International Knowledge Centre
for Engineering Sciences and Technology
under the Auspices of UNESCO
联合国教科文组织国际工程科技知识中心

Newsletter

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International Knowledge Centre for Engineering Sciences
and Technology under the Auspices of UNESCO

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联合国教科文组织国际工程科技知识中心

The International Knowledge Centre for Engineering Sciences and Technology (shortened as "IKCEST") is a category 2 centre under the auspices of the United Nations Educational, Scientific and Cultural Organization (shortened as "UNESCO"). IKCEST was established on June 2, 2014. The Chinese Academy of Engineering is responsible for the operation and management of the IKCEST.

Under the auspices of UNESCO, IKCEST is a comprehensive and international knowledge centre devoted to the engineering sciences, technology and applied technology. IKCEST aims at connecting engineering sciences and technology institutions globally, assembling various digital resources relating to engineering sciences and technology, building up a public data service platform and corresponding service environment, and coordinating the building of various professional knowledge systems, thus providing knowledge-based services at a global scale in the form of consultancies, scientific research and education for policy-makers and engineering science and technology professionals in the world, with particular reference to the developing countries.

The specific tasks and functions of IKCEST are as follows: to establish an international engineering and technology resources hub; to establish a public data service platform, and to develop the technology for mining and analyzing knowledge from big data; to cooperatively build professional knowledge service systems, and to build capacity in developing countries; to foster interdisciplinary engineering talents with big data processing ability; and to assist UNESCO to fulfill its aims and support its action plans.

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Preparatory meetings and video conferences for UNESCO Science Centres Coordination Meeting held

The International Knowledge Centre for Engineering Sciences and Technology (IKCEST) and International Centre on Space Technologies for Natural and Cultural Heritage (HIST) held two preparatory meetings for the UNESCO Science Centres Coordination Meeting respectively on March 29 and April 27, 2016, in Beijing.

Besides, two video conferences for the Meeting were held on March 31 and May 4, 2016. Staff from IKCEST, HIST, UNESCO Secretariat and UNESCO Beijing Office jointly attended the conferences.

Video conference between IKCEST and DRR Division of UNESCO held

The International Knowledge Centre for Engineering Sciences and Technology (IKCEST) and Disaster Risk Reduction (DRR) Division of UNESCO held a video conference on April 26, 2016. Liu Chang, Director of Division of International Cooperation of IKCEST, Liu Hongyang and Ma Yingchen, both Project Managers of IKCEST, Wang Juanle, Deputy Director of Department for Geo-data Science and Sharing, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Soichiro Yasukawa, Head of DRR Division of UNESCO, as well as other relevant personnel attended the conference. First, Wang Juanle reported on the development scheme of a global DRR knowledge service system. Then the attendees exchanged views on the model, content and key points of the meta database development, thus determining the direction of such work.

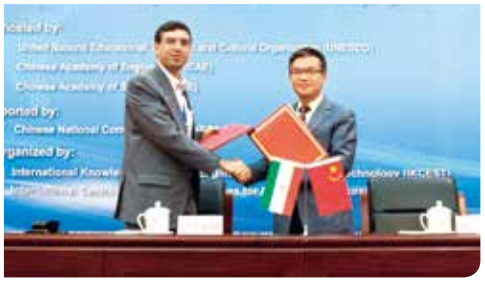
In the process of building the meta database, the IKCEST will target the disaster metadata standards proposed by the UNESCO, and take advantage of featured resources owned by the Institute of Geographic Sciences and Natural Resources Research to take the initiative to build a batch of disaster databases in superior fields.

Soichiro Yasukawa said the UNESCO will provide strong support for IKCEST to develop a global DRR meta database, and he hoped IKCEST will construct a distinctive database that is not considered a replication of the existing databases. IKCEST reported to the DRR Division that it will hold a technical training session to professionals from developing countries later in this year. Soichiro Yasukawa said he will pay close attention to it.

It was decided at the conference that a research delegation of IKCEST will visit several relevant Japanese research institutes in July 2016, and the delegation will go to the UNESCO Headquarters in Paris to make more detailed and intensive exchanges with DRR Division on the development of the global DRR meta database.

MoU between IKCEST and RCUWM signed in Beijing

The International Knowledge Centre for Engineering Sciences and Technology (IKCEST) signed a memorandum of understanding (MoU) with the Regional Centre for Urban Water Management (RCUWM) based in Tehran, Iran, on May 16, 2016, at Beijing Conference Centre. Song



Dexiong, Executive Deputy Director of IKCEST, and Seyed Ali Chavoshian, Director of RCUWM attended the ceremony and signed the MoU. The ceremony was presided over by Liu Chang, Director of Division of International Cooperation of IKCEST. Liu Hongyang, Ma Yingchen, from the IKCEST Secretariat and other relevant personnel attended the ceremony.

