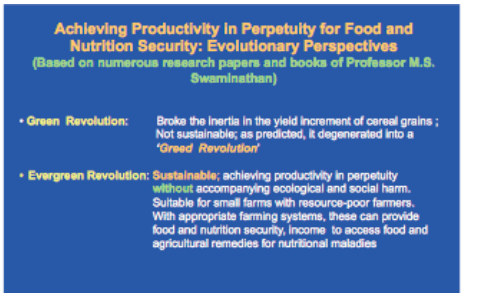
"Presentation on behalf of Professor Dr. M.S. Swaminathan, Hony. UNESCO Jaques Cousteau Chair for Ecotechnology for Sustainable Rural Development"

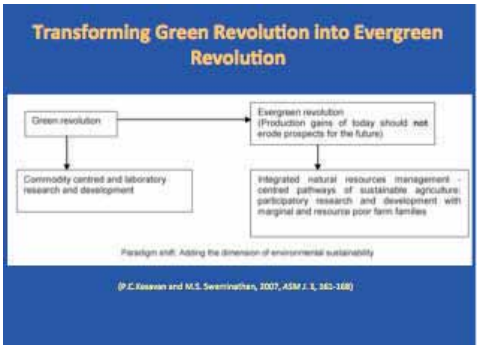
by

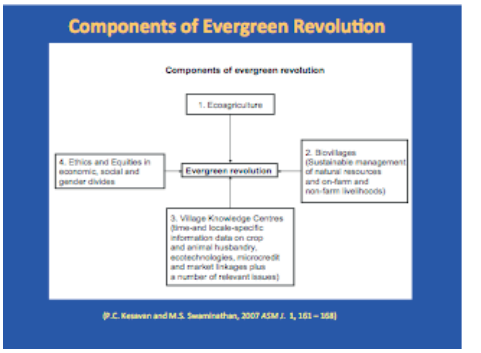
Dr. P.C. Kesavan, M.S. Swaminathan Research Foundation, India











Ecotechnology Revolution

- Blending frontier technologies* with traditional wisdom and ecological prudence. These then become eco-technologies with *pro-nature, pro-poor and pro-women* orientation
- Ecotechnologies involve concurrent attention to *Ecology, Energy, Equity, Economics, Employment and Ethics.*
- Ecotechnologies are in action in MSSRF's Biovillages.

* (ICT, BT, Nano, Space, Nuclear)

Dialogue on Ecotechnology at M.S. Swaminathan Research Foundation , 1994

Evergreen Revolution
Biovillage Paradigm

Natural Resources Conservation and Enhancement

- Land
- Water
- Biodiversity
- Common Property Resources

Sustainable Livelihoods

On-farm

- Diversification
- Value Addition

Non-farm

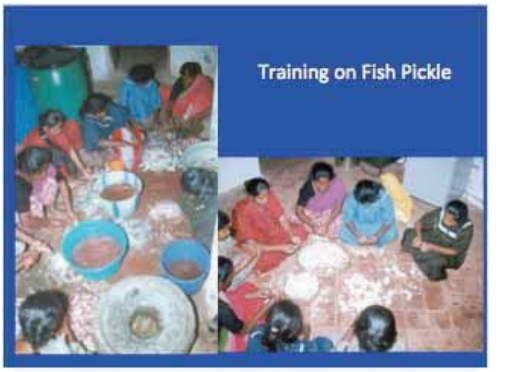
- Market Driven Enterprises
- Self-help Groups Supported by Micro-credit

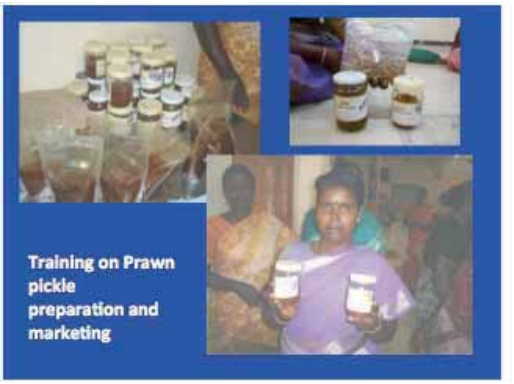
Jobless economic growth is the enemy of food security in poor households

Linking Ecological and Livelihood Security

Biological Software for Sustainable Agriculture

Vermi-compost Production Keelavanjour- Karaikal (UTP)

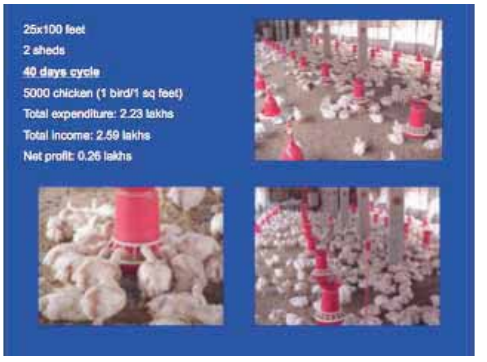


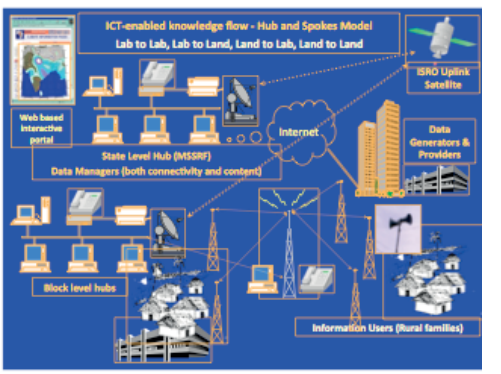

Training on Prawn pickle preparation and marketing

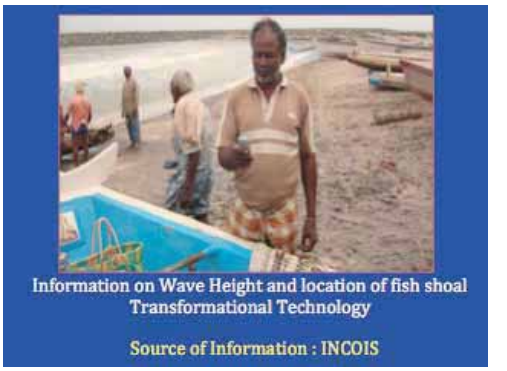

Crab fattening Demonstration

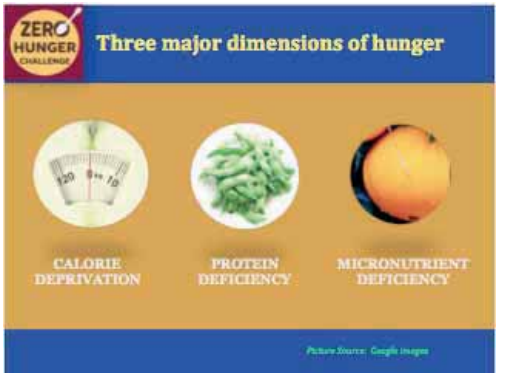

Crab Fattening in Pazayar Tsunami Nager -Nagai


SHGs micro enterprises activities
Production of Oyster Mushroom
8 units in 2 villages are operational
10 x 20 sq feet
Income:
Rs. 1200/month per unit


25x100 feet
2 sheds
40 days cycle
5000 chicken (1 bird/1 sq feet)
Total expenditure: 2.23 lakhs
Total income: 2.59 lakhs
Net profit: 0.26 lakhs







Farming System for Nutrition (FSN)*

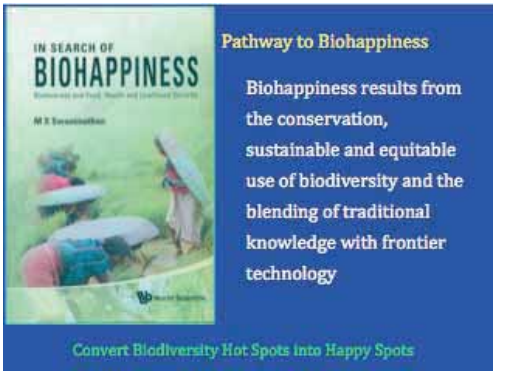
"FSN involves the introduction of agricultural remedies to the nutritional maladies prevailing in an area, through the mainstreaming of nutritional criteria in the selection of the components of a farming system involving horticultural crops, farm animals and where feasible, fish. While finalizing the components of a farming system, the gender and age dimensions of human nutritional needs are kept in view, such as the special needs of pregnant women and nursing mothers, and new born babies during the first 1000 days after conception and birth". Biofortified crop varieties are introduced in FSN wherever available.

Agric Res DOI 10.1007/s40003-014-0119-5, 5 August 2014


Innovations in below sea level farming in Kuttanad
COCONUT - ONE RICE - ONE FISH
Low chemical input or Organic
Yield- 4.2 t/ha
Yield- Rice: 4.2 t/ha
Fish- Prawn: 480 kg;
* Recommended practice
Globally Important Agricultural Heritage Sites

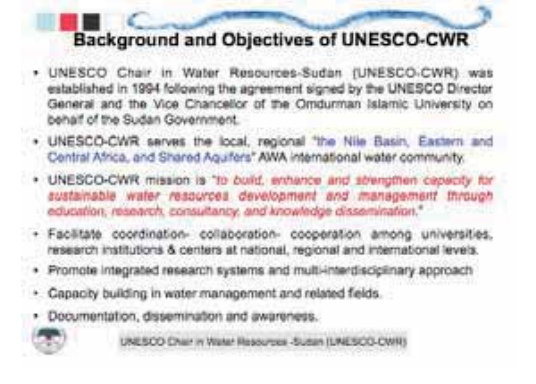

Community Food and Water Security System
Conservation - Cultivation – Consumption - Commerce
Gene Bank
Seed Bank
Grain Bank
Water Bank
Pathway to achieving the UN Millennium Development Goal of Eradicating hunger & poverty

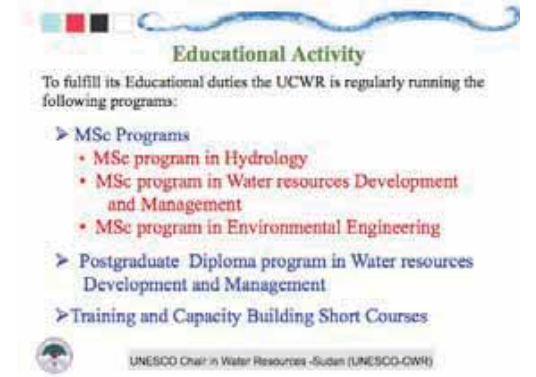

Evergreen Revolution is the Pathway
From Green to Evergreen Revolution
MS Swaminathan
World requires 50% more rice in 2030 than in 2004 with approximately 30% less arable land of today
Mainstreaming ecology in technology development and dissemination is the road to sustainable agriculture


IN SEARCH OF
BIOHAPPINESS
Pathway to Biohappiness
Biohappiness results from the conservation, sustainable and equitable use of biodiversity and the blending of traditional knowledge with frontier technology
Convert Biodiversity Hot Spots into Happy Spots

Appendix 19

Presentation on *"UNESCO Chair in Water Resources - Sudan"*
by
Assoc. Prof. Dr. Sameh Kantoush, Disaster Prevention Research Institute, Kyoto University





Training and Capacity Building Short Courses

Ser. No.	Short Course	No. of times	No. of Participants
1	Water Resources Planning & Management	8	175
2	Water Harvesting	7	89
3	Surface Water Modeling	3	38
4	Flood Monitoring Product	1	41
5	Water supply stations, Operation and maintenance	1	27
6	Use of GIS and RS in Modeling of Surface Water Flow	4	47
7	Design of Water Supply Networks	1	12
8	Design of Waste Water Networks	1	20
9	Water Quality Management	1	17
10	Analytical Methods in Water Quality Assessment	4	110
11	International Computer Driving License (ICDL)	5	70

UNESCO Chair in Water Resources -Sudan (UNESCO-CWR)

Research Activity

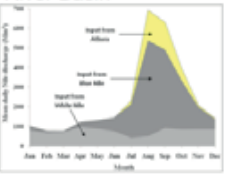
- PhD by research program
- MSC by research Program

PhD by research	No. of Students
Graduated Students	3
Registered	6
Currently Applied	5

MSc by research	No. of Students
Graduated Students	4
Registered	7
Currently Applied	3

UNESCO Chair in Water Resources -Sudan (UNESCO-CWR)

Large Constructed and Planned Dams in Nile River Basin



UNESCO Chair in Water Resources

Industry and Consultancy Projects

The UNESCO-CWR has conducted and currently engaged in a number of consultancy work projects that funded by local, regional and international Bodies

- Flood Risk Mapping
- Eastern Nile Water Shed management program
- Design of an upgraded data acquisition, communication and forecasting systems
- Protection and Development of Khartoum River Fronts

UNESCO Chair in Water Resources -Sudan (UNESCO-CWR)

Knowledge Documentation and Dissemination

This performed Through:

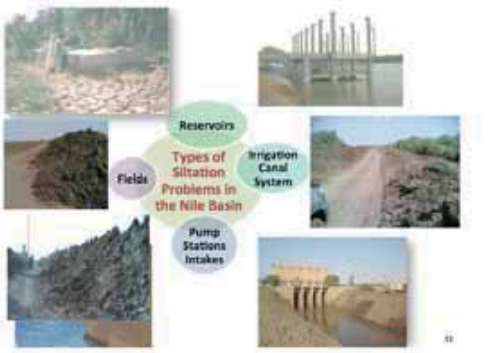
- Documenting all Activities and Publishing.
- Monthly Chair Forums
- Public Lectures
- Updating UCWR Library
- Networking

UNESCO Chair in Water Resources -Sudan (UNESCO-CWR)

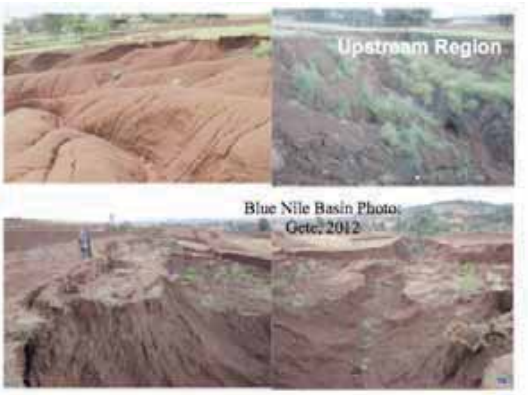
Regional and International Networks

- Nile Basin Initiatives (NBI) in the field of (Applied Training and Research Studies)
- Friend/Nile Project Network
- Nile Basin Capacity Building Network for River Engineering (NBCBN-RE) Programme.
- Consultative Group for International Agricultural Research (CGIAR)
- International Network for Capacity Building in IWRM.
- Wadi Hydrology Network in Arab Region (WHN)
- Arab Network for Water Researchers
- Tiger Initiatives
- International Water Management Institute (IWMI)
- IHP-HELP Program
- National Networks

UNESCO Chair in Water Resources -Sudan (UNESCO-CWR)


Reservoirs
Fields
Types of Siltation Problems in the Nile Basin
Irrigation Canal System
Pump Stations Intakes


Sediment Management at the River Basin Scale
Balancing of sediment transport from the source of the river to the coast
Sedimentation
Check dam
Dam impacts and lack of sediment supply
Storage reservoir
River environment change (physical, ecological, and environmental effects)


Upstream Region
Blue Nile Basin Photo: Gete, 2012

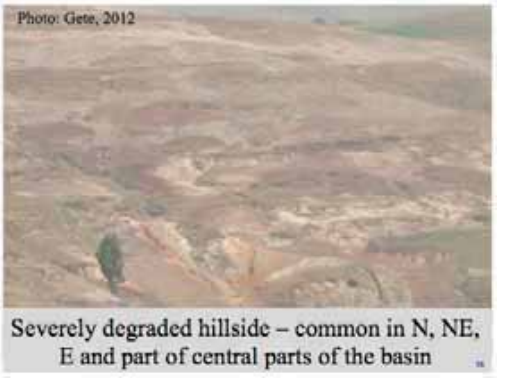
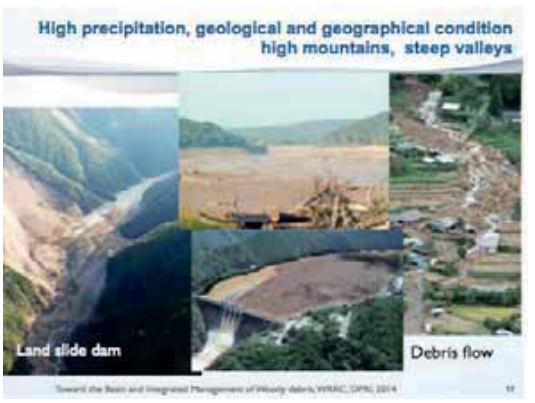
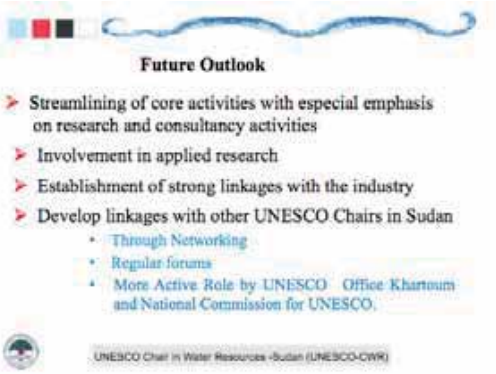


Photo: Gete, 2012
Severely degraded hillside – common in N, NE, E and part of central parts of the basin


High precipitation, geological and geographical condition high mountains, steep valleys
Land slide dam
Debris flow


Future Outlook
Streamlining of core activities with especial emphasis on research and consultancy activities
Involvement in applied research
Establishment of strong linkages with the industry
Develop linkages with other UNESCO Chairs in Sudan
Through Networking
Regular forums
More Active Role by UNESCO Office Khartoum and National Commission for UNESCO.
UNESCO Chair in Water Resources -Sudan (UNESCO-CWR)

MSc Programs

Program	No. of graduates	Years
MSc in Hydrology	26	2000 - 2007
MSc in WRDM	35	2008 -
MSc in Env. E	-	2010

Postgraduate Diploma Program (started in 2006)

P. Diploma Program	No. of Students
Graduated Students	25
Total Registered	94

UNESCO-CWR is staffed by more than twenty (20) water resources experts in the various areas of specialisation. Below is a list of the Key personnel lead by experts that have a wide range of knowledge in academic, research and consultancy works.