In his speech, Song Dexiong briefed previous exchanges and cooperation between IKCEST and RCUWM and the background of signing the MoU. Meanwhile, he hoped that the signing of the MoU would benefit the development of both sides and help the capacity building of developing countries, thus contributing to the UN Sustainable Development Goals (SDGs) and 2030 Agenda. Seyed Ali Chavoshian appreciated the contribution of IKCEST to the bilateral cooperation and stressed that the signing of the MoU is of great significance to the two centres for further cooperation and synergetic development. Then, Song Dexiong and Seyed Ali Chavoshian signed the MoU on behalf of IKCEST and RCUWM respectively.

UNESCO Science Centres Coordination Meeting held in Beijing

UNESCO Science Centres Coordination Meeting was held from 16 to 18 May 2016, at Beijing Conference Centre. A total of 160 participants from over 30 countries gathered in Beijing, including representatives from UNESCO Science Centres, the World Academy of Sciences for the Advancement of Science in Developing Countries, Chinese Academy of Engineering, Chinese Academy of Sciences, Chinese National Commission for UNESCO, UNESCO headquarters and UNESCO field offices.

The meeting was co-hosted by UNESCO, the Chinese Academy of Engineering and the Chinese Academy of Sciences; supported by the Chinese National Commission for UNESCO, Ministry of Environment of Germany through the International Centre on Water Resources and Adaptation to Climate Change under the auspices of UNESCO; and co-organized by the International Knowledge Centre for Engineering Sciences and Technology (shortened as “IKCEST”) and International Centre on Space Technologies for Natural and Cultural Heritage (shortened as “HIST”).

Flavia Schlegel, Assistant Director-General for the Natural Sciences Sector of UNESCO, Zhou Ji, President of the Chinese Academy of Engineering, Chen Zuoning, Vice President of the Chinese Academy of Engineering, Zhong Zhihua, Secretary-General of the Chinese Academy of Engineering, Tan Tieniu, Vice President of the Chinese Academy of Sciences, Guo Huadong, Member of Chinese Academy of Sciences, and Zhou Jiagui, Deputy Secretary-General of the Chinese National Commission for UNESCO attended the meeting and made opening or closing remarks.

During the meeting, participants from all over the world explored how the science centres could make contributions to the implementation of the Sustainable Development Goals (shortened as “SDGs”) and the 2030 Agenda, increase cooperation among UNESCO Science Centres and establish an information sharing platform, in the forms of plenary, breakout and feedback sessions. Flavia Schlegel, Assistant Director-General for the Natural Sciences Sector of UNESCO, made presentations calling for joint efforts of all science centres to contribute to the SDGs and the 2030 Agenda. The meeting has made important progress in increasing the cooperation among regional/similarly-themed Centres under the auspices of UNESCO, clarifying the role of Category 2 Centres in science projects implementation and enhancing the contribution of Category 2 Centres to the mid-term strategic plan of the Sciences Sector.

IKCEST Secretariat presented a proposal for an Information and Knowledge Sharing Platform among all category 1 and 2 centres to the meeting, with user needs survey questionnaire for all participants distributed. The meeting also presented 11 best practices from Centres.

During the meeting, participants discussed closely and then approved the “Beijing Action Plan”, which is of great importance in guiding future work of all science centres to make more concerted efforts with the visions and missions of the UN, increasing cooperation among science centres, establishing an Information and Knowledge Sharing Platform based on proposals such as the one presented to the meeting by IKCEST or others, strengthening capacity-building of centres, optimizing specialized area and theme structures and resources complementation.

This very first UNESCO Science Centres Coordination Meeting is of great significance in the history of UNESCO. Within the framework of UNESCO, the meeting brought together 47 science centres widely distributed around the world, and provided opportunities for these centers to exchange experiences and thoughts face to face, to strengthen the coordination mechanism and enhance exchanges and cooperation among them, thus contributing to the implementation of the UN SDGs and 2030 Agenda.

UNESCO science centres came together in China

The first global meeting of UNESCO Natural Sciences Centres opened today in Beijing, China, to discuss how they can best contribute to the implementation of the 2030 Agenda for Sustainable Development and strengthen cooperation. UNESCO's Natural Sciences Sector counts with a network of 65 associated centres in the fields of water, renewable energy, science policy, biotechnology, geosciences, the basic sciences and remote sensing. Forty five of the centres were represented for this first meeting, together with four UNESCO affiliates: the Abdus Salam International Centre for Theoretical Physics (ICTP), the UNESCO-IHE Institute for Water Education, the World Water Assessment Programme (WWAP) and the World Academy of Sciences for the Developing world (TWAS).

"We are grateful for the generous cooperation of the science and engineering community in China for taking this initiative because it is most timely for us to have this opportunity to discuss our common future together in particular in relation to the 2030 Agenda for Sustainable Development" said Flavia Schlegel, Assistant Director-General for the natural Sciences, as she opened the meeting, together with Prof. Zhou Ji, President of Chinese Academy of Engineering (CAE), Prof. Tan Tieniu, Vice President of the Chinese Academy of Sciences (CAS), and Mr. Zhou Jiagui, Deputy Secretary General of the Chinese National Commission for UNESCO.