Core Staff

- Professor Abdalla A. Ahmed : Hydraulic Engineering and IWRM
- Professor Ahmed Salih Ahmed : Irrigation Management
- Professor Hassan Fadul : Soil Sciences and Agronomy
- Dr. Kamal E. Bashar : Hydrology and Watershed Management
- Dr. Ahmed Musa Siyam : Hydraulic Engineering
- Professor Abbas Abdalla : River Morphology
- Dr. Ibrahim Ali Babiker : Remote Sensing and GIS
- Dr. Yousif A. Ibrahim : Water System Analysis
- Eng. Muna Musnad (M.Sc.) : Hydrology, WRM, Water Quality

Human Resources Cont'd.

Core Staff

- Eng. Elgaily M. Ahmed Bashir (M.Sc.): WRE
- Eng. Osama Hamid (M.Sc.) : Civil Design and costing
- Eng. Ayman Khalid (M.Sc.) : Environmental Engineering
- Seif Eldin Zaroog (Higher Dip.) : GIS and RS Technician Ms. Dina Abdin Salama (M.Sc.) : Hydrology
- Ms. Fida Bukhari,(MSc) Water Quality
- Mr. Mohamed Faisal (M.Sc.) : Librarian
- Arafat Ibrahim Osman (M.Sc.) :Computer Programmer

Affiliated Staff

- Professor Khalil Medani ---- Socio-Economic
- Dr. Abdalla Elson ----- Groundwater
- Dr. Sami Omer Haj ElKhadir ----- Groundwater
- Prof AlSamani ElGali ---- Livestock Production
- Professor Gamal Abdo ---- Groundwater Modelling
- Prof. Abdelbadi Abdelwahab --- Agriculture
- Prof Nur Eldin El Mouhamf ---- Animal Production
- Dr. Omer Abdalla ----- Water Quality
- Dr. Babkir Abdalla ----- Environmental Specialist
- Ms Laila Yahia (MSc) ----- Environmental Engineering

Facilities

In performing its, educational, research and consultation activities the UCWR has avail and equipped itself with a wide range of supporting facilities. These comprise:-

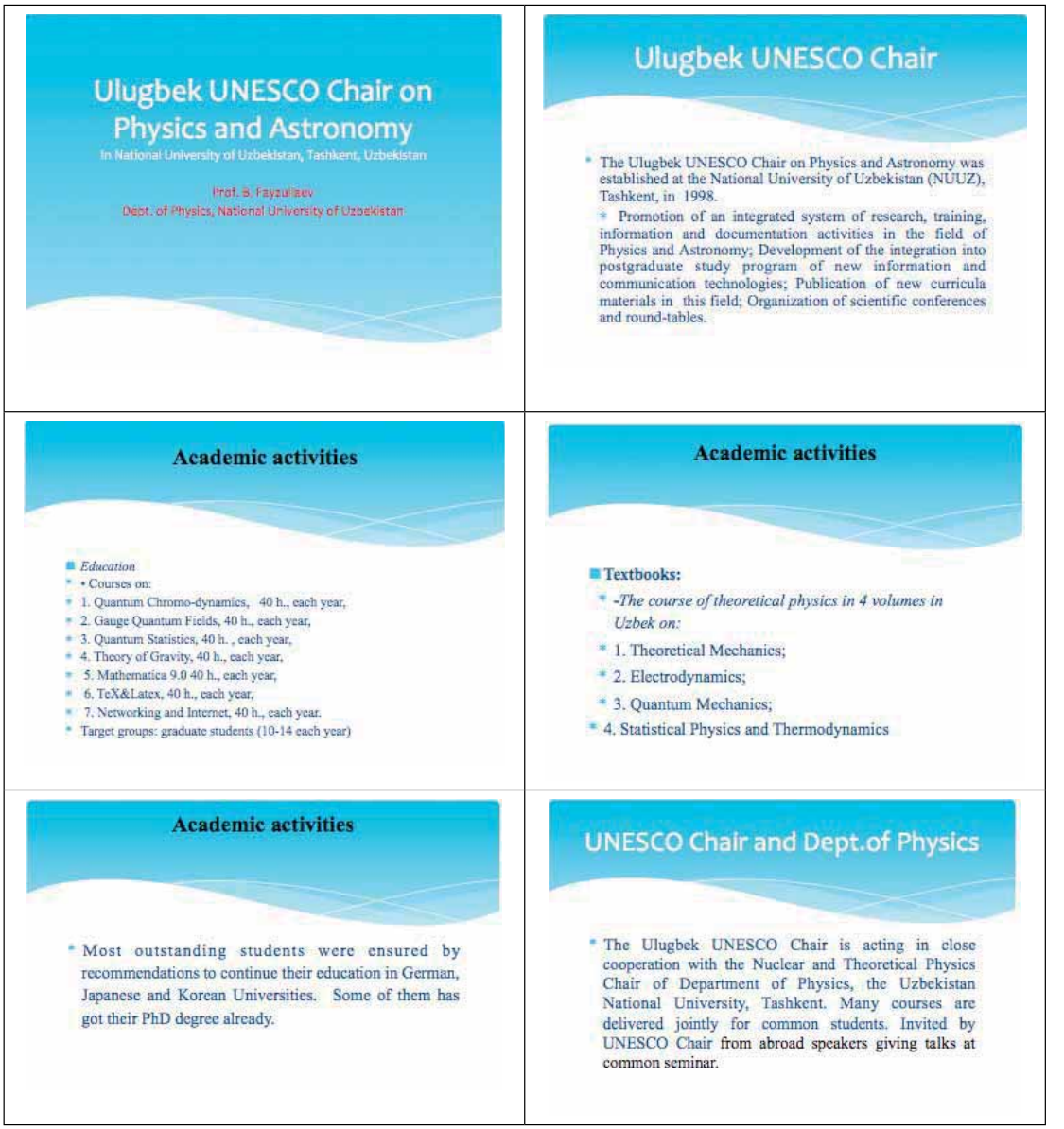
- A library
- Lecture Rooms,
- Meeting Halls
- Water Quality Laboratory
- Groundwater exploration Equipments
- Survey Laboratory
- Remote Sensing & GIS Laboratory

Problems and Challenges

- Temporary premises
- Inadequate Funding
- Staff Shortage
- Courses Related Problems

APPENDIX 20

Presentation on *"Ulugbek UNESCO Chair on Physics and Astronomy"*
by
Prof. Dr. B. Fayzullaev, Department of Physics, National University of Uzbekistan



International connections

* Each year 3-4 scientists abroad are visiting our Chairs. For example, invited speakers from abroad who gave talks at the Department seminar during last year:
* 1) Prof. Jongbae Hong, Institute for Basic Science, Korea (May, 2015)
2) Prof. Yuki Izumida, Ochanomizu University, Tokyo (January, 2015)
3) Prof. Shogo Tanimura, Nagoya University, Japan (September, 2014)
4) Prof. Giulio Casati, University of Insubria, Italy (May, 2014).

Conferences/Meetings

Following International meetings were organized:

* International Research Workshop NPQCD03 , Tashkent, 22-28 Sept. 2003;
* NATO Advanced Research Workshop "Non-linear dynamics and fundamental interactions", Tashkent, Oct. 9 - 15, 2004.

UNESCO

* In May, 2008 at NUUZ Head of office and UNESCO representative in Uzbekistan Mrs. Anna Paolini provided two days seminar- training for UNESCO Chair holders in Uzbekistan and gave a good coverage of UNESCO priorities and pointed out the importance of network collaborations. During that seminar the activities of each existing chairs in Uzbekistan was assessed.

Medicine and Physics

* Oncological clinics of Uzbekistan have purchased 40-50 nuclear medicine devices, but there is strong deficit of practitioners responsible for specific service components. Our Chairs in collaboration with Institute of Nuclear Physics is preparing specialists with master's degree for working with this and other nuclear (medicine) instruments and devices – each year 7-8.

Nuclear Activation analysis

* There is another direction of our activity – preparation of nuclear physics master's degree specialists on nuclear activation analysis (in collaboration with INP). These specialists are working on analysis of materials in mining industry, mainly, determination of the element content of the materials. These methods are using in custom control too.

Ulugbek UNESCO Chair

* Thank you for your attention!

Appendix 21

LIST OF ACRONYMS

UNESCO	United Nations Education, Scientific and Cultural Organization
ISTIC	International Science, Technology and Innovation Centre of South-South Cooperation Under The Auspices of UNESCO
MOE	Ministry of Education Malaysia
UTM	Universiti Teknologi Malaysia
SDG	Sustainable Development Goals
HIST	International Centre on Space Technology for Natural and Cultural Heritage under the auspices of UNESCO
ICQHS	International Centre on Qanat and Historic Hydraulic Structures
RC-IRBM	Regional Centre for Integrated River Basin Management
APCE	Asia Pacific Centre for Ecohydrology
LIPI	Indonesian Institute of Sciences
IKCEST	International Knowledge Centre for Engineering Sciences and Technology
IRIS	Isfahan Regional Centre for Technology Incubators and Science Parks Development
KEWI	Kenya Water Institute
HTCKL	Humid Tropics Centre Kuala Lumpur
IPCC	Intergovernmental Panel on Climate Change

DESIGNED & PRINTED BY : ART UDSB +607-2341901 / +607-2341902

CONTENTS

ACKNOWLEDGMENTS

We would like to acknowledge the contribution of:

- Ministry of Education Malaysia (MoE) staff and contributors: Datin Paduka Ir. Dr. Siti Hamisah Tapsir, Mr. Muhammad Zainal Abidin Zainun.
- Malaysian National Commission for UNESCO staff and contributors: Mr. Mohd Khairul Adib Abd Rahman.
- Internatiomal Science, Technology and Innovation Centre for South-South Cooperation Under the Auspices of UNESCO (ISTIC) staff and contributors: Dato Ir. Lee Yee Cheong, Dato Dr. Samsudin Tugiman, Ms. Zarmila Zalmi Sabot.
- UNESCO Office in Jakarta staff and contributors: Shahbaz Khan, Joana Vitorica Onaindia, Tchadie Alain Michel, Dinanti Erawati, Sharizad Sulaiman, Soyun Kang.
- Universiti Teknologi Malaysia staff and contributors: Prof. Dr. Zulkifli Yusop, Prof. Dr. Arshad Ahmad, Assoc. Prof. Dr. Sharif Moniruzzaman Shirazi, Assoc. Prof. Dr. Shareeshivadasan A/L Chelliapan, Dr. Noorul Hassan Zardari, Mrs. Nor Azizah Ismail, Mrs. Siti Salamah Mohd Shihab, Mr. Mohd. Farid Rahmat, Mrs. Fadzlin Md Sairan, Mr. Chew Teong Han, Mr. Mohamad Fairuz bin Hamzah, Mr. Izad Imran Ismail, Ms. Nalina A/P Paramasivan, Mr. Muhammad Taufik Hashim, Mr. Mohd. Rafi Abu Bakar, Assoc. Prof. Zainuddin Abdul Razak, Ms. Nurul Farhana Sufian, Mrs. Mirahani Maris, Mr. Mohamad Hafiz Asrun, Mrs. Suriyani Yusoff.

BACKGROUND

The current year 2015 is a critical moment globally for the transition into the Post-2015 Development Agenda as new framework for global development efforts. With the mandate to promote international cooperation in education, science, culture, communication and information, UNESCO's contribution to the Post-2015 Development Agenda is essential. UNESCO is mobilizing all its strengths for building sustainable, inclusive, knowledgeable societies needed for the century ahead.

The draft of the Sustainable Development Goals (SDG) 'outcome document' includes 17 goals and 169 targets, where the universality of Science and its critical role for poverty eradication and sustainable development has been highlighted.

The programmes of UNESCO in Natural Sciences have been able to expand cooperation beyond the network of the traditional intermediaries – what may be called the "UNESCO Natural Sciences family": National Commissions, UNESCO Chairs, Category 2 Institutes and Centres, clubs and associations, National Committees of intergovernmental programmes and specialized networks, such as the Associated Schools Project Network.

Within this variety of partners, Category 2 Centres and Chairs play an important role as they expand the capacities and effectiveness to carry out activities, promote the outreach, impact and visibility at all levels, broaden the support base and mobilize resources and create synergies among all communities of UNESCO.

As part of the Post-2015 Development Agenda initiatives, the UNESCO Office, Jakarta (Regional Sciences Bureau for Asia and the Pacific) organized several events (international conference, workshop, forum and seminar) in May 2015 in Kuala Lumpur. This report presents the proceedings and main outcomes of the workshop on "Promoting Interaction and Knowledge Exchange Between UNESCO Natural Sciences Related Centres and Chairs in Asia and the Pacific".

UNESCO
is mobilizing all its strengths for building the sustainable, inclusive, knowledge societies needed for the century ahead.

MAIN ACTORS OF THE WORKSHOP

In Asia and the Pacific Region, the Category 2 Centres and Chairs have the capacity to provide a tangible contribution towards the realization of not only 'Natural Sciences' objectives and priorities as stated in the UNESCO Medium Term Strategy but also towards the implementation of the SDGs in the Post-2015 framework. The Category 2 Centres and Chairs can contribute by expanding and strengthening the UNESCO's global and regional outreach, and providing an collective impact, given that the competencies, scope of expertise, as well as training opportunities that they offer. Their dissemination is also an added value to strengthen North-South, South-South and triangular cooperation. In that regards, Category 2 Centres and Chairs from Africa will also contribute to the workshop.

Therefore, through the workshop, the Natural Sciences related Category 2 Centre and Chairs in Asia and the Pacific region are expected to share knowledge and experience in order to step forward to broaden perspectives as well as to scope strategic areas for cooperation.

MESSAGE OF ACTION

The workshop was organized in order to promote interaction and knowledge exchange for strengthening South-South cooperation between UNESCO Natural Sciences related Category 2 Centres and Chairs in Asia and the Pacific Region, and link with Africa. A strong and efficient Natural Sciences network in the region and globally will be critical to support the implementation of the Post-2015 Development Agenda framework in the upcoming years.

The following actions were the outcomes of the workshop:

- Provide an overview of UNESCO's Science Category 2 Centres and Chairs in Asia-Pacific and their contribution to programmes and activities of UNESCO in the Post-2015 Development Agenda framework.
- Identify potential gaps and overlaps among the Centres and Chairs in Asia-Pacific.
- Identify formats for collaboration and knowledge exchange on science research and sustainable development between the different stakeholders.
- Build networks for strengthening partnerships between the Category 2 Centres and Chairs in Asia-Pacific, in Africa, as well as among the Malaysian scientific network.
- Initiate reflection for the development of a regional strategy on funds raising and joint actions in the Asia-Pacific to support the Post-2015 Development Agenda.