"Today we will speak to you about the link between science, technology and innovation and the Sustainable Development Goals, which are more than a continuation of the Millennium Development Goals, as they are aimed to be inspirational for all countries of the world to achieve the 2030 Agenda for Sustainable Development" she continued. "Then you will reflect on how we can collectively through synergy, knowledge sharing and networking increase our contributions to the 2030 Agenda so that we can best help all countries achieve sustainable development."

Category 2 institutes and centres provide a valuable and unique contribution to the implementation of UNESCO's programme through capacity building; knowledge sharing; theoretical and experimental research; and advanced training. These institutes are under the auspices of UNESCO but are not legally part of the Organization; they are associated with it through formal arrangements approved by the General Conference.

In his opening remarks, Mr. Zhou Jiagui

stressed the need for synergies and increasing cooperation between centres, which can play an essential role in reaching UNESCO's objectives, as well as Sustainable Development Goals.

"Science and Technology have been propelling human society forward with irreversible and irresistible force. Every major advance in human civilization is closely related to revolutionary breakthrough in S&T" stated Prof. Zhou Ji (CAE). Recalling the creation of the International Knowledge Centre for Engineering Sciences and Technology (IKCEST) as a UNESCO Category 2 Centre in 2014, he declared that science and Technology have become the greatest power for various countries in the world to improve the overall national strength, seek development opportunities and map out the future of humanity.

Prof Tan Tieniu explained that for the past 25 years, the Chinese Academy of Sciences has given great importance to cooperation with UNESCO, especially in the fields of basic sciences and science policy, and called on the representatives of UNESCO's centres to work together to support common goals in scientific research, capacity building and development.

Over the next three days, the centres will identify ways to improve information sharing and efficiency, and increase their ability to conduct joint projects. They will also focus on maximizing their efforts to assist Member States in achieving the 2030 Agenda for Sustainable Development. Together, they will develop an action plan.

The meeting is hosted by the Chinese Academy of Engineering (CAE) and the Chinese Academy of Sciences (CAS), and co-organized by two UNESCO Category 2 Centres, namely the International Knowledge Centre for Engineering Sciences and Technology (IKCEST) and the International Centre on Space Technologies for Natural and Cultural Heritage (HIST), with the support of the Chinese National Commission for UNESCO and the Permanent Delegation of China to UNESCO. (From http://www.unesco.org/, May 16, 2016)

Opening Speech by Flavia Schlegel, Assistant Director-General for the Natural Sciences Sector of UNESCO on the occasion of the UNESCO Science Centres Coordination Meeting

Dear Prof. Zhou Ji, President of the Chinese Academy of Engineering,
Dear Prof. Chen Zuoning, Vice President of the Chinese Academy of Engineering,
Dear Prof. Tan Tieniu, Vice President of the Chinese Academy of Sciences,
Dear Prof. Zhou Jiagui, Vice Secretary-General of the Chinese National Commission for UNESCO,
Dear Director of IKCEST,
Dear Director of HIST,
Dear colleagues,
Ladies and Gentlemen,

Welcome to this, the first-ever meeting of centres and institutes affiliated with UNESCO's Natural Sciences Sector. I am delighted you could join us here in Beijing for what I hope will be a stimulating exchange of ideas.

On behalf of all of you, may I thank our generous Chinese hosts, the Chinese Academy of Engineering (CAE) and the Chinese Academy of Sciences (CAS), as well as the meeting co-organizers who are themselves UNESCO Category 2 Centres, namely the International Knowledge Centre for Engineering Sciences and Technology (IKCEST)

and the International Centre on Space Technologies for Natural and Cultural Heritage (HIST). Our thanks also go to the Chinese National Commission for UNESCO and the Permanent Delegation of China to UNESCO, and to the UNESCO Beijing Office as well. I know everyone involved, including colleagues from UNESCO Headquarters and around the world in our Field Offices, some of whom are with us here, worked very hard to organize this event. I'd also like to thank the German Ministry of Environment for its support.

We are grateful for the generous cooperation of the science and engineering community in China for taking this initiative because it is most timely for us to have this opportunity to discuss our common future together in particular in relation to the 2030 Agenda for Sustainable Development.

And I'd like to thank each and everyone of you for making the journey to Beijing to contribute to this meeting.

I remind that we have present today both category 1 and category 2 centres and institutes of the Natural Sciences Sector. What is the difference? Our two category 1 centres are an integral part of UNESCO's programme in science, even if they have significant autonomy. They build scientific capacity in Member States, particularly in developing countries, and each has an outstanding international reputation, training hundreds of young scientists each year. I would like to acknowledge the presence of the UNESCO-IHE Institute for Water Education and the Abdus Salam International Centre for Theoretical Physics (ICTP) in addition to The World Academy of Sciences (TWAS) and the World Water Assessment programme (WWAP), both UNESCO programmes.

Category 2 centres, proposed by UNESCO member states, are under the auspices of UNESCO but are not legally part of UNESCO; you are associated with UNESCO through formal arrangements approved by the UNESCO governing bodies but do not receive any direct financial support from the Organization. You are, or will be, contributing to the execution of our science programme through the work that you already do or plan to do in your discipline, whether it is in using science to manage better water resources, in physics or in science policy: through capacity building; the exchange of information; theoretical and experimental research; and advanced training. Today 45 of the 65 natural sciences-related category 2 centres are present. This is wonderful!

I am so pleased we have this unique opportunity to get to know each other better. The family of UNESCO science centres has grown, with 17 new centres approved at the last UNESCO General Conference late last year. Some of you are already interconnected, such as the ones of the Asia Pacific region or those that are part of the UNESCO Water Family. Already, yesterday and today, you have participated in the Gallery, which I hope will serve as a means for you to forge new connections with other centres and hopefully collaborate in the future.

Today we will speak to you about the link between science, technology and innovation and the Sustainable Development Goals, which are more than a continuation of the Millennium Development Goals, as they are aimed to be inspirational for all countries of the world to achieve the 2030 Agenda for Sustainable Development. Then you will reflect on how we can collectively through synergy, knowledge sharing and networking increase our contributions to the 2030 Agenda so that we can best help all countries achieve sustainable development.

Tomorrow we will look at where your centres and institutes fit within the Sector's programme

of work, and deliberate on how we can increase cooperation between centres, and between centres and UNESCO's science professionals around the world, in support of the programme of work. How can we improve information sharing? How can we be more efficient? How can we all increase our ability to raise funding for joint projects? How can we maximize our efforts to assist Member States in achieving the 2030 Agenda? We will have presentations on the last day of best practices and we will conclude with a joint statement of how we will go forward with concrete actions in a new spirit of collaboration, to bring the important benefits of the science we do to people everywhere.

But, most important of all, let's use the time and space, graciously granted to us by all our common effort, for the best of future cooperation.

Thank you.

Opening Remarks by Zhou Ji, President of CAE on the occasion of the UNESCO Science Centres Coordination Meeting

Respected Assistant Director-General Flavia Schlegel,
Ladies and Gentlemen,
Dear friends,

Good afternoon!

We are gathered here in Beijing today to attend and witness the first UNESCO Science Centres Coordination Meeting since its establishment in 1945. On behalf of the Chinese Academy of Engineering (CAE), I would like to extend warm congratulations on the convening of the meeting, and express sincere greetings to the over 120 representatives from 38 countries, as well as friends from the media.

Dear friends, since ancient times, science and technology has been propelling the human society forward with irreversible, irresistible force. Every major advance of human civilization is closely related to revolutionary breakthroughs in science and technology. Nowadays, science and technology has become the primary productive force, and has been playing an increasingly prominent role of the cornerstone and driving force for the progress of human civilization. Science and technology play a more decisive role in the economic development, social progress and people's well-being more profoundly than ever before in history.

Entering the 21st century, mankind will keep on moving on the basis of existing science and technology achievements, and innovation-driven development will become the inevitable choice for sustainable development of the human society. Sci-tech innovation has become the greatest power for various countries in the world to improve the overall national strength, seek development opportunities,

and map out the future of humanity.

UNESCO is the world's largest intergovernmental organization in education, science and culture. For the past 71 years, UNESCO has carried out a tremendous amount of basic and pioneering work in promoting technology development, personnel exchanges, education popularization, sharing of education resources, knowledge dissemination as well as cultural preservation and inheritance among all countries. It has also made unremitting efforts to boost mutual understanding and trust between peoples all over the world, and facilitate exchanges and mutual learning among different civilizations.

The Chinese Academy of Engineering is the highest honorary and advisory academic institution in China's engineering science and technology community. Participating in and promoting the global development of science and technology on behalf of China's engineering science and technology community is an important mission of us. With the support of UNESCO, we launched the UNESCO International Knowledge Centre for Engineering Sciences and Technology (IKCEST) in 2014. Last year, we, together with Tsinghua University, applied to UNESCO for the establishment of the International Centre for Engineering Education, which was approved in the 38th session of the General Conference of UNESCO. I hope that these two Centres will build a new bridge between UNESCO and CAE, and that they can become a platform for cooperation among UNESCO science centres, and a link for promoting friendship among all participants here. I hope we can conduct smoother and closer cooperation and exchanges in the future.

Specialized in different areas, various UNESCO science centres have carried out a series of fundamental and forward-looking research, playing an important role in the promotion of sci-tech development and innovation worldwide, thus becoming effective support for UNESCO to carry out various work. We are ready to work with colleagues from all countries to contribute our share to the continued prosperity and harmony of human society within the UNESCO framework.

To conclude, I wish the meeting a great success. I wish you all extremely beautiful memories about Beijing and this meeting.

Thank you.

Opening Remarks by Tan Tieniu, Vice President of CAS on the occasion of the UNESCO Science Centres Coordination Meeting

Honorable Dr. Flavia Schlegel, Assistant Director-General for Natural Sciences of UNESCO
Honorable Prof. Zhou Ji, President of the Chinese Academy of Engineering
Excellencies,
Distinguished Guests,
Friends,
Ladies and Gentlemen,

It's my great honor to be here today for the UNESCO Science Centers Coordination Meeting. As far as I know, this is the first time that UNESCO has its international meeting with its category 1 and category 2 centers and I feel very pleased that the Chinese Academy of Sciences has the honor to co-host this meeting together with UNESCO and the Chinese Academy of Engineering. On behalf of the Chinese Academy of Sciences, I welcome all to Beijing for this meeting.