WORKSHOP PRESENTATIONS

Below is the list of the presentations made during the Workshop. The slides of the presentations are given in Appendix 6.

Presentations from UNESCO Category 2 Centre for Natural Sciences:

1. *"International Science, Technology and Innovation Centre for South-South Cooperation Under The Auspices of UNESCO",* by Dato Dr. Samsudin Tugirman, Director of ISTIC, Malaysia.
2. *"Space Technology: A Powerful Tool for Smart Management of UNESCO Properties",* by Ms Liu Jie, International Centre on Space Technology for Natural and Cultural Heritage under the auspices of UNESCO (HIST), China.
3. *"An Introduction to ICQHS Activities, Plans and Potentials",* by Mr Majid Labbaf Khaneiki, International Centre on Qanat and Historic Hydraulic Structures (ICQHS), Iran.
4. *"Regional Centre for Integrated River Basin Management, Kaduna, Nigeria (A Category 2 UNESCO Water Centre)"* by Dr. Omogbemi Omolojo Yaya, RC-IRBM, National Water Resource Institute, Nigeria.
5. *"Asia Pacific Centre for Ecohydrology (APCE)"* by Mr. Hery Harjono, Category 2 Centre of UNESCO / Indonesian Institute of Sciences (LIPI), Indonesia.
6. *"International Knowledge Centre for Engineering Sciences and Technology (IKCEST)"* by Dr. Liu Chang, China.
7. *"Isfahan Regional Centre for Technology Incubators and Science Parks Development (IRIS)"* by Dr. Hasan Khakbaz, Advisor of President of ISTT, Iran.
8. *"UNESCO Category 2 Reginal Centre on Groundwater Resources, Education, Training and Research Institute in Kenya"* by Mr. Wilson M. Lekoomet, Kenya Water Institute (KEWI), Kenya.
9. *"HTCKL Work Related to Science and UNESCO"* by Dr. Mohamed Roseli Zainal Abidin, Humid Tropics Centre Kuala Lumpur (HTCKL), Department of Irrigation and Drainage Malaysia.

Presentations from UNESCO Chairs for Natural Sciences:

1. *"IPCC Fifth Assessment Report, Lima Climate Action High Level Session Lima Peru"* by Dr. Rajendra K. Pachauri, India.
2. *"Environmental Management and Infrastructure Development Engineering, Saitama University Japan"* by Prof. Dr. Matsumoto Yasunao, Japan.
3. *"UNESCO Chair on Water Reuse, University of Tehran"* by Prof. Dr. Mohammad-Hossein Sarrafzadeh, Iran.
4. *"Presentation on behalf of Professor Dr. M.S. Swaminathan, Hony, UNESCO Jaques Cousteau Chair for Ecotechnology for Sustainable Rural Development"* by Dr. P.C. Kesavan, M.S. Swaminathan Research Foundation, India.
5. *"UNESCO Chair in Water Resources - Sudan"* by Assoc. Prof. Dr. Sameh Kantoush, Disaster Prevention Research Institute, Kyoto University.
6. *"Ulugbek UNESCO Chair on Physics and Astronomy"* by Prof. Dr. B. Fayzullaev, Department of Physics, National University of Uzbekistan.

SUMMARY OF WORKSHOP PRESENTATIONS

Below are the brief summaries of the presentations made during the Workshop.

Title:	1. International Science, Technology and Innovation Centre for South-South Cooperation under the auspices of UNESCO.
Presenter:	Dato Dr. Samsudin Tugirman, Director of ISTIC, Malaysia.
Summary:	This presentation covered the following main points: Description of ISTIC Priority Programmes including: • STI Policy: Many South countries do not have STI Policy to guide national development, those that have do not pay enough attention to SMEs and women. ISTIC Partners – Korean Institute for S&T Policy Evaluation and Planning (KISTEP), UTM Perdana School. • Inquiry Based Science Education (IBSE) and Science, Technology, Engineering and Mathematics (STEM) Education: Assuring the supply pipeline of creative and discerning STI Professionals. ISTIC Partners with IAP SEP Council, Foundation La main a la pate, France. • Women in STI: Many South countries do not have policies on contribution of women in national development. ISTIC partners with NAM Institute for Empowerment of Women (NIEW), UN Women. • Maintenance of Infrastructure: Infrastructure project abound in the developing world, but there is little indigenous capacity to maintain them in good working order. ISTIC Partners with Engineeering Staff College of India (ESCI) Hyderabad, Institute of Engineers Malaysia (IEM). • Technoprenuership: Researchers need training in grant application writing and business plan formulation. ISTIC Partners with USAINS, Universiti of Science Malaysia (USM). ISTIC looks forward to strategic collaboration with other Category 2 Centres of UNESCO. Collaboration will be on win-win basis and sharing of resources. Recommend / Propose relevant participants to participate in future ISTIC programmes. Currently, ISTIC is establishing a collaboration with IRIS (Isfahan Regional Centre for Technology Incubators and Science Parks Development, under the auspices of UNESCO, Iran).

Title:	2. Space Technology: A Powerful Tool for Smart Management of UNESCO Properties.
Presenter:	Ms Liu Jie, International Centre on Space Technology for Natural and Cultural Heritage under the auspices of UNESCO (HIST), China.
Summary:	This presentation covered the following main points: • HIST is a Scientific Research Centre that assist developing countries with space technology to improve their capacity for conservation, management and sustainable development of World Heritage sites. • The task of HIST is also helping developing countries' policy makers and practitioners to strengthen capacity building on the use of space technologies for better conservation and management of the properties. • HIST research results have been used for education and publicity. • Currently HIST is facing a few challenges such as Advisory Bodies and States Parties that have limited capacity to use space technology. There is a lack of accurate boundary data. Despite a wealth of data and case studies, there is still a lack of robust data at appropriate spatial and temporal resolutions. HIST is in need for powerful computing capacity. HIST also needs to build on the momentum of individual case studies in order to mainstream the use of space technology at the institutional level. • Smart management of UNESCO properties would benefit from space technologies, particularly the development of Earth observation. • HIST would like to work closely with related space organizations and other international partners to make more significant contributions for the smart management of UNESCO properties.

Title:	3. An Introduction to ICQHS Activities, Plans and Potentials.
Presenter:	Mr Majid Labbaf Khaneiki, International Centre on Qanat and Historic Hydraulic Structures (ICQHS), Iran.
Summary:	This presentation covered the following main points: • Description of ICQHS mission to recognize the transfer of knowledge and experiences, promotion of information and capacities to all the aspects of Qanat technology and other historic hydraulic structure to fulfill sustainable development of water resources. • ICQHS focuses on study towards the Destructive Impacts of the Developmental Programmes on Qanats. It also does research on feasibility of generation of electricity out of Qanat water current. A study on new methods for building and maintaining Qanat and methodology of preparing Qanat Atlas with aid of GIS. • ICQHS also holds training courses on historic hydraulic structures, Qanat technology and training courses to acquaint the consulting engineers with nomination of historic hydraulic structures on the UNESCO World Heritage list. International training course on Qanat technology and preservation of historic hydraulic structures is also available. • ICQHS organized International Scientific gatherings on Traditional Knowledge for Water Resources Management and produced a publication on traditional knowledge for water resources management.

Title:	4. Regional Centre for Integrated River Basin Management, Kaduna, Nigeria (A Category 2 UNESCO Water Centre).
Presenter:	Dr. Omogbemi Omoloju Yaya, RC-IRBM, National Water Resource Institute, Nigeria.
Summary:	This presentation covered the following main points: 🕐 RC-IRBM objectives are to facilitate interaction among different scientific and institutional stakeholders and provide support to River Basin Development Authorities or Organizations in the West Africa Region. It also conducts and promotes hydro-informatics, integrated water resources management and socio-economic research. 🕐 RC-IRBM coordinates the implementation of cooperative research projects and studies with regional, federal and local authorities as well as private sectors. 🕐 Currently, RC-IRBM builds and runs networking for information sharing, knowledge exchange and capacity-building in Member States of the West Africa region; as well as organizes training courses, seminars and workshops.

Title:	5. Asia Pacific Centre for Ecohydrology (APCE).
Presenter:	Mr. Hery Harjono, Category 2 Centre of UNESCO / Indonesian Institute of Sciences (LIPI), Indonesia.
Summary:	This presentation covered the following main points: 🕐 APCE's focus is on ecological approach to water resources management, which provides sustainable water for the people by harnessing science and technology, education and culture. 🕐 APCE is committed to contribute towards overcoming current and important issues of national, regional and global interest such as poverty, disaster risk reduction and climate change mitigation and adaptation. 🕐 By 2021 APCE aims to develop excellent expertise in: ❖Relationships among ecological pattern and hydrological process; ❖Disturbance and dynamics in natural and anthropogenic ecology and hydrology; ❖Ecohydrological approaches to biodiversity conservation, environmental management and ecological restoration; ❖Integrating hydrology with ecological planning, design and architecture or reverse; ❖Transdisciplinary studies of regional sustainability from scopes of ecohydrology, ecology, culture (society) or integration of them.

Title:	6. International Knowledge Centre for Engineering Sciences and Technology (IK-CEST).
Presenter:	Dr. Liu Chang, China.
Summary:	This presentation covered the following main points: 🕐 IKCEST main task is to establish an international engineering and technology resources hub. IKCEST aims to cooperate with research institutes, enterprises and institutions of higher learning worldwide to build a widely connected international hub for engineering and technology, resources, thus laying a global data foundation from which to operate. 🕐 IKCEST also wants to establish a public data service platform, and to develop the technology for mining and analyzing knowledge from big data. 🕐 IKCEST would like to cooperatively build professional knowledge service, systems, and to build capacity in developing countries. 🕐 IKCEST will foster interdisciplinary engineering talents with big data processing ability. 🕐 IKCEST will assist UNESCO to fulfill its aims and support its action plans.

Title:	7. Isfahan Regional Centre for Technology Incubators and Science Parks Development (IRIS).
Presenter:	Dr. Hasan Khakbaz, Advisor of President of ISTT, Iran.
Summary:	This presentation covered the following main points: 🕐 ISTT mission intends to prepare the ground for the development of technology incubators and science parks in the region by providing consultations, training courses and capacity building. ISTT is also facilitating the international relations among science parks and incubators with their counterparts in the region. 🕐 Since its official establishment in May 2010, IRIS has developed different programmes and plans. Among them are: ❖ Organizing the official inauguration ceremony and inviting ECO countries ambassadors to attend; ❖ Formation of the secretariat of the Centre; ❖ Allocating a space in ISTT to IRIS and equipping it; ❖ Designing and developing the logo of the centre; ❖ Determining the Governing Board members and Directors of Centre with cooperation of UNESCO; ❖ Organizing seven meetings of Governing Board members and developing the work plan of the Centre; and ❖ Training Workshops (more than 40 National and International workshop with the attendance of international experts from Japan, South Korea, Germany, UK, Spain, Poland, Romania, Malaysia, China, Tunisia, Australia and etc)

Title:	8. UNESCO Category 2 Regional Centre on Groundwater Resources, Education, Training and Research Institute in Kenya.
Presenter:	Mr. Wilson M. Lekoomet, Kenya Water Institute (KEWI), Kenya.
Summary:	This presentation covered the following main points: 🕐 Kenya Water Institute (KEWI) objectives include the conduct of research, offering professional training, providing policy advise, facilitating technological transfer and promoting regional collaboration and exchange of experience. 🕐 KEWI is active in training on groundwater for both students and clients in Kenya and the region. KEWI is also doing geological surveys and pursuing degree programmes in Universities in Kenya. It is aimed at improving water / groundwater management capacity within the institution and the country. 🕐 Today, in collaboration with other partners (JKUAT and living Water African Region), KEWI is in the process of establishing a joint five year project whose purpose is to develop capacity for the drilling technology experts. Under this project about twelve experts will be trained at PhD level, twenty at master level and about 150 at advance diploma level. 🕐 Recently, UNESCO undertook a groundwater mapping project in Turkana, which culminated in the discovery of large ground water reservoirs. KEWI and the Category 2 Centre will play a major role in furthering this course and will serve as a hub for capacity development in water related matters in the East Africa Region.

Title:	9. HTCKL Work Related to Science and UNESCO.
Presenter:	Dr. Mohamed Roseli Zainal Abidin, Humid Tropics Centre Kuala Lumpur (HTCKL), Department of Irrigation and Drainage Malaysia.
Summary:	This presentation covered the following main points: 🕐 HTCKL objectives are to promote a conducive atmosphere for collaboration through technology and information exchange, education and science. HTCKL helps to increase scientific technologies knowledge about hydrological cycle thus increasing the capacity to better manage and develop the water resources in a holistic manner and to promote and increase scientific and technological knowledge about urban storm water management, ecohydrology, humid tropics and water education. 🕐 HTCKL initiatives provides the execution and implemention of the Post 2015 Development Agenda especially for Sustainable Development Goal No. 6: *Ensuring availability and sustainable management of water and sanitation for all.* 🕐 UNESCO-IHP Cross-Cutting Programmes related to HTCKL includes: ❖ UNESCO Switch-in-Asia: Urban Water Management; SWITCH – Sustainable Water Management Improves Tomorrow's Cities Health; ❖ AP Friends; Asia Pacific Flow Regimes from International Experimental and Network Data; ❖ UNESCO-HELP River basin (Langat River): Hydrology for the Environment, Life and Policy; ❖ Integrated Water Resources Management (IWRM). 🕐 In IHP-VII Strategic Plan 2014-2021, HTCKL is involved in: ❖ Water related Disasters and Hydrological Change; ❖ Addressing Water Scarcity Quality; ❖ Water and Human Settlements of the future; ❖ Ecohydrology, Engineering Harmony for a Sustainable World; and ❖ Water Education, Key for Water Security

Title:	10. IPCC Fifth Assessment Report, Lima Climate Action High Level Session, Lima Peru.
Presenter:	Dr Rajendra K. Pachauri, India (via teleconference).
Summary:	This presentation covered the following main points: Description of the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Continued warming increases the risk of severe, pervasive and irreversible impacts. Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development. People who are socially, economically, culturally, politically, institutionally or otherwise marginalized are especially vulnerable to climate change. Ambitious mitigation is affordable and translates into delayed but not foregone growth (entails losses in global consumption of median value 1.7% in 2030). Estimated costs on mitigation do not account for the benefits of reduced climate change. Many impact such as loss of human lives, cultural heritage and ecosystem services are difficult to value and monitor and thus they are poorly reflected in estimates of losses.

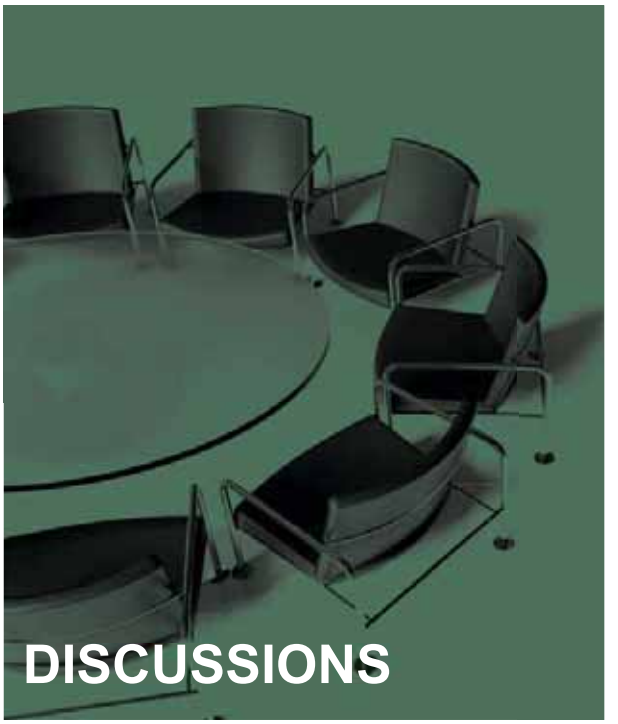
Title:	11. Environmental Management and Infrastructure Development Engineering, Saitama University Japan.
Presenter:	Prof. Dr. Matsumoto Yasunao, Japan.
Summary:	This presentation covered the following main points: Description of the UNESCO Chair at Saitama University Japan on Environmental Management and Infrastructure Development Engineering. The Chair's objective is to promote collaboration between the researchers and the research team of the university and other universities and institutions. It also attracts prospective students to our existing International Graduate Programme in Civil and Environmental Engineering. The Chair allows sharing of experience and knowledge in environmental management and infrastructure development engineering research and development. Saitama University Research Groups are as follows: ❖ Geotechnical and Geosphere Research Group; ❖ Earthquake Disaster Prevention Mitigation Group; ❖ Transporting & Planning Group; ❖ Structural Engineering Mechanics and Materials Group; and ❖ Hydraulic and Environment Engineering Group.

Title:	12. UNESCO Chair on Water Reuse, University of Tehran.
Presenter:	Prof. Dr. Mohammad-Hossein Sarrafzadeh, Iran.
Summary:	This presentation covered the following main points: The water crisis in the world involves: ❖ 1.1 billion people live without clean drinking water ❖ 2.6 billion people lack adequate sanitation ❖ 3900 children die every day from water borne diseases UNESCO Chair on Water Reuse, University of Tehran is involved in post graduate teaching programmes, training, research and institutional development (strengthening of information / library services, laboratories and etc.) Among its objectives are gathering the available expertise in the field of water reuse and facilitate information transfer. It also creates network between water institutions to facilitate exchange of experience and information nationally, regionally and internationally. Furthermore, it conducts and contributes to workshop and conferences of national, regional and international nature to push forward exchange of experience. University of Tehran is also engaged in producing technological developments for water reuse, saving water by recycling and ground water recharge. Developing low-cost methods for sanitary disposal of municipal wastewater. Activities to reduce pollution of rivers and other surface water and provide a reliable water supply to farmers.

Title:	13. Presentation on behalf of Professor Dr. M.S. Swaminathan, Hony. UNESCO Jaques Cousteau Chair for Ecotechnology for Sustainable Rural Development.
Presenter:	Dr. P.C. Kesavan, M.S. Swaminathan Research Foundation, India.
Summary:	This presentation covered the following main points: Green Revolution and the Paradox of Grain Mountains and Hungry Millions. ❖ Green Revolution (GR) provided food security at the national level; ❖ GR did not create more on-farm and off-farm livelihoods; ❖ GR not integrated with sustainable rural development; and ❖ GR is largely monocropping; loss of agrobiodiversity. Ecotechnology Revolution ❖ Blending frontier technology with traditional wisdom and ecological prudence. These then become eco-technologies with pro-nature, pro-poor and pro-women orientation; ❖ Ecotechnologies involve concurrent attraction to Ecology, Energy, Equility, Economics, Employment and Ethics; and ❖ Ecotechnologies are in action in MSSRF's Biovillages.

Title:	14. UNESCO Chair in Water Resources - Sudan.
Presenter:	Assoc. Prof. Dr. Sameh Kantoush, Disaster Prevention Research Institute, Kyoto University.
Summary:	This presentation covered the following main points: • UNESCO-CWR mission is to build, enhance and strengthen capacity for sustainable water resources development and management through education, research, consultancy and knowledge dissemination. • CWR also facilitate coordinate, collaborate, cooperate among universities, research institutes & centres at national, regional and international levels. • It also promotes integrated research system and multi-interdisciplinary approach. • UNESCO-CWR serves the local, regional "the Nile Basin, Eastern, Central Africa and Shared Aquifers" AWA International water community.

Title:	15. Ulugbek UNESCO Chair on Physics and Astronomy.
Presenter:	Prof. Dr. B. Fayzullaev, Department of Physics, National University of Uzbekistan.
Summary:	This presentation covered the following main points: • The Ulugbek UNESCO Chair promotes an integrated system of research, training, information and documentation in the field of Physics and Astronomy. • Development of the integration into postgraduate study programmes of new information and communication technologies. • Publication of new curricular materials in the field of Physics and Astronomy. • Organization of scientific conference and round-table discussions. • The Ulugbek UNESCO Chair is acting in close cooperation with Nuclear and Theoretical Physics Chair of Department of Physics, the Uzbekistan National University, Tashkent. Many courses are delivered jointly for common students. The UNESCO Chair invites international speakers to give talks at common seminars.



DISCUSSIONS

The second day of the workshop included a dialogue session, with breakout group discussions where each group discussed on the assigned topic and presented findings of their group deliberations. Three groups were formed for that purposes.

The topics assigned to the groups were:

1. Developing a UNESCO Family Strategic Plan for Asia and the Pacific,
2. Scoping UNESCO Chairs in Malaysia; and
3. Delivering together.

The group discussion was guided by a series of questions based on the topics assigned to each group.

The full reports of the group discussion are given in the Appendix 3.

GROUP 1: Developing a UNESCO Family Strategic Plan for Asia and the Pacific.

QUESTION 1: Which are the strengths of UNESCO and its Natural Sciences Family in Asia and the Pacific?

The Centres and Chairs under Natural Sciences Family are focused on very important issues relevant to the society and environment. The fields in which these Centres and Chairs focus include natural disasters, hydrology, food security, water resources, water and culture, eco-hydrology, ground water, oceanography, biology and etc.

Members of this discussion group suggested organizing a Regional Steering Committee meeting (RSC) every year hosted by member countries (International Hydrological Programme (IHP), National Committee and Category 2) and presentation of reports and cross cutting programmes (e.g. ASIA PACIFIC FRIEND, HELP BASIN, UNESCO SWITCH-URBAN WATER MANAGEMENT, INTEGRATED WATER RESOURCE MANAGEMENT (IWRM) POST 2015).

In addition, UNESCO Jakarta office has an important role to assist in creating more collaborative programmes and activities in knowledge sharing on scientific research and sustainable development between UNESCO Category 2 Centres and Chairs and their stakeholders. There were consensus of building networks for strengthening partnership between the UNESCO Centres in Asia and the Pacific with the Malaysian scientific network. This collaboration will result in funds raising strategies / funding mechanism and joint research activities among the partners (Paris Link).

QUESTION 2: How to build a strong and an efficient regional sciences network?

UNESCO Centres and Chairs shall utilize a variety of interactive tools and approaches to maintain a sustainable internal communication with sufficient frequency of updates between Asia and the Pacific regional science network.

Currently, UNESCO has developed an integrated collaborative platform for the UNESCO Water Network using existing UNESCO's UNESTEAM shared point based platform. This platform shall serve as the primary mechanism for sharing feedback, information, documents and news within the network.

The establishment of groups of professionals in diverse fields of natural sciences will allow members of Centre and Chairs to remain up-to-date and encourage collaboration within these networks, e.g. International Hydrological Programme (IHP), Intergovernmental Oceanographic Commission (IOC), Man and the Biosphere Programme (MAB). An active participation in this common communication platform is highly encouraged to ensure timely updates and content quality.

The group discussion also suggested setting up twinning programmes between Chairs and Centres with the aim of advanced research, training and programme development, e.g. Integrated Water Resource Management (IWRM) which will promote remote sensing application to climate change studies within Southeast Asia countries and China. This initiative will encourage cooperation through transfer of knowledge across borders.

Centres could also facilitate and organize national and regional training, short courses and knowledge sharing workshop that can essentially strengthen particular fields by training human resources and applying state-of-the-art technologies and tools, e.g. training the field of eco-hydrology.

Staff Exchange programme was also suggested since it has always built bridges between disciplines and the scientists. The exchange will aim to stimulate cutting edge research and sharing scientific knowledge.

Collaborative engagement in enhancing communication and information sharing between members is important especially to maintain a high level of engagement with members' stakeholders. It was suggested to make significant efforts to establish an effective communication channel, e.g. website to convey progress, exchange knowledge or success stories to adverse impact.

QUESTION 3: How can UNESCO support the Natural Sciences Category 2 Centres and Chairs?

UNESCO has made significant efforts to facilitate collaboration with various UN Agencies such as Intergovernmental Panel on Climate Change (IPCC), United Nations Development Programme (UNDP) and other UN Programmes.

The Centres and Chairs expressed a desire to network and collaborate with one another and expressed interest in establishing a mechanism for cooperation. They would like to see UNESCO take a leading role in bringing them together, so they can further develop cooperation mechanism between themselves and increase the visibility of their partnership. This however has a cost implication, so funding mechanisms need to be explored.

GROUP 2: SCOPING UNESCO CHAIRS IN MALAYSIA.

QUESTION 1: Which are the key strengths of Malaysian science stakeholders?

This group mainly discussed on the strengths and weaknesses of UNESCO Natural Sciences Centres and Chairs in Malaysia. The group categorized different fields of natural sciences research according to the strengths and the weaknesses of the Malaysian stakeholders. The Malaysian stakeholders have reasonably good exposure to few areas including sustainable energy, water resources, climate change, disaster risk reduction, urban environment, ecological economics and water-energy-food nexus.

The group agreed that Malaysia is relatively competent in water resource management and climate change. In water resource management, Malaysia has numerous government agencies including Department of Irrigation and Drainage (DID), Economic Affairs Unit (UPEN), Ministry of Energy, Green Energy and Water (KETTHA), National Water Services Commission (SPAN) who work hand-in-hand with water companies e.g. Syarikat Bekalan Air Selangor Sdn. Bhd. (SYABAS) etc.

As for climate change, strong collaborations exist among universities (Universiti Teknologi Malaysia (UTM), Universiti Kebangsaan Malaysia (UKM), Universiti Sains Malaysia (USM), Universiti Malaya (UM) and Universiti Malaysia Terengganu (UMT)), Malaysian Meteorological Department, National Hydraulic Research Institute of Malaysia (NAHRIM), the Ministry of Natural Resources and Environment (MNRE) and Ministry of Energy, Green Energy and Water (KETTHA).

QUESTION 2: How can Malaysia contribute to a strong and efficient regional science network?

Strategic partnership with UNESCO family centres (e.g. Category 2 Centres) should be established or enhanced to enable higher level of knowledge exchange, resources sharing and human capital development. Such efforts will result in more significant achievements in addition to wider coverage of activities and collaboration.

The deliberation of this group also resulted in suggestions of having a clear and generic strategy that should be based on multidisciplinary, problem-solving and outcome-based approach at local and regional levels. They also highlighted that the academic institutions have an active and leading role in solving natural resources problems and the solutions can be in line with Malaysian Higher Education Blueprint-2015 by emphasizing on the quadruple helix.

The group also demanded for establishing and implementing a Sustainability Science Network and programme across region. Ultimately, all collaborations, networking, strategies and activities must be in line with SDGs to ensure effective outcome on regional and global scale.

QUESTION 3: How can UNESCO Natural Sciences family support Malaysian stakeholders to deliver the Post 2015 Development Agenda?

UNESCO Science family can support through development and implementation of Sustainable Sciences Network across region and programme. Furthermore, the UNESCO family can act as a “big brother” to bring together existing centres and chairs to promote cooperation especially in the form of technology and knowledge transfer.

Funding is also essential, not only to the Malaysian stakeholders but also to other parties in which the UNESCO Science family can support by facilitating funding mechanism.

GROUP 3: DELIVERING TOGETHER

Question 1: What are the key areas for cooperation in Sciences in the Post-2015 Development Agenda framework?

There are four key areas to be focused on. The first one is biodiversity and ecology conservation. With intense development, loss of biodiversity and ecology are inevitable. However, critical areas for biodiversity and ecology protection should be identified and protected. The cooperation in this aspect should inform stakeholders and policy makers in the importance of conserving such areas, leading to a more sustainable development.

Next is the renewable energy. In years to come, traditional energy sources such as petroleum and coal would be depreciated and before that happens, renewable energy should receive utmost attention. The cooperation in this area should be amplified and promoted as the next evolution of energy sources, not just alternative. Such effort would also enable technological transfer to help achieve renewable energy target. Renewable energy should be marketed as affordable, reliable, sustainable and modern energy for all.

Transboundary water is also an important issue to be highlighted. The issue become very complicated when there is more than one country claiming rights to water sources (especially lake and river water basin). Transboundary cooperation should exist to solve the issue without political influence and violence.

A larger entity such as a river commission could be established to hold talks, draft legal agreements and discuss this transboundary issue for the sake of survival.

The last issue is food security and livelihoods. Specific projects need to address food security and livelihood issues especially concerning rural communities. Critical issues that directly related to food security such as food source availability, clean water access and power (energy) access need to be investigated. However, food production should not only address the issue of demands but also retain the essential ecological integrity of production systems.

Question 2: How to implement joint activities in sciences to support the SDGs?

Action plans should be devised in broader coverage to reach the goals of SDGs. Among those shortlisted were research activities, community programmes and education programmes. Such activities or programmes should be knowledge transfer programmes so that it would be a win-win scenario for the different parties. For example, research in water quality issue would improve the livelihood of the community. The governance aspect should also be emphasized. For example, awareness programme specifically for women and youth, as well as gender equality. Apart from professional, women and youth should be engaged in community-based sciences to increase the awareness and also knowledge. A specific web portal should also be established to act as knowledge centre and particularly as a gateway to connect to the modern youth. Massive open online course (MOOCs) should also be encouraged as part of the freely available education for the masses.

Question 3: How to link Asia and the Pacific with Africa to support South-South cooperation in Sciences?

The most important aspect to link between these different entities is the structural arrangement (committees). Such solid structure should include secretariat and/or taskforce for joint cooperation. The establishment of these secretariat with representative from each regions of interest will ensure seamless and more efficient “bring-it-together” collaborative efforts.

To ensure accurate and up-to-date information dissemination, a web portal should be available and frequently updated so that all participants in all regions are aware of such efforts and activities. With proper support and promotion, this portal will even reach out to more potential participants (visibility) and collaborators, especially from untapped regions or countries.

CONCLUSIONS AND RECOMMENDATIONS

• The current 15 UNESCO Natural Sciences related Category 2 Centres and 28 UNESCO Natural Sciences related Chairs in Asia and the Pacific Region are focusing on very important issues relevant to the society and environment. The fields in which these Centres and Chairs are focusing include: historical hydraulic structures, humid tropic hydrology and water resources, ecohydrology, urban water management, erosion and sedimentation, biotechnology, space technologies for cultural and natural heritage, geochemistry and others. These Centres and Chairs are aligned with the 17 SDGs, e.g. poverty reduction, food security, education quality, gender equity, sustainable management of water, affordable energy, sustainable economic growth, sustainable industrialization, resilient and sustainable cities, ecosystem protection, and global partnership.

• The workshop successfully achieved the targets of creating more collaborative programmes and activities of knowledge sharing on scientific research and sustainable development between UNESCO Category 2 Centres and Chairs. There was consensus of building networks for strengthening partnerships between the UNESCO Centres in Asia-Pacific, Africa and the Malaysian scientific network. This collaboration will result in fund raising strategies and joint research activities among the partners. It was agreed that the investment in science, food and water security, renewable energy, water and natural resources management, disaster risk reduction and resilience to climate change will achieve regional and global peace and prosperity. It is revealed that the UNESCO Centres and Chairs are coordinating in implementing the collaborative research projects and studies with regional, federal and local authorities as well as with the private sector. The individual sectors and the society as whole are the main beneficiaries of the joint projects completed under these Centres and Chairs. However, few regions and countries are still lacking of such platforms where joint research and collaborative projects can be carried out and benefits can be transferred to the society and individual sectors. Some of the areas of research identified in the workshop include disaster risk reduction and management, sustainability science and water demand management.

- There was a suggestion on creating a new Chair in Malaysia regarding Disaster Risk Reduction and Management (DRRM). The government is concerned about different types of disasters like flood, landslide, earthquake, tsunami and the associated of those disasters in Malaysia. The proposed Chair will be the most effective response to mitigate any types of catastrophe in Malaysia through collaboration among the different Centres and Chairs in South-South cooperation.

  Practice of reducing disaster risks can be done through systematic efforts by collaboration and research among the different Chairs of UNESCO worldwide. Reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and other natural resources, improving preparedness and early warning for the natural disaster events can be achieved by strong relationship of South-South cooperation.

- It was also suggested to create a new Category 2 Centre in Malaysia on Sustainability Science (CMSS). UNESCO Natural Sciences Family can support the Malaysian science stakeholders by developing and implementing a sustainability science network and programme across region, by promoting cooperation with existing Centres and Chairs by technology and knowledge transfer and by facilitating funding mechanisms. It is thus, recommended to have a UNESCO Category 2 Centre on Sustainability Science in Malaysia.

  The proposed Centre can be established in Malaysia for developing joint projects with the existing Regional Centres and the Malaysian scientific network. Sustainability science is an emerging field of interdisciplinary research that fosters shared prosperity and poverty alleviation while protecting the environment. This field draws from multiple disciplines of the natural, social, medical and engineering sciences, from the professions and from practical field experience in business, government, and civil society.