Since its founding in 1949, the Chinese Academy of Sciences has been playing an increasingly important role in the Science, Technology and Innovation in China. With 104 research institutes and 3 prestigious universities across China, the Academy has become a unique and biggest national research institution which brings together scientists and engineers from China and around the world to address both theoretical and practical problems based on world-class research infrastructures. In recent years, in collaboration with the member states of UNESCO, the Chinese Academy of sciences has also set up a 8 research centers in Thailand, Nepal, Myanmar, Sri Lank, Uzbekistan , Kenya and so on.

The Chinese Academy of Science attaches great importance to the cooperation with UNESCO. Since 1980s, the Academy has been one of the 6 standing members of the Chinese national Commission for UNESCO. It has conducted different forms of collaboration with UNESCO in basic sciences, science policy, ecological sciences and so on. For example, the National Committee of the Man and the Biosphere (MAB) Program is hosted in the headquarters of the Academy which has been providing operational and project funding to the activities of MAB in China as well as in the world.

With regard to category 2 centers under the auspices of UNESCO, I'm very delighted to say that the Academy is now hosting two of them, namely the International Centre on Space Technologies for Natural and Cultural Heritage (HIST) and International Centre for Theoretical Physics for Asia and Pacific (ICTP-AP). While ICTP-AP is still in the process of preparation for establishment, HIST is very active. It's one of the co-organizers of this meeting. It also serves as the rotating chairman of the Union of UNESCO Category 2 centers in China. In additional to domestic projects, HIST has successfully undertaken international projects for Angkor World Heritage Site in Cambodia, East Rennel World Heritage Site in Danger in Solomon Islands and the various World Heritage sites in Sri Lanka by using space technologies. It has also made contributions to the capacity building for more than 100 managers of World Heritage sites and World Biosphere Reserves in Asia and Africa in terms of using space technologies for better management and conservation of UNESCO sites.

It's my sincere wish that, through this meeting, HIST and ICTP-AP will work more closely with UNESCO and all the other science-related centers to make better and greater contributions to the implementation of UNESCO science programs, and of the SDGs and 2030 Agenda of UN in the future. The Chinese Academy of Sciences will further continue to cooperate with UNESCO, and will provide all the necessary support to the operation of HIST and ICTP-AP and hope to have the opportunity to host more of such centers. Last but not the least, ladies and gentlemen, I would like to take this opportunity to extend my best wishes to a great success of this meeting. Have a good time in China.

Enjoy the meeting. Enjoy your time in Beijing.

Opening Remarks by Zhou Jiagui, Deputy Secretary-General of Chinese National Commission for UNESCO on the occasion of the UNESCO Science Centres Coordination Meeting

H.E. Ms Flavia Schlegel, Assistant Director General for Natural Science,
H.E. Mr Zhou Ji, President of Chinese Academy of Engineering and Ms Chen Zuoning, Vice President of Chinese Academy of Engineering,
H.E. Mr Tan Tieniu, Vice President of Chinese Academy of Sciences,
H.E. Ms Wu Qidi, Former Vice-Minister of Education,
Distinguished Ladies and Gentlemen,

I am very glad to be invited to the UNESCO Science Centres Coordination Meeting. First of all, I would like to express my gratitude to the organizer, the Chinese Academy of Engineering, the Chinese Academy of Sciences and especially UNESCO and Ms Flavia Schlegel, who decided to host this important meeting in China, which means mutual trust and responsibility and also means the pragmatic cooperation between China and UNESCO. China will work hard to provide good conditions for the meeting, and sincerely hope the meeting with fruitful results.

UNESCO has established a number of category 2 centres. These centres serve in their fields of specialization as international or regional centres and poles of excellence to provide services and technical assistance to Member States, cooperation partners and also internally to the network of UNESCO field offices. China supported and paid great attention to the development of category 2 centres. We have established 13 category 2 centres, 8 of them in the fields of natural sciences and 5 in the fields of education and culture. These centres work with expertise and other high-quality resources with the support of Chinese government and relevant research institutes develop a series of important research and training activities worldwide, which made contribution to the implementation of UNESCO's general strategy in each sector and promotion of international educational, cultural and scientific communication and cooperation.

Science, technology and innovation play a very important role of making human's dream come true. The scientific category 2 centres shoulder important responsibility. We hope this meeting will inject new energy and power to the construction of centres, promote the centres become the belt and paragon between the member states and UNESCO, make greater contributions to achieve the missions of UNESCO, maintain world peace, promote sustainable development and human justice through international intelligence cooperation innovation.

To conclude, I wish this meeting a complete success. I hope all the guests enjoy a happy time in China.

Thank you!