• Final Recommendations and contribution to the “Kuala Lumpur Statement”:

1. The UNESCO Natural Sciences related Category 2 Centres and Chairs in Asia and the Pacific Region are highly encouraged to build a strong regional science network to promote interaction, knowledge sharing and joint activities.
   - A good example is the cooperation between ISTIC (Malaysia) and IRIS (Iran) in technopreneurship training for research scientists and engineers, in Iran in 2015.
   - Iranian UNESCO chairs and centres will create a web-based network for coordination and cooperation between them, including periodic meetings to find common fields of interest and define joint projects. If this model works in Iran, it will be expanded to UNESCO centres and chairs the other regions.
2. The network of UNESCO Natural Sciences related Category 2 Centres and Chairs in Asia and the Pacific region will encourage active links with Africa to strengthen the South-South and triangular cooperation in STI.
   - For example HTCKL (Malaysia) and RC-IRBM (Nigeria) active engagement and joint programmes on water resources management.
3. The UNESCO Regional Science Bureau for Asia and the Pacific will continue to mobilize and provide necessary support to the UNESCO’s Natural Sciences family in the region for the successful delivery of the Sustainable Development Goals in the Post-2015.

APPENDIX 1 - Workshop Programme

The Workshop Programme is as follows:

Day 1: 26 May 2015		
12 :30 -13.30	*Registration and lunch at Taman Sari Outlet*	
[Session 1] Opening		
13:30 – 14:30	Opening, welcome remarks and Souvenir Presentation	1. Dato Ir. Lee Yee Cheong, Chairman, ISTIC Governing Board 2. Prof. Mohamed H. A. Hassan, Chairman, Council of the United Nations University (UNU 3. Prof. Dr. Ahmad Fauzi Ismail, Deputy Vice Chancellor (Research and Innovation) Universiti Teknologi Malaysia 4. Mr. Shahbaz Khan, OIC UNESCO Office Jakarta 5. Mr. Mohd Khairul Adib bin Abdul Rahman, Secretary General of The Malaysian National Commission for UNESCO
[Session 2] Setting the scene		
14:30-14:45	UNESCO Natural Sciences Regional Support Strategy 2014-2021	Mr. Shahbaz Khan, OIC UNESCO Office, Jakarta
14:45-15:00	Malaysian Higher Education Blueprint	Prof. Dato' Ir. Dr. Mohd Saleh Jaafar, Adviser / Consultant on Malaysia Higher Education Blueprint
15:00-15:15	Post-2015 Development Agenda and STI	Dato Ir. Lee Yee Cheong, Chairman, ISTIC Governing Board
15:15-15:45	Group photo and *Coffee break at Urban Hotel Lobby*	
[Session 3] Introduction to UNESCO Category 2 Centres		
15:45-17:00	Presentations from Directors of UNESCO Category 2 Centres for Natural Sciences	Dato Samsudin, ISTIC, Malaysia Ms Jie, HIST, China Mr Labbaf, ICQHS, Iran Dr Yaya, RC-IRBM, Nigeria Mr Harjono, APCE, Indonesia Dr Chang, IKCEST, China Dr Khakbaz, IRIS, Iran Mr Lekoomet, KEWI, Kenya Dr Roseli, HTCKL, Malaysia

[Session 4] Introduction to UNESCO Chairs		
17:00-17:50	Presentations from UNESCO Chairs for Natural Sciences	Dr Pachauri, India Dr Matsumoto, Japan Prof. Sarrafzadeh, Iran Dr Kesavan, India Dr Kantoush, Sudan Dr Fayzullaev, Uzbekistan
17:50-18:30	Q&A Discussion	
20:00	*Welcome Dinner at Mahkota 3 (Istana Hotel)*	*By UTM*

Day 2: 27 May 2015		
08:00-08:30	*Arrival and installation at Safir (1) meeting room*	
[Session 5] Breakout Dialogue		
08:30-09:30	1. Developing a UNESCO Natural Sciences Family Strategic Plan for Asia and the Pacific 2. Scoping UNESCO Chairs and Category 2 Centres in Malaysia 3. Delivering Together	Moderators: 1. Prof. Dr. Zulkifli Yusop (UTM) 2. Prof. Dr. Arshad Ahmad (UTM) 3. Assoc. Prof. Dr Marlinda (UNITEN)
09:30-10:00	Reporting from Breakout Dialogue	Rapporteurs from each breakout discussion 1. Assoc. Prof. Dr. Sharif Moniruzzaman Shirazi (UTM) 2. Dr. Noorul Hassan Zardari (UTM) 3. Assoc. Prof. Dr. Shareeshivadasan A/L Chelliapan (UTM)
10:00-10:15	*Coffee break at Safir Foyer*	
[Session 6] Key-findings		
10:15-11:00	Discussion	Moderator Prof. Dr. Zulkifli Yusof, UTM
[Session 7] Closing		
11:00-11:10	Conclusions: Plan of action and follow-up	Mr. Shahbaz Khan, OIC UNESCO Office, Jakarta
11:10-11:30	Closing Remarks	1. Dr. Mohamed Roseli Zainal Abidin, Director of Humid Tropics Centre, Kuala Lumpur (HTCKL) 2. Flavia Schlegel, UNESCO Assistant Director General for Natural Sciences
12:00	*Lunch at Taman Sari Outlet*	

APPENDIX 2 – Concept note

Promoting Interaction and Knowledge Exchange between UNESCO Natural Sciences related Centres and Chairs in Asia and the Pacific

Background

The current year 2015 is a critical moment globally for the transition into the Post-2015 Development Agenda as new framework for global development efforts. With the mandate to promote International cooperation in education, the sciences, culture, communication and information, UNESCO's contribution to the Post-2015 Development Agenda is essential. UNESCO is mobilizing all its strengths for building the sustainable, inclusive, knowledge societies needed for the century ahead.

The draft of the Sustainable Development Goals (SDG) 'outcome document' includes 17 goals and 169 targets, where the universality of Science and its critical role for poverty eradication and sustainable development has been highlighted. As stated by the UNESCO Director-General in the High Level Segment of ECOSOC, "*investment in science is investment in food and water security, renewable energy, disaster risk reduction and resilience to climate change. It is about peace and prosperity for all*." Moreover, networking will be critical in the implementation of the Post-2015 Development Agenda, since the proposed SDG no. 17 refers to "strengthen the means of implementation and revitalize the global partnership for sustainable development".

The programmes of UNESCO in Natural Sciences have been able to expand their cooperation beyond the network of the traditional intermediaries – what may be called the "UNESCO Natural Sciences family": National Commissions, UNESCO Chairs, Category 2 Institutes and Centres, clubs and associations, National Committees of intergovernmental programmes and specialized networks, such as the Associated Schools Project Network. Within this variety of partners, Category 2 Centres and Chairs play an important role as they expand the capacities and effectiveness to carry out activities, promote the outreach, impact and visibility at all levels, broaden the support base and mobilize resources and create synergies among all communities of UNESCO.

UNESCO Category 2 Centres and Chairs are independent of UNESCO and are associated with the Organization through individual arrangements, as approved by the UNESCO governing body - the General Conference -. These Centres and Chairs perform research, advanced training, contribute to the execution of UNESCO's programmes and increase the participation of national and regional institutions in UNESCO's work.

In Asia-Pacific Region, the Category 2 Centres and Chairs have the capacity to provide a tangible contribution towards the realization of not only 'Natural Sciences' objectives and priorities as stated in the UNESCO Medium Term Strategy but also towards the implementation of the SDGs in the Post-2015 framework. The Category 2 Centres and Chairs can contribute by expanding and strengthening the UNESCO's global and regional outreach, and providing a collective impact, given the competencies, scope of expertise, as well as training opportunities that they offer. Their dissemination is also an added value to strengthen North-South, South-South and triangular cooperation.

Scope of the workshop

This workshop is organized in order to promote interaction and knowledge exchange for strengthening South-South cooperation between Natural Sciences Category 2 Centres and Chairs in the Asia-Pacific region. A strong and efficient Science network in the region will be critical to support the implementation of the Post-2015 Development Agenda in the upcoming years.

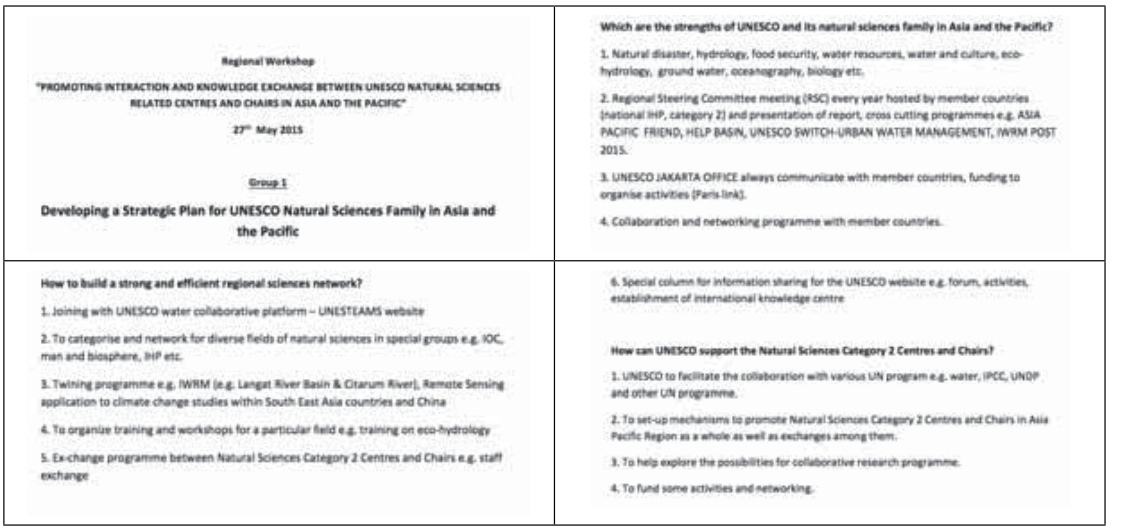
The following actions will be the outcomes of the workshop:

- Providing an overview of UNESCO's Medium Term Strategy globally and the Regional Bureau's Science Support Strategy in the Asia-Pacific (2014-2021).
- Providing an overview of UNESCO's Natural Sciences Category 2 Centres and Chairs in Asia-Pacific and their contribution to programmes and activities of UNESCO in the Post-2015 Development Agenda framework.
- Identify potential gaps and overlaps among the Centres and Chairs.
- Identify formats for collaboration and knowledge exchange on science research and sustainable development.
- Building networks for strengthening partnerships between the Category 2 Centres and Chairs in Asia-Pacific and Africa.
- Initiate reflection for the development of a regional strategy on funds raising and joint actions to support the Post-2015 Development Agenda.

This workshop is organized with the valuable support of the Malaysian Funds-in-Trust.

APPENDIX 3 – Outcomes from Breakout Discussion

GROUP 1: Developing a Strategic Plan for UNESCO Natural Sciences Family in Asia and the Pacific



Regional Workshop

"PROMOTING INTERACTION AND KNOWLEDGE EXCHANGE BETWEEN UNESCO NATURAL SCIENCES RELATED CENTRES AND CHAIRS IN ASIA AND THE PACIFIC"

27th May 2015

Group 1

Developing a Strategic Plan for UNESCO Natural Sciences Family in Asia and the Pacific

Which are the strengths of UNESCO and its natural sciences family in Asia and the Pacific?

1. Natural disaster, hydrology, food security, water resources, water and culture, eco-hydrology, ground water, oceanography, biology etc.

2. Regional Steering Committee meeting (RSC) every year hosted by member countries (national IHP, category 2) and presentation of report, cross cutting programmes e.g. ASIA PACIFIC FRIEND, HELP BASIN, UNESCO SWITCH-URBAN WATER MANAGEMENT, IWRM POST 2015.

3. UNESCO JAKARTA OFFICE always communicate with member countries, funding to organise activities (Paris link).

4. Collaboration and networking programme with member countries.

How to build a strong and efficient regional sciences network?

1. Joining with UNESCO water collaborative platform – UNESTEAMS website

2. To categorise and network for diverse fields of natural sciences in special groups e.g. IOC, man and biosphere, IHP etc.

3. Twining programme e.g. IWRM (e.g. Langat River Basin & Citarum River), Remote Sensing application to climate change studies within South East Asia countries and China

4. To organize training and workshops for a particular field e.g. training on eco-hydrology

5. Ex-change programme between Natural Sciences Category 2 Centres and Chairs e.g. staff exchange

6. Special column for information sharing for the UNESCO website e.g. forum, activities, establishment of international knowledge centre

How can UNESCO support the Natural Sciences Category 2 Centres and Chairs?

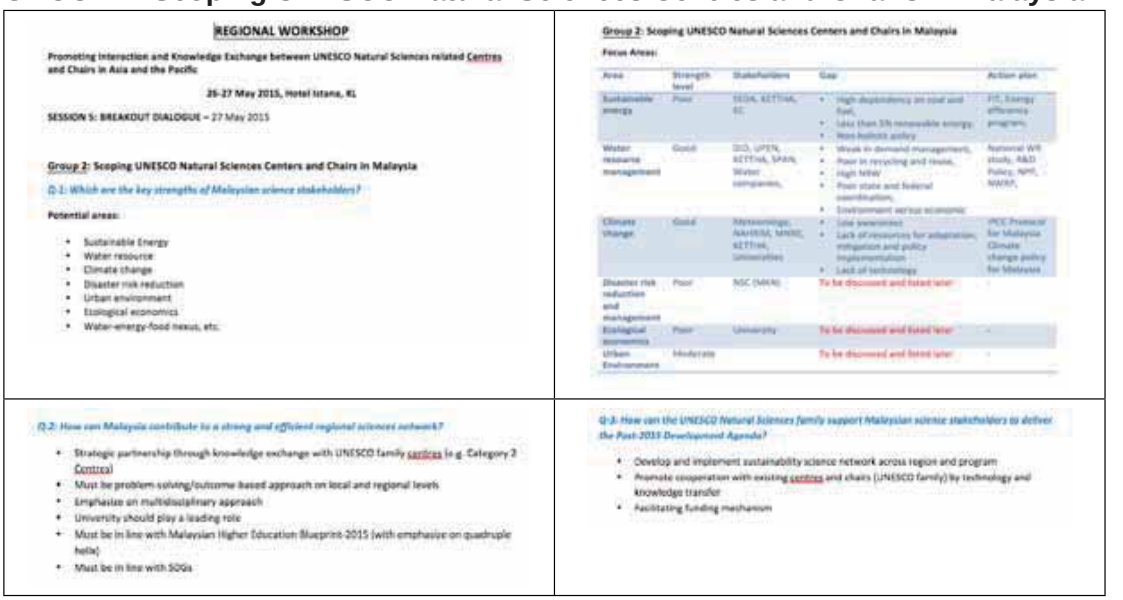
1. UNESCO to facilitate the collaboration with various UN program e.g. water, IPCC, UNDP and other UN programme.

2. To set-up mechanisms to promote Natural Sciences Category 2 Centres and Chairs in Asia Pacific Region as a whole as well as exchanges among them.

3. To help explore the possibilities for collaborative research programme.

4. To fund some activities and networking.

GROUP 2: Scoping UNESCO Natural Sciences Centres and Chairs in Malaysia



REGIONAL WORKSHOP

Promoting Interaction and Knowledge Exchange between UNESCO Natural Sciences related Centres and Chairs in Asia and the Pacific

26-27 May 2015, Hotel Istana, KL

SESSION 5: BREAKOUT DIALOGUE – 27 May 2015

Group 2: Scoping UNESCO Natural Sciences Centers and Chairs in Malaysia

Q-1: Which are the key strengths of Malaysian science stakeholders?

Potential areas:

- Sustainable Energy
- Water resource
- Climate change
- Disaster risk reduction
- Urban environment
- Ecological economics
- Water-energy-food nexus, etc.

Group 2: Scoping UNESCO Natural Sciences Centers and Chairs in Malaysia

Focus Areas:

Area	Strength level	Stakeholders	Gap	Action plan
Sustainable energy	Poor	SEDA, KETTHA, EC	• High dependency on coal and fuel, • Less than 5% renewable energy, • Non-holistic policy	FIT, Energy efficiency programs,
Water resource management	Good	DID, UPEN, KETTHA, SPAN, Water companies,	• Weak in demand management, • Poor in recycling and reuse, • High NRW • Poor state and federal coordination, • Environment versus economic	National IWR study, R&D Policy, NPP, NWRP,
Climate change	Good	Meteorology, NAHRIM, MMD, KETTHA, Universities	• Low awareness • Lack of resources for adaptation, mitigation and policy implementation • Lack of technology	IPCC Protocol for Malaysia Climate change policy for Malaysia
Disaster risk reduction and management	Poor	NSC (MKN)	To be discussed and listed later	-
Ecological economics	Poor	University	To be discussed and listed later	-
Urban Environment	Moderate		To be discussed and listed later	-

Q-2: How can Malaysia contribute to a strong and efficient regional sciences network?

- Strategic partnership through knowledge exchange with UNESCO family centres (e.g. Category 2 Centres)
- Must be problem-solving/outcome-based approach on local and regional levels
- Emphasize on multidisciplinary approach
- University should play a leading role
- Must be in line with Malaysian Higher Education Blueprint 2015 (with emphasize on quadruple helix)
- Must be in line with SDGs

Q-3: How can the UNESCO Natural Sciences family support Malaysian science stakeholders to deliver the Post-2015 Development Agenda?

- Develop and implement sustainability science network across region and program
- Promote cooperation with existing centres and chairs (UNESCO family) by technology and knowledge transfer
- Facilitating funding mechanism

GROUP 3: Delivering Together

UTM

Delivering Together

GROUP 3

Rapporteur
Assoc. Prof. Dr. SM Shirazi
Centre for Environmental Sustainability and Water Security
Universiti Teknologi Malaysia (UTM)

www.utm.my innovative • entrepreneurial • global

UTM **GROUP MEMBERS**

Prof. Dr. Arshad Ahmad**
Prof. Dato Dr. Rashidah Shuib
Prof Khairuddin Mohamad
Prof. Dr. Abdul Rahim Mohd Yusoff
Mr. Wilson Maili Lekoomet
Dr. Hasmahzaiti Omar
Prof. Dr. Jahangir Mirza
Assoc. Prof. Dr. SM Shirazi
Assoc. Prof. Dr Faridah Noor Mohd Noor
Dr. Sobri Harun
Prof Abu Bakar

www.utm.my innovative • entrepreneurial • global

UTM

What are the key areas for cooperation in Sciences in the Post-2015 Development Agenda framework?

How to implement joint activities in sciences to support the SDGs?

How to link Asia and the Pacific with Africa to support South-South cooperation in Sciences?

www.utm.my innovative • entrepreneurial • global

FRAMEWORK

- Guided by the SDGs Post 2015 development
- Noted central focus of SDGs:
  > symbiotic relationships:
  health, gender
- Participatory and dialogue
- Focus on women and youth
- Gender

UTM **General issues**

Health
Poverty
Youth
Sustainable Energy
Gender Issue
Curriculum Development for water resources engineering technology
Groundwater Development
Community Development – Participatory Approach
Mapping of Biodiversity
Food Security in terms of Irrigation and groundwater
Mitigation of extreme events
Traditional water Knowledge – Rainwater harvesting

www.utm.my innovative • entrepreneurial • global

Specific projects

❖**Sustainable and clean, safe water supply from various sources:**

- Research
- Community projects
- Education
- Portal :
  > knowledge dissemination
  > using cyber to connect education programmes
  e.g MOOCS
- Governance

APPENDIX 4 – Slides for Closing Session with Minister

Presentation on Workshop Outcomes and Recommendation to Minister of Education II Malaysia
by
Prof. Dr. Zulkifli bin Yusof

Zulkifli Yusop F.ASc
Universiti Teknologi Malaysia
zulyusop@utm.my

60 Participants; 21 countries (Nigeria, Iran, China, India, Uzbekistan, Iran, Japan, Indonesia Sudan)

3 main presentations by
Mr Shabaz Khan of UNESCO Jakarta
UNESCO National Science Strategy

Prof Dato' Ir Mohd Salleh Jaafar
Malaysia Higher Education Program

Dato Ir Lee Yee Cheong
Post 2015 Development Agenda and STI

9 Presentations by UNESCO Category 2 Centre for Natural Sciences

6 presentations by UNESCO chairs

The address three questions

1. Developing a Strategic Plan for UNESCO Natural Sciences Family in Asia and the Pacific
2. **Scoping UNESCO Natural Sciences Centers and Chairs in Malaysia**
3. Delivering Together

Through break up sessions in just One Hour

Water issues getting increasingly complex
e.g Dam construction

Areas of concern for Malaysia

Area	Strength level	Stakeholders	Gap	Action plan/initiative
Sustainable energy	Poor	SEDA, KETTHA, EC	• High dependency on coal and fuel, • Less than 5% renewable energy, • Non-holistic policy	FIT, Energy efficiency program,
Water resource management	Good	DID, SPEN, KETTHA, SPAN, Water companies,	• Weak in demand management, • Poor in recycling and reuse, • High NRW • Poor state and federal coordination, • Environment versus economic development	National WR study, R&D Policy, NWRP,
Climate change	Good	Meteorology, NAHRIM, MMRE, KETTHA, Universities	• Low awareness • Lack of resources for adaptation, mitigation and policy implementation • Lack of technology	IPCC Protocol for Malaysia Climate change policy for Malaysia
Disaster risk reduction and management	Poor	NSC (MKN), DID	• Inadequate prediction technology • Ineffective early warning system • No Umbrella policy • Poor planning and coordination at local scale	Integrated Flood Management, Center of excellent
Ecological economics	Poor	University , Government Agency	• Lack of expertise • Poor understanding among policy makers	

Suggested Areas for Chair or Category Centre

1. Sustainability Science
2. Disaster and Risk Management
3. Water Demand Management



APPENDIX 5 – List of Workshop Participants

Foreign Participants			
NO.	**COUNTRIES**	**PARTICIPANTS NAME**	**ADDRESS**
1	JAPAN	DR. YASUNAO MATSUMOTO	UNESCO Chair on Environmental Management and Infrastructure Development Engineering
2	CHINA	MS. LIU JIE	International Centre on Space Technologies for Natural and Cultural Heritage (HIST)
3	CHINA	DR. LIU CHANG	International Knowledge Centre for Engineering Sciences and Technology
4	INDONESIA	MR. HERY HARJONO	Asia-Pacific Centre for Ecohydrology (APCE)
5	INDONESIA	DR IGNASIUS SUTAPA	Asia-Pacific Centre for Ecohydrology (APCE)
6	IRAN	PROF. MOHAMMAD HOSSEIN SARRAFZADEH	UNESCO Chair on Water Reuse at the University of Tehran
7	NIGERIA	DR. OMOGBEMI OMOLOJU YAYA	Regional Centre for Integrated River Basin Management (RC-IRBM)
8	IRAN	MR. MAJID LABBAF KHANEIKI	International Centre on Qanats and Historic Hydraulic Structures (ICQHS)
9	SUDAN	PROF. SAMEH KANTOUSH	On behalf of UNESCO Chair in Sudan (Dr. Abdalla)
10	INDIA	PROF. P. C. KESAVAN	UNESCO-Cousteau Ecotechnie Chair for Ecotechnology
11	KENYA	MR. WILSON LEKOOMET	Kenya Water Institute
12	UZBEKISTAN	DR. BIRUNIY FAYZULLAEV	UNESCO Chair on Physics and Astronomy
13	IRAN	DR. HASAN KHAKBAZ	Isfahan Regional Centre for Technology Business Incubators & Science Parks Development (IRIS)
14	INDONESIA	ALAIN MICHEL TCHADIE (UNESCO JA-KARTA)	UNESCO Jakarta
15	INDONESIA	DINANTI ERAWATI (UNESCO JAKARTA)	UNESCO Jakarta
16	INDONESIA	JOANA VITORICA (UNESCO JAKARTA)	UNESCO Jakarta
17	INDONESIA	MR. SHAHBAZ KHAN (UNESCO JAKARTA)	UNESCO Jakarta

Higher Institution Centre of Excellence (HiCoe)			
NO.	**INSTITUTION**	**PARTICIPANTS NAME**	**ORGANIZATION**
1	UMT	PROF. DR. ZULFIGAR BIN YASIN	Institut Oceanografi dan Sekitaran (INOS) Universiti Malaysia Terengganu 21030 Kuala Terengganu
2	UM	PROF. DR. HEW WOOI PING	Pusat Pengkhususan Tenaga Kuasa Termaju (UMPEDAC) Tingkat 4, Wisma R&D UM Universiti Malaya Jalan Pantai Baru, 59990 Kuala Lumpur
3	USM	PROF. DR. NOR AZAZI ZAKARIA	River Engineering and Urban Drainage Research Centre (REDAC) Engineering Campus, Universiti Sains Malaysia Seri Empangan, 14300 Nibong Tebal

Centre Of Excellence (CoE) UTM			
NO.	**INSTITUTION**	**PARTICIPANTS NAME**	**ORGANIZATION**
1	UTM	PM. DR. SOBRI BIN HARUN	Department of Hydraulic and Hydrology Faculty of Civil Engineering Universiti Teknologi Malaysia 81310 UTM Johor Bahru
2	UTM	PROF. DR. ARSHAD BIN AHMAD	Institute of Future Energy Level 2, Block N29, Faculty of Chemcial Engineering Universiti Teknologi Malaysia 81310 UTM Johor Bahru
3	UTM	PROF. DR. JAHANGHIR MIRZA	UTM Construction Research Centre Level 1, Block C09 Faculty Of Civil Engineering Universiti Teknologi Malaysia 81310 UTM Johor Bahru
4	UTM	PROF. DR. MADZLAN BIN AZIZ	Research Alliance in Frontier Materials Level 2, Sultan Ibrahim Chancellery Building Universiti Teknologi Malaysia 81310 UTM Johor Bahru
5	UTM	PROF. DR. ABDUL RAHIM B HJ MOHD YUSOF	Research Institute for Sustainable Environment (RISE) Level 2, Sultan Ibrahim Chancellery Building Universiti Teknologi Malaysia 81310 UTM Johor Bahru
6	UTM	PROF. DR. ZULKIFLI BIN YUSOP	Research Alliance in Resources Sustainability Level 2, Sultan Ibrahim Chancellery Building Universiti Teknologi Malaysia 81310 UTM Johor Bahru
7	UTM	DR IRINA SAFITRI ZEN	Institute Sultan Iskandar Level 4, Dewan Sultan Iskandar Universiti Teknologi Malaysia 81310 UTM Johor Bahru

Representatives			
NO.	**INSTITUTION**	**PARTICIPANTS NAME**	**ORGANIZATION**
1	UM	PROF. DR. ZANARIAH ABDULLAH	Faculty of Science Universiti Malaya 50603 Kuala Lumpur
2	UPM	PM. DR. HALIMAH MOHAMED KAMARI	Faculty of Science Universiti Putra Malaysia 43400 Serdang Selangor
3	UTHM	PM. DR. ALONA CUEVAS LINATOC	Universiti Tun Hussein Onn Malaysia Parit Raja, Batu Pahat 86400 Johor
4.	MOE	SHARIZAD SULAIMAN	Malaysian National Commission for UNESCO
4	UPNM	PROF. DR. FAUZIAH BINTI HAJI ABDUL AZIZ	Centre for Research Management & Innovation Universiti Pertahanan Nasional Malaysia Kem Sungai Besi 57000 Kuala Lumpur

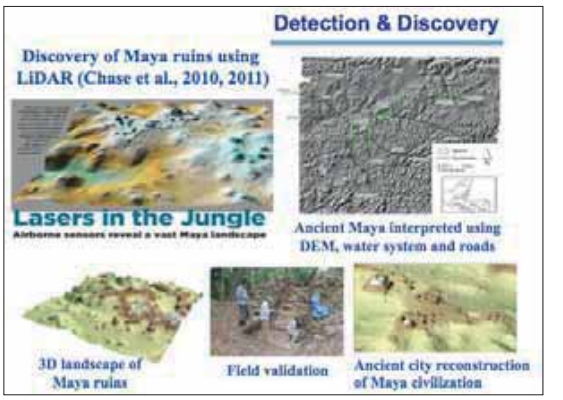
UTM Official Invitation			
NO.	**INSTITUTION**	**PARTICIPANTS NAME**	**ORGANIZATION**
1	UTM	PROF. DATUK IR. DR. WAHID OMAR	Vice-Chancellor Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru
2	UTM	PROF. DR. AHMAD FAUZI ISMAIL	Deputy Vice-Chancellor (Research & Innovation) Universiti Teknologi Malaysia Bangunan Canseleri Sultan Ibrahim 81310 UTM Johor Bahru

APPENDIX 6

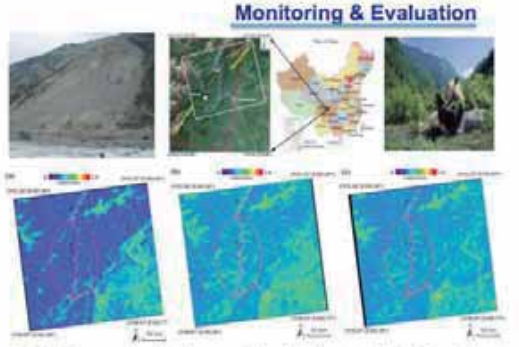
Presentation on International Science, Technology and Innovation Centre for South-South Cooperation Under The Auspices of UNESCO
by
Dato Dr. Samsudin Tugirman, Director of ISTIC, Malaysia

APPENDIX 7

Presentation on *"Space Technology: A Powerful Tool for Smart Management of UNESCO Properties"*
by
Ms Liu Jie, International Centre on Space Technology for Natural and Cultural Heritage under the auspices of UNESCO (HIST), China



Monitoring & Evaluation



InSAR for assessing Wenchuan earthquake deforestation in Sichuan Giant Panda Site (20.66% destroyed, 3% recovery rate)

Documentation & Conservation

Interactive digital sites using Virtual Reality Technique

Forbidden City

Shanhai Gate of Great Wall

Ancient Yangzhou , the Grant Canal

Open Initiative

In 2001, UNESCO and ESA jointly launched the "Open Initiative on the use of space technologies to support the World Heritage Convention".

The Main Goals:

1. Space for World Heritage sites (From Space 2 Place)
2. Space for the people managing the sites (Space 4 People)
3. Space for our young generation (Space 4 Young Generation)

2. HIST: A New Platform for UNESCO Properties

On 24 July, 2011, *the International Centre on Space Technologies for Natural and Cultural Heritage* under the auspices of UNESCO was established in Beijing.

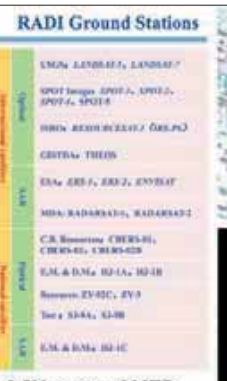
The center is hosted by and built on the premises of Institute of Remote Sensing and Digital Earth (RADI) . Its aim is to provide technical services to UNESCO and its less developed member states on using space technologies for UNESCO properties, namely World Heritage Sites, World Biosphere Reserves and Global Geoparks.

Institute of Remote Sensing and Digital Earth(RADI), Chinese Academy of Sciences

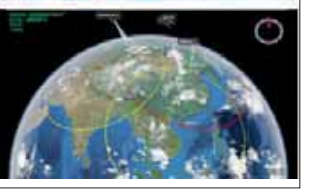
RADI is one of the world's best Earth Observation institutions. Staffed by 1200 researchers and graduate students , it possesses large scientific facilities, including two remote sensing airplanes and three satellite ground stations, able to receive satellite remote sensing data that geographically cover 70% of Asia.

Hosting Institute

RADI Ground Stations

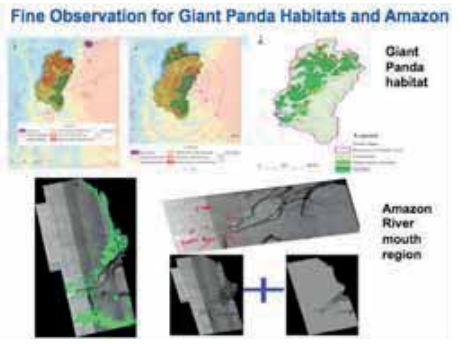


2.5M scenes,300TB



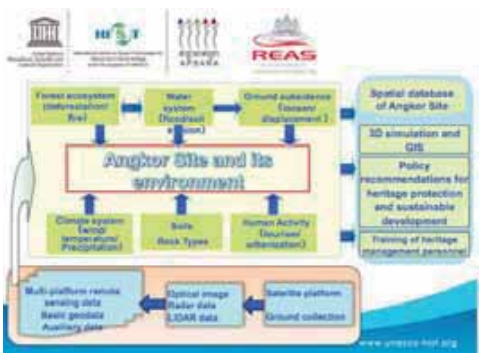

Tasks of HIST
• Scientific Research: Assisting developing countries with space technologies to improve their capacity for the conservation, management and sustainable development of World Heritage.
• Capacity Building: help developing countries' policy makers and practitioners to strengthen capacity building on the use of space technologies for better conservation and management of the properties;
• Education and Publicity: The research results will be used for education and publicity.