UNESCO Science Centres Coordination Meeting Summary of Proceedings

Introduction

The UNESCO Science Centres Coordination Meeting was held from 15 to 18 May 2016 at the Beijing Conference Centre, Chaoyang District, Beijing, China. The meeting gathered 45 Centres out of the 65 Category 2 centres affiliated to the Natural Sciences Sector, which represent over 50% of all UNESCO Category 2 Centres (115 in total). UNESCO-IHE Institute for Water Education, the Abdus Salam International Centre for Theoretical Physics (ICTP), The World Academy of Sciences (TWAS) and the United Nations World Water Assessment Programme (WWAP) also attended. Among the 45 centres, 24 were from HYD, 16 from PCB and 5 from EES (see matrixes at the end of this report).

As Category 2 Centres are considered a powerful tool to enable UNESCO SC to assist Member States in view of the achievement of the Sustainable Development Goals, the main objectives of the coordination meeting were:

(i) to identify how UNESCO can assist the centres in aligning the scope of their action towards the achievement of the SDGs;

(ii) to identify how centres can increase their contribution to the implementation of SC's programme for the current biennium and beyond;

(iii) to devise mechanisms increasing cooperation between regionally – and similarly-themed centers to work together as a network;

(iv) to create synergies between Centres for addressing the global challenges and;

(v) to initiate an inclusive information sharing tool or platform for the Centres.

DAY 1 - Monday 16 May 2016

1. Opening Ceremony (Master of Ceremony Qunli Han)

The Opening Ceremony of the UNESCO Science Centres Coordination Meeting gathered more than 120 participants from 38 countries, as well as the directors of 45 out of the 65 Category 2 Centres in the Science Sector. Flavia Schlegel, UNESCO Assistant Director- General for Natural Sciences (ADG/SC) took the floor, for an Opening Address in which she expressed UNESCO's gratitude for the fruitful cooperation with the engineering and science communities in China, through the Chinese Academy of Engineering (CAE) and the Chinese Academy of Sciences (CAS). This excellent cooperation which is demonstrated by this important gathering: "the first ever UNESCO Science Centres Coordination Meeting".

ADG/SC particularly stressed the crucial role of the 3-day conference in capitalizing on the experience, the expertise and know-how of the 45 Centres participating, to shape an inclusive approach in coordinating the Science Centres. She hoped the meeting be characterized by a novel " Beijing spirit " of collaboration and partnership, which would be a step forward in bolstering the contribution of the network of Science Centres in the implementation of the United Nations 2030 Agenda for Sustainable Development, and in improving communication between Centres and in gaining visibility.

Mr. Zhou Jiagui, Deputy Secretary-General of the Chinese National Commission for UNESCO took the floor after ADG/SC and underlined the great need to team-up in order to create synergies and cooperation between Centres. In his words, such common action and shared vision is important for the efficient programme delivery of UNESCO.

Prof. Zhou Ji, President of the Chinese Academy of Engineering (CAE), in his address, conveyed the satisfaction of the CAE with this major first international coordination meeting, that

will contribute to strengthen interdisciplinarity, joint strategic approach on challenges, and regional and international collaboration between Centres. He applauded UNESCO for the great work done and underlined that CAE attached a lot of importance to their cooperation with UNESCO, especially through the two engineering category 2 centres - the International Knowledge Centre for Engineering Sciences and Technology (IKCEST) and the International Centre for Engineering Education (ICEE), which he hoped will serve as new bridges promoting more cooperation in the future.

Prof Tan Tieniu, Vice President of the Chinese Academy of Sciences (CAS) stated: "The CAS always attached great importance to the cooperation with UNESCO since the 1980s, especially in the basic sciences and science policy fields". He thus called the C2Cs to work together towards the achievement of the 2030 Agenda for Sustainable Development. Prof Tan Tieniu ensured that CAS will continue its meaningful cooperation with UNESCO, and will continue to offer the necessary support towards the development of UNESCO's programme in sciences.

IKCEST also signed a MoU on the morning of Day 1 with the Regional Centre for Urban Water Management based in Tehran, Iran.

2. Presentation of the SDGs, the 2030 Agenda and the Global Framework Agreements (Moderator Giuseppe Arduino)

ADG/SC presented the different Global Framework Agreements, which set the basis of UNESCO's work and which should guide the cooperation with and between Centres. She clearly highlighted the prevalent need for an alignment of the Science Centres programmes toward the achievement of the SDGs. In this context and in view of getting familiarized with the landscape of the Global Framework Agreements, the ADG introduced the (i) SDGs; (ii) the Samoa Pathway which focuses on small Island Developing States; (iii) the Sendai framework on preparedness and management of Disaster Risks; (iv) the Istanbul Programme of Action which targets LDCs; (v) the Addis Ababa Action Agenda which set priority areas such as the adoption of STI strategy as part of national Sustainable Development plans, promotes SC collaboration, (vi) the enhancement of STEM education at all levels, and recognizing ILKs; (vii) the Technology Bank for LDCs and, (viii) the Technology Facilitation Mechanism. ADG/SC mentioned a «All or nothing Agenda», which should take advantage of the strong interlinkages of the pillars of the before-mentioned Global Frameworks in view of attaining global sustainable development.