Atlas of Remote Sensing for World Heritage: China


Fine Observation for Giant Panda Habitats and Amazon
Giant Panda habitat
Amazon River mouth region


Smart Management of Cultural Heritage Sites in Italy and China
Land subsidence in Luoyang City
Hangu Gate by Terrestial LIDAR
Longmen Grottoes 3D modeling
Suspected relics along Silk Road


Remote Sensing for Environment of Angkor Site
➢ MOU between HIST and APSARA during the 37th session of the UNESCO World Heritage Committee in Phnom Penh, June 2013
➢ Cambodian Deputy Prime Minister H. E. Dr. Sok An met with the HIST/RADI delegation

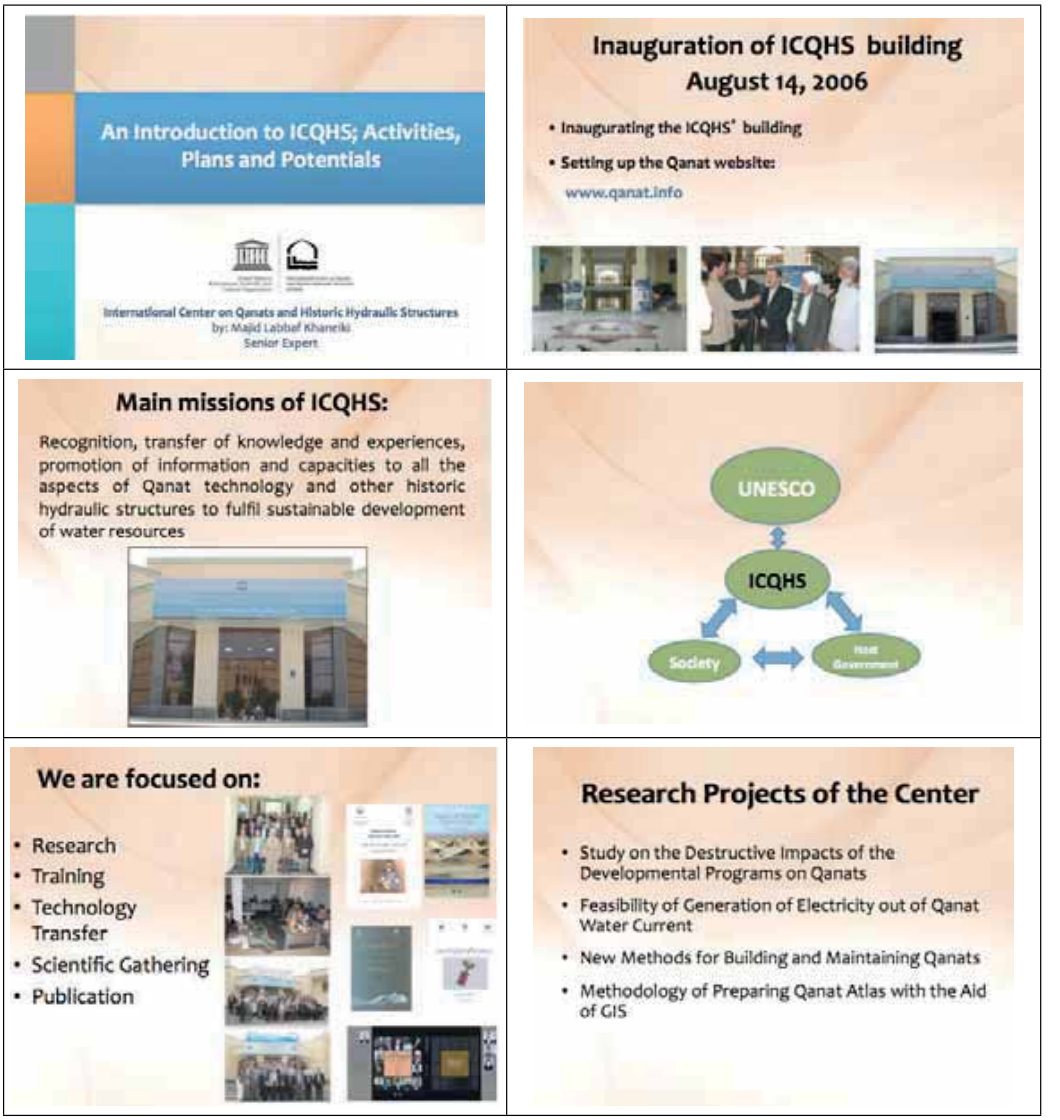

REAS
Angkor Site and its environment
Spatial database of Angkor Site
3D simulation and GIS
Policy recommendations for heritage protection and sustainable development
Training of heritage management personnel


Low-cost "virtual ground station" for Smart Management
➢ 2Mbits Internet connection
➢ two computers and a large monitor or TV screen
➢Distributing real time quick-look imagery of high resolution
RADI's three stations receive data from satellites covering 70% of Asia
Installed in Kirgizstan, Mongolia, Belgrade, and Cambodia


Capacity Building
October 2012, the 1st International Workshop on Space Technologies for Management and Conservation of World Heritage took place in Beijing. 20 people from 15 developing countries in Asia participated in the Workshop.

APPENDIX 8

Presentation on *"An Introduction to ICQHS Activities, Plans and Potentials"* by Mr Majid Labbaf Khaneiki, International Centre on Qanat and Historic Hydraulic Structures (ICQHS), Iran

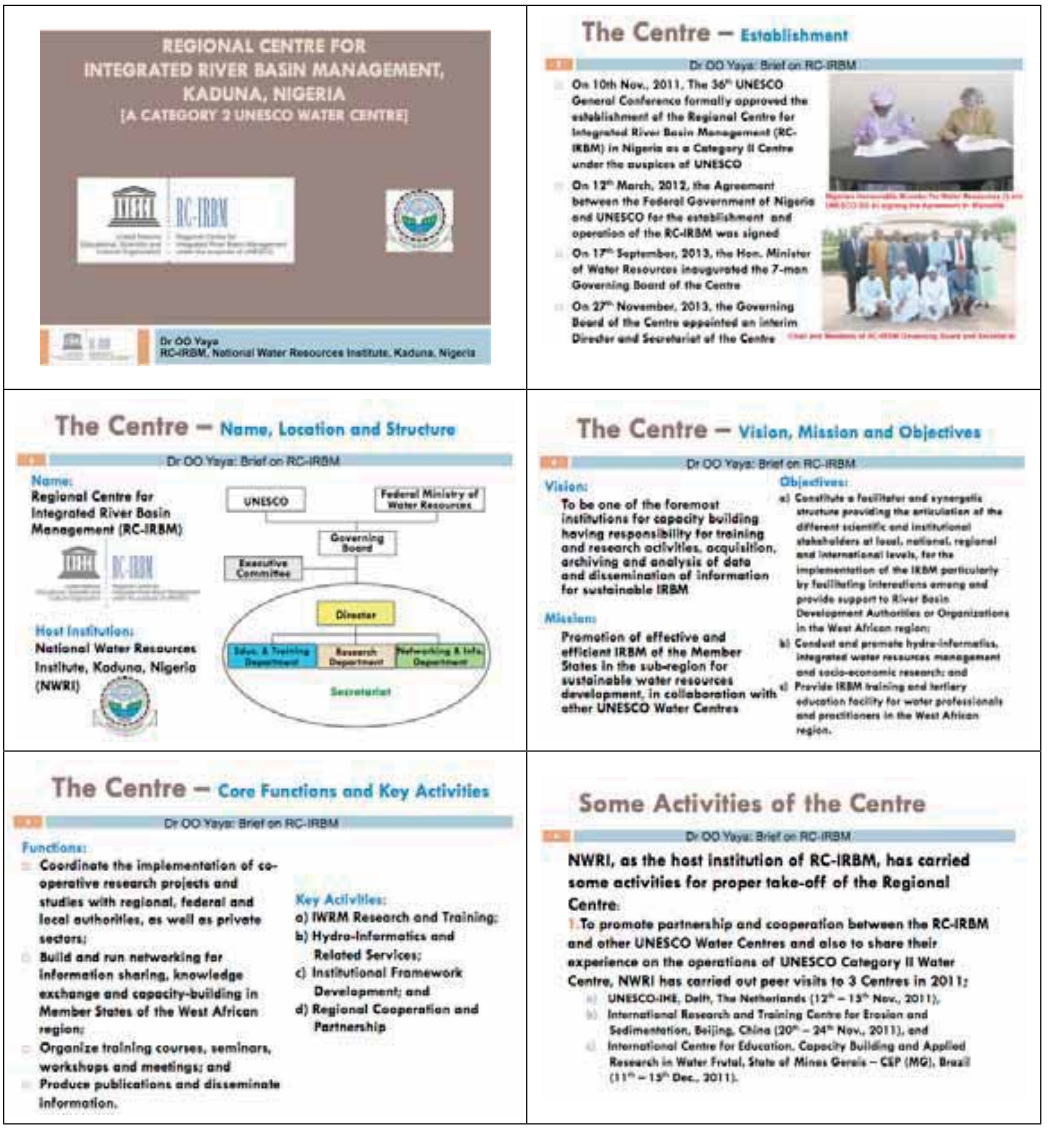


APPENDIX 9

Presentation on *"Regional Centre for Integrated River Basin Management, Kaduna, Nigeria (A Category 2 UNESCO Water Centre)"*

by

Dr. Omogbemi Omolojo Yaya, RC-IRBM, National Water Resource Institute, Nigeria

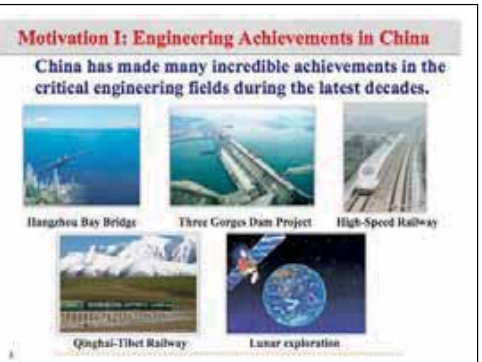


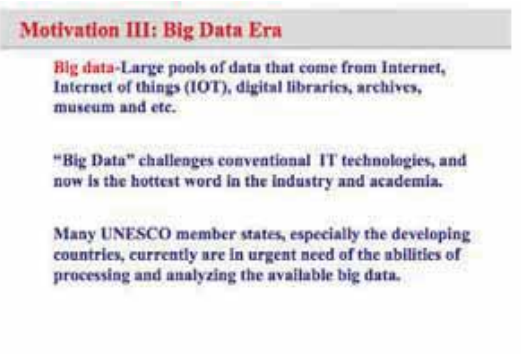
APPENDIX 10

Presentation on *"Asia Pacific Centre for Ecohydrology (APCE)"*
by
Mr. Hery Harjono, Category 2 Centre of UNESCO / Indonesian Institute of Sciences (LIPI), Indonesia

APPENDIX 11

Presentation on *"International Knowledge Centre for Engineering Sciences and Technology (IKCEST)"*
by
Dr. Liu Chang, China





APPENDIX 12

Presentation on *"Isfahan Regional Centre for Technology Incubators and Science Parks Development (IRIS)"*
by
Dr. Hasan Khakbaz, Advisor of President of ISTT, Iran

APPENDIX 13

Presentation on *"UNESCO Category 2 Regional Centre on Groundwater Resources, Education, Training and Research Institute in Kenya"*
by
Mr. Wilson M. Lekoomet, Kenya Water Institute (KEWI), Kenya

UNESCO CATEGORY II REGIONAL CENTRE ON GROUNDWATER RESOURCES, EDUCATION,

TRAINING AND RESEARCH INSTITUTE IN KENYA

PRESENTATION FOR WORKSHOP HELD IN KUALA LUMPUR, MALAYSIA BETWEEN THE 26TH AND 27TH MAY, 2015

By: Wilson M. Lekoomet
Senior lecturer
Kenya Water Institute

Introduction

- In March, 2013 the Government of Kenya (GOK) and UNESCO officially signed an agreement to create a UNESCO Category II regional centre on groundwater resources, education, training and research.
- The centre hosted in KEWI will act as a regional platform for education, research and training on groundwater resources. The centre will be conducting research, offering professional training, providing advice, facilitating technological transfer and promoting regional cooperation and exchange experience.

Introduction Cont.

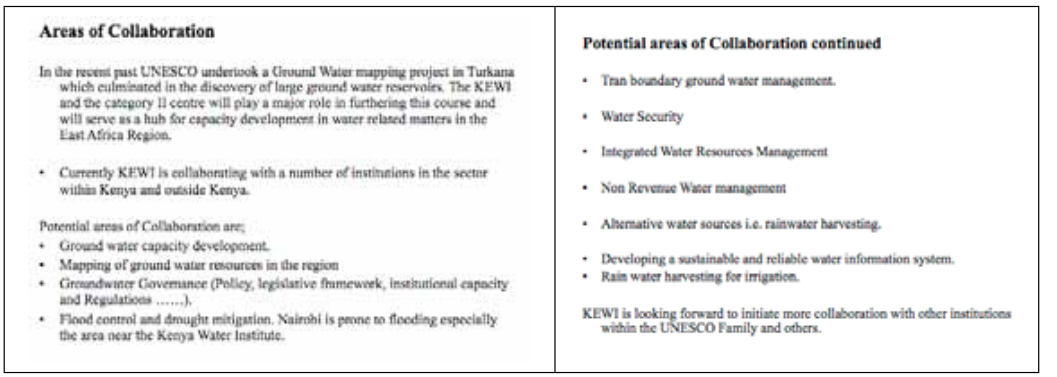
- Some key objectives of the centre include the conduct of research, offering professional training, providing policy advise, facilitating technological transfer and promoting regional collaboration and exchange of experience.
- The specific agreement was signed in March, 2013, however there has been a delay in the operationalisation of the centre activities due to some reforms in the state corporations in Kenya.
- In March 2013 the Kenya government initiated a reform process which is meant to streamline all state corpoporations. This process involves streamlining, and merging of state corporations with a view of improving their efficiencies.
- The state corporation advisory committee (SCAC) has concluded the process and it is anticipated that in due course the centre will be operationalized. The ministry of Environment, Water and Natural Resources is expediating the signing up of the legal documents so as to ensure that the centre is operationalized ASAP.

Centre's of activities

- In the meanwhile, although the centre has not been operationalized Kenya Water Institute (KEWI) has been undertaking a number of activities on behalf of the centre. Some of these activities are;
- Training in groundwater for both the regular students and other clients (short courses) for different clients in Kenya and the region.
- Consultancy services to different clients in kenya.
- Hydro geological surveys for the different clients) in Kenya and the region.
- Capacity building of water experties i.e. Currently a number of KEWI staff are pursuing degree programmes in different Universities in Kenya. This is aimed at improving water ground water Management capacity within the institution andmthe country.So far Seven (7) staff are undertaking undergraduate, seven are undertaking their MSc, while three (3) are undertaking their PhDs.

Centre's of activities cont.

- KEWI was a major partner and contributed in the sponsoring of the National WaterSummit heldmin october, 2014 inTurkana and presented a paper on "Research and capacity building in the water sector" in kenya.
- KEWI has identified an office for the centre, where the coordination of the center's activities will be done.
- In the meanwhile, as we await the commencement of the center's operations a senior officer has been identified to coordinate the center's activities.
- KEWI played a major role in cultural celebrations held at KICC, Nairobi organized by KNATCOM in November, 2014.
- KEWI participated in the Kenya National Commission for UNESCO collaboration marking the 50 years of Kenya and UNESCO collaboration held between 24th November, 2014 and 28th November, 2014 held in Paris.
- The construction of a water resource centre, which will act as a hub for water Resources Research and training is ongoing. The resource center is going to host the offices of the UNESCO Category II center.
- In January, 2015 ten (10) KEWI staff members undertook a tailor made training in groundwater in Naivasha funded by the Netherlands Fellow ship programme (Niche – Nuffic programme).
- In collaboration with other partners (JKUAT and living Water African Region), KEWI is in the process of establishing a joint five year project whoose purpose is to develop capacity for the drilling technology experts. Under this project about twelve experts will be trained at phd level, twenty at master level andmabout 150 at advanced diploma level.



Areas of Collaboration

In the recent past UNESCO undertook a Ground Water mapping project in Turkana which culminated in the discovery of large ground water reservoirs. The KEWI and the category II centre will play a major role in furthering this course and will serve as a hub for capacity development in water related matters in the East Africa Region.