The comparative advantages of UNESCO in contributing to these global agendas were underlined: universal (for developed and developing countries), multi-disciplinary (SC, IOC, SHS, ED, CLT, CI), with a global mandate, comprising networks of Centres, Chairs, laureates, awardees and alumni.

3. Breakout session on the Contribution of Centres to the implementation of the 2030 Agenda

How to improve the contribution and how to have a more focused actions of the science Centres in the implementation of the 2030 Agenda together with UNESCO was a pervading topic throughout the three-day meeting. In this context, the breakout session allowed the mapping of the specific SDGs covered by the Centers against the ones which are priority for the Natural Sciences Sector's programmes. This session has shown an acute coverage and alignment with the main SDGs that the Natural Sciences Sector targets, i.e.: SDG4-Education, SDG6-Water, SDG9-Innovation, SDG13-Climate Change, SDG15-Environment, and SDG17-Partnership; and to a lesser extent: SDG7-Energy and SDG11-Sustainable cities.

The session also gave the opportunity for the 6 groups to discuss the levers they have to influence policies at national and regional levels towards the implementation of science SDGs, to identify possible

synergies between Centres in view of fulfilling specific targets of the SDGs, to define sustainable STEM education for national and regional scientific integration and development, to discuss means of networking and of implementation to leverage STI for development, to promote basic and applied research and innovation as one of the main triggers of scientific development, and to better communicate science e.g. through the establishment of an inclusive communication platform.

DAY 2 – Tuesday 17 May 2016

1. Centers in the implementation of UNESCO SC programmes and objectives (Moderator Shahbaz Khan)

ADG/SC introduced the day's session by outlining the important role of centers in the implementation of the Natural Sciences Sector programmes. The document 37 C/18 explaining the process of renewal of category 2 centers has been used as a row material to introduce the main assets of science centers in contributing to SC programmes and objectives. In light of this, few working recommendations have been given as examples to the discussion:

a) stay focused on priority areas of SC;

b) keep the quality of the partnership towards the implementation of the SDGs;

c) team-up for a more efficient delivery;

d) promote open access towards scientific knowledge.

2. Breakout session on the way to increase cooperation among the similarly-themed Centres: On the way to the "Beijing Action Plan"

Following the expressed will to enhance understanding and synergies between C2Cs, as well as between C2Cs and UNESCO programmes, and to agree on a non-legally binding common statement, the C2Cs worked on Day 2 on a joint declaration termed "The Beijing Action Plan". The discussion inside the different groups, to contribute to the joint statement, has been nourished by the following guidelines:

- the preparedness of centres to science knowledge building or/and policy advice in connection with the 2030 Agenda for sustainable development

- the mechanisms for centres to contribute to the development of STI conducive to the attainment of SDGs

- achieve effective communication.

3. Breakout session (regional groups) on how the Centres can improve their contribution to the implementation of the mid-term strategy for SC and how they can work together more efficiently: On the way to the "Beijing Plan of Action"

In this session, special focus lay on the ways to improve efficiency among C2Cs and the collaborative mechanisms of implementation of programmes that may be developed at regional level. In this context few ideas and recommendations came out from the discussion:

- to develop common approaches to funding bodies for joint projects and programmes;

- to render available and regularly the information on the work of the Centres, especially regarding the contribution to UNESCO's mid-term strategy;

- to mobilize Member States on rotational basis on the Centres work and achievements;

- to create bridges with regional strategies, such that the STISA 2024 and the Agenda 2063 The Africa We Want;

- for the Centres in Europe, it has been recommended to take advantage of the European Commission for project funding and partnerships;

- to stimulate a collective communication strategy at all levels;

- to establish science centres coordination meeting at regional level.

In this context, 3 MoU were signed between Centres sharing the same objectives. In the same

venue, the Asia-Pacific group announced that Malaysia will host the next regional science Centres coordination meeting in 2017.

4. Significance of establishing an information sharing platform among Centres (Moderator Michael McClain)

After a short introduction from Qunli Han, Director of UNESCO Ecological and Earth Sciences, on existing initiatives pertaining to data sharing and information, and the role of social media, benefits were stressed but limitations that could be improved were also commented on. The latter may be improved through a renewed, open and transparent mechanism for collaboration and information sharing platform based in IKCEST.

The creation of a communication tool to share and exchange on the diverse and purposeful experiences of each Centres; to nourish and draw links among joint commitments/work on the ground, was raised on different occasions during the meeting. It is with pleasure, therefore, that UNESCO welcomed the offer of IKCEST to establish a joint platform for communication where the ownership should be shared. It is worth mentioning that, in addition to the joint platform, Centres have in great majority expressed appreciation with respect to thematic and regional groupings to better work together for the same objective: to advance science as one of the main developmental levers.