- Currently KEWI is collaborating with a number of institutions in the sector within Kenya and outside Kenya.

Potential areas of Collaboration are;

- Ground water capacity development.
- Mapping of ground water resources in the region
- Groundwater Governance (Policy, legislative framework, institutional capacity and Regulations ……).
- Flood control and drought mitigation. Nairobi is prone to flooding especially the area near the Kenya Water Institute.

Potential areas of Collaboration continued

- Tran boundary ground water management.
- Water Security
- Integrated Water Resources Management
- Non Revenue Water management
- Alternative water sources i.e. rainwater harvesting.
- Developing a sustainable and reliable water information system.
- Rain water harvesting for irrigation.

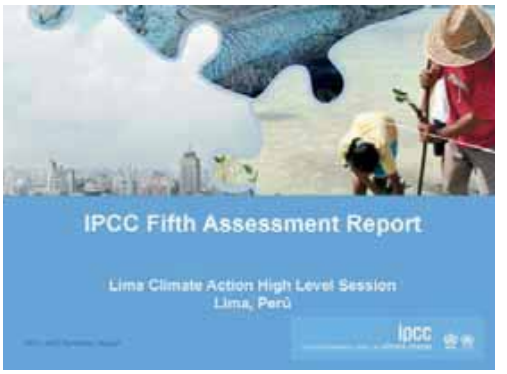
KEWI is looking forward to initiate more collaboration with other institutions within the UNESCO Family and others.

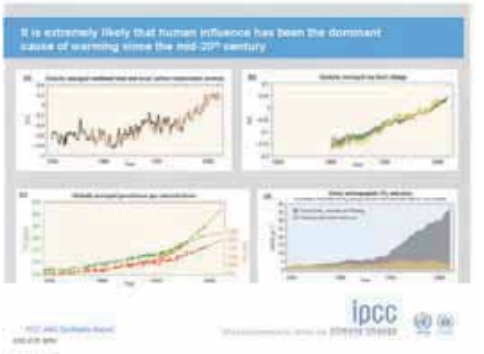
APPENDIX 14

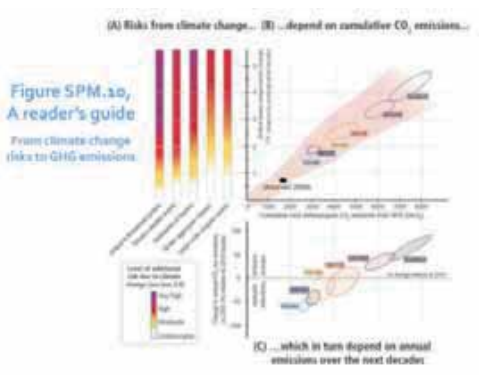
Presentation on *"HTCKL Work Related to Science and UNESCO"*
by
Dr. Mohamed Roseli Zainal Abidin, Humid Tropics Centre Kuala Lumpur (HTCKL), Department of Irrigation and Drainage Malaysia

APPENDIX 15

Presentation on *"IPCC Fifth Assessment Report, Lima Climate Action High Level Session Lima Peru"*
by
Dr. Rajendra K. Pachauri, India







APPENDIX 16

Presentation on *"Enviromental Management and Infrastructure Development Engineering, Saitama University Japan"*
by
Prof. Dr. Matsumoto Yasunao, Japan

Introduction of UNESCO Chair on Environmental Management and Infrastructure Development Engineering, Saitama University, Japan

Location of Saitama University

UNESCO Chair at Saitama U.

- On Environmental Management and Infrastructure Development Engineering
- Established in 1997
- Objectives:
  - To promote collaboration between the researchers and the research team of the university and other universities and institutions
  - To attract prospective students to our existing International Graduate Program on Civil and Environmental Engineering
  - To share experiences and knowledge in environmental management and infrastructure development engineering through research and education

International Graduate Program on Civil and Environmental Engineering

- The program started in 1992
- All education is given in English
- Students enroll for
  - Master's & Doctoral Programs
- Scholarships (Travel cost, Tuition fee, Living expenses)
  - Ministry of Education, Culture, Sports, Science and Technology (MEXT) – 7 per annum
  - Asian Development Bank (ADB-JSP) – 11 per annum
  - World Bank (JJ/WBGSP) – 4+ per annum
  - Others
- Total enrollment (till April 2015):
  - Approximately 500 students from 26 countries

Academic Staff Organisation

(As of 1 April, 2015)

Personnel	Total	GRR	EDPM	SEMM	HEE	TP
Professor	10	3	2	3	1	1
Associate Professor	7	3	1	3	1	0
Assistant Professor	9	2	1	2	2	2
Total	26	8	4	7	4	3

GRR: Geotechnical and Geosphere Research Group
EDPM: Earthquake Disaster Prevention & Mitigation Group
SEMM: Structural Engineering, Mechanics and Materials Group
HEE: Hydraulic and Environmental Engineering Group
TP: Transportation & Planning Group

Research Groups

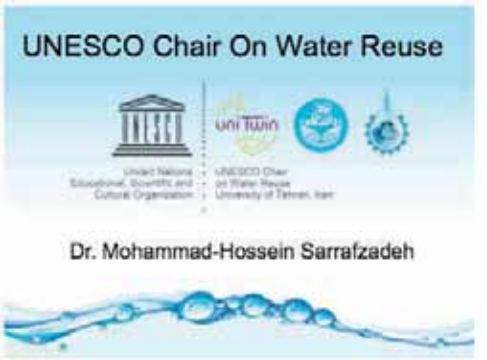
Geotechnical and Geosphere Research Group

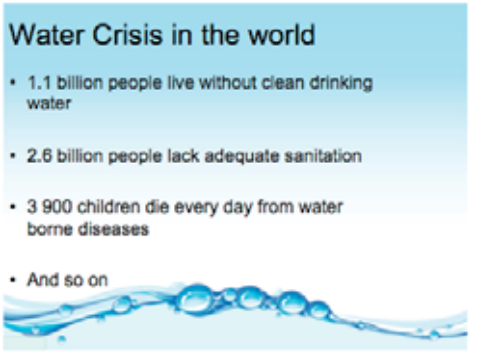
Earthquake Disaster Prevention & Mitigation Group

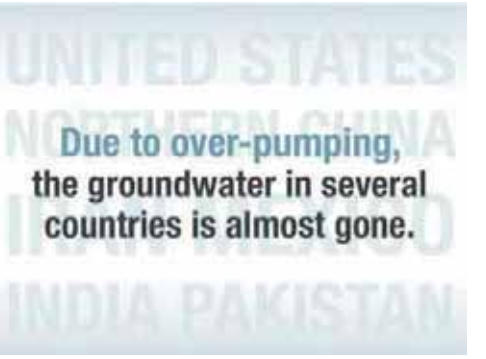
Transportation & Planning Group

APPENDIX 17

Presentation on *"UNESCO Chair on Water Reuse, University of Tehran"*
by
Prof. Dr. Mohammad-Hossein Sarrafzadeh, Iran





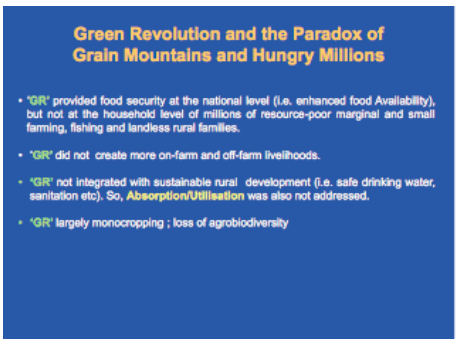


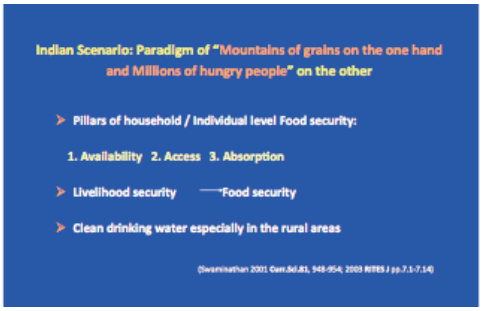
APPENDIX 18

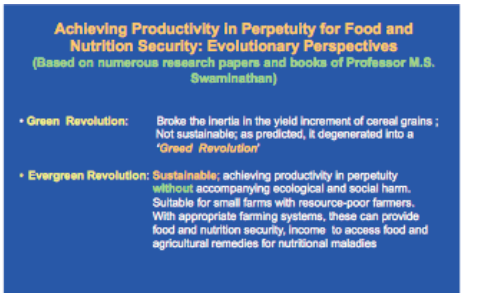
"Presentation on behalf of Professor Dr. M.S. Swaminathan, Hony. UNESCO Jaques Cousteau Chair for Ecotechnology for Sustainable Rural Development"

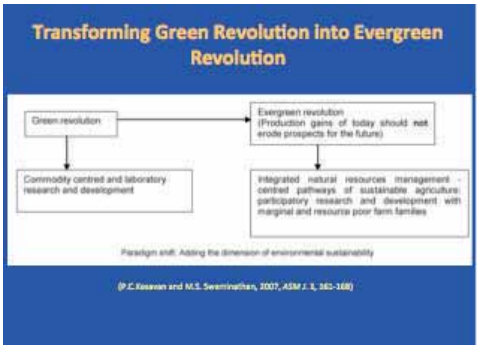
by

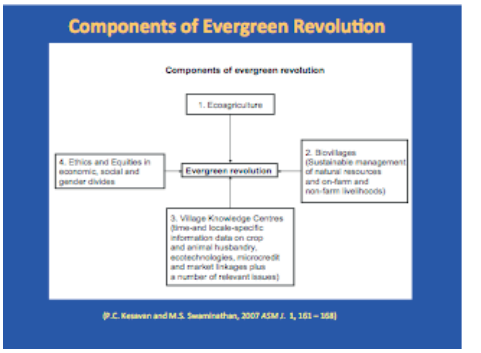
Dr. P.C. Kesavan, M.S. Swaminathan Research Foundation, India





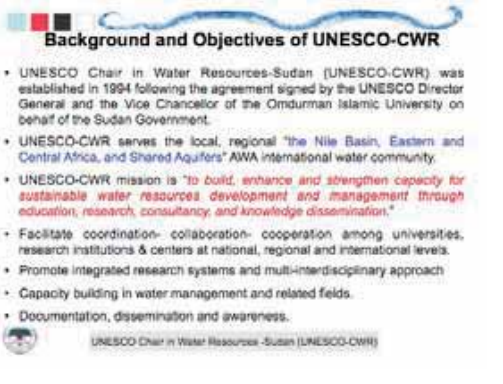


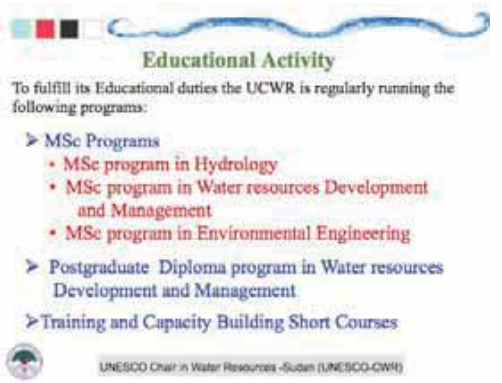




Appendix 19

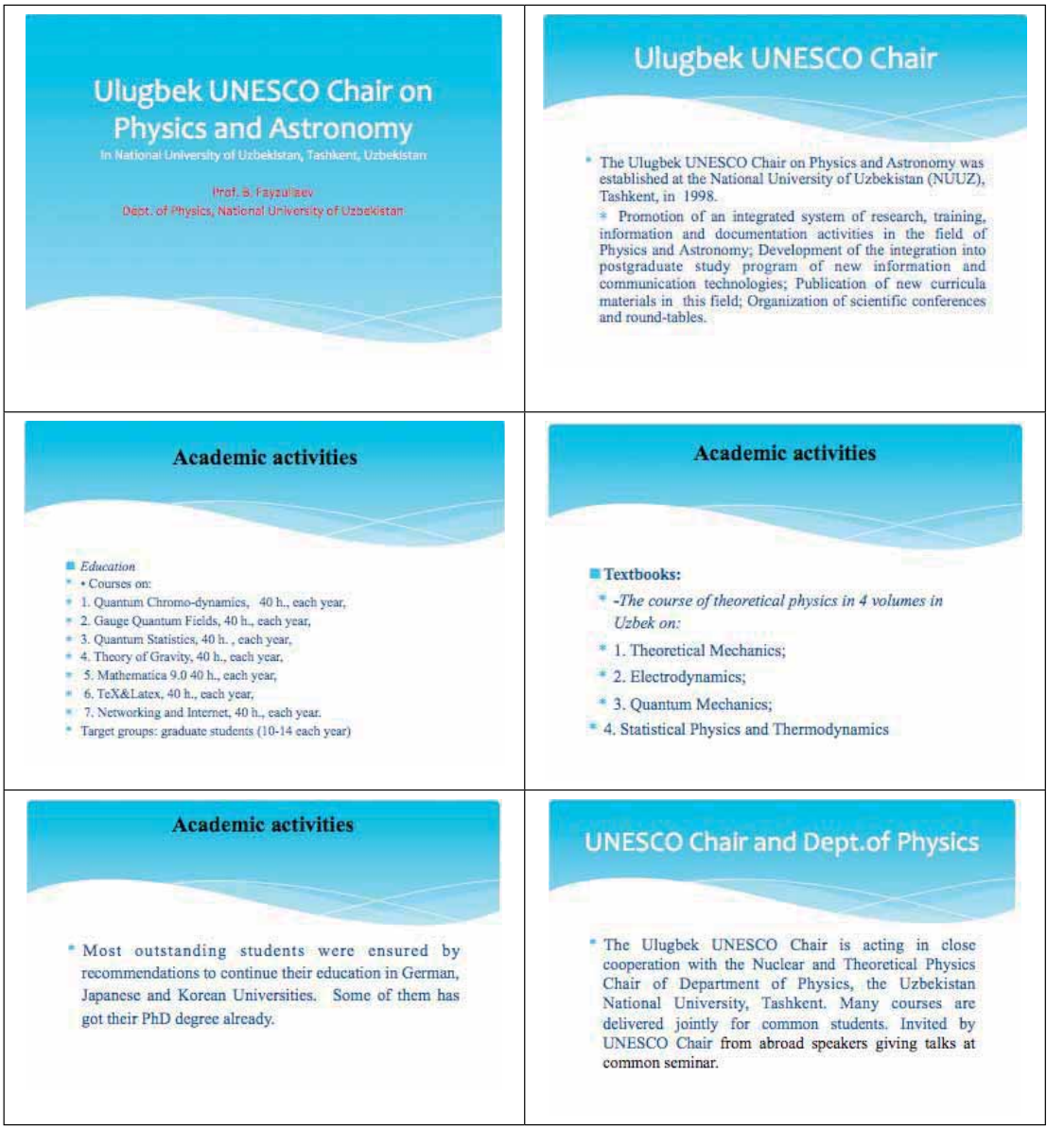
Presentation on *"UNESCO Chair in Water Resources - Sudan"*
by
Assoc. Prof. Dr. Sameh Kantoush, Disaster Prevention Research Institute, Kyoto University





APPENDIX 20

Presentation on *"Ulugbek UNESCO Chair on Physics and Astronomy"*
by
Prof. Dr. B. Fayzullaev, Department of Physics, National University of Uzbekistan



Appendix 21

LIST OF ACRONYMS

UNESCO	United Nations Education, Scientific and Cultural Organization
ISTIC	International Science, Technology and Innovation Centre of South-South Cooperation Under The Auspices of UNESCO
MOE	Ministry of Education Malaysia
UTM	Universiti Teknologi Malaysia
SDG	Sustainable Development Goals
HIST	International Centre on Space Technology for Natural and Cultural Heritage under the auspices of UNESCO
ICQHS	International Centre on Qanat and Historic Hydraulic Structures
RC-IRBM	Regional Centre for Integrated River Basin Management
APCE	Asia Pacific Centre for Ecohydrology
LIPI	Indonesian Institute of Sciences
IKCEST	International Knowledge Centre for Engineering Sciences and Technology
IRIS	Isfahan Regional Centre for Technology Incubators and Science Parks Development
KEWI	Kenya Water Institute
HTCKL	Humid Tropics Centre Kuala Lumpur
IPCC	Intergovernmental Panel on Climate Change

DESIGNED & PRINTED BY : ART UDSB +607-2341901 / +607-2341902