DAY 3 – Wednesday 18 May 2016

1. Session on best practices (Moderator Giuseppe Arduino)

The morning session allowed 11 Centres to present their work, success, achievements and difficulties in the spirit of sharing best practices. ISTIC, the African Regional Centre for Eco-Hydrology (ARCE), IKCEST, the International Centre on Coastal Ecohydrology, HIST, MCTP, ICHARM, CIMPA, the International Research Centre on Karst (IRCK), the Asia Pacific Centre for Ecohydrology (APCE) and the International Centre on Water Resources and Adaptation to Global Change (BfG) all shared their experiences with the group. A wide range of success stories and best practices have been shared and discussed, namely:

1. the ISTIC Inquiry-based science education programme in South East Asia;
2. the ARCE experience in applying ecohydrological solutions to water management in Ethiopia
3. the IKCEST DRR educational platform, including on-line educational module
4. ICCE presenting the network of UNESCO Ecohydrology family programme
5. the HIST platform to preserve UNESCO's World Heritage sites through remote sensing
6. the Academic mobility in the MCTP
7. the ICHARM programme of best practicable knowledge to local practices on water-related disaster management
8. the CIMPA in-countries decentralized way of capacity development in mathematics, as well as the international open call for proposals of research schools in mathematics
9. the International Research Centre on Karst (IRCK)
10. the APCE experience in ecohydrology in Indonesia
11. the e-learning tool developed by the Koblenz Centre, as well as the programme on water diplomacy.

2. Closing Ceremony

The closing Ceremony of the UNESCO Science Centres Coordination Meeting held in the afternoon of 18 May 2016, and gathered more than 90 participants. The CAE, the CAS, the representative of the Centres and the ADG SC took the floor respectively:

Prof. Zhong Zhihua, Academician of the Chinese Academy of Engineering, Secretary General of the Chinese Academy of Engineering,

Director of IKCEST expressed to all participants congratulations for the success of the meeting with outcomes beyond the expectations. He expressed his satisfaction to the presence of 45 Centres to this meeting, which helped to clarify the important role of Centres in the implementation of science programmes and strategies for the benefit of Member States in the context of the SDGs.

Prof. Guo Huadong, Academician of the Chinese Academy of Sciences, Director of HIST praised the great achievement made in setting the "Beijing Action Plan". He welcomed the upcoming second edition of the regional meeting of Asia-Pacific Science Centres to be held in Malaysia and encouraged the other regions in that way.

H.E. Mary M. Khimulu, Former Ambassador of Kenya to UNESCO and Chairperson of the Governing Board of the Regional Centre for Groundwater Resources Education, Training and Research in East Africa, Kenya conveyed the great thanks of the centres and participants to the hosts of this first edition of the UNESCO Science Centres Coordination Meeting.

ADG/SC, in her concluding remarks, thanked the participants and expressed UNESCO's satisfaction with the different outcomes of the meeting, especially the "Beijing Action Plan" adopted by the Centres attending the meeting. She pointed out that this is not a legally binding document but a declaration of will to collaborate ahead towards the achievement of the UN 2030 Agenda. She expressed her appreciation to Malaysia for proposing to host the next SC category 2 centres meeting for the Asia-Pacific region in 2017 and encouraged the other regions to do likewise. She also welcomed the idea of a joint platform of communication, and requested the creation of a working group to proceed with the concept. ADG/SC also warmly welcomed the idea of regional meetings between Centres, as well as the MoUs of cooperation signed by category 2 Centres during the meeting in Beijing.

Below is the matrix of the UNESCO Science Category 2 Centres by region and themes in general and matrix of the distribution of C2Cs present at the Beijing Meeting.

SCIENCE C2C MATRIX TOPIC/REGION

	HYD	PCB	EES	TOTAL
AFR	4	3	1	8
APA	11	10	4	25
ARB	5	1	0	6
EUR	10	6	2	18
LAC	6	2	0	8
TOTAL	36	22	7	65

C2C TOPIC/REGION PRESENT AT BEIJING

	HYD	PCB	EES	TOTAL
AFR	3	3	0	6
APA	9	10	4	22
ARB	3	0	0	3
EUR	6	5	1	12
LAC	1	1	0	2
TOTAL	22	19	5	45

Please visit the UNESTEAMS platform at the following address for the photo gallery, videos, presentations and flipcharts of sessions of the Meeting: https://teams.unesco.org/cop/unesco-s/SitePages/Home.aspx

Beijing Action Plan

UNESCO Science Centres Coordination Meeting

Beijing, China, 15-18 May 2016

Preamble

We, the representatives of the science-related Category 2 Centres and Institutes under the auspices of UNESCO and representatives of UNESCO-IHE Institute for Water Education, the Abdus Salam International Centre for Theoretical Physics (ICTP), The World Academy of Sciences (TWAS), the United Nations World Water Assessment Programme (WWAP) and the UNESCO Secretariat from Headquarters and the Field Offices, gathered in Beijing from 15to 18 May 2016 at the first UNESCO Science Centres Coordination meeting;

Expressing our gratitude to the hosts (the Chinese Academy of Engineering and the Chinese Academy of Sciences), supporters (the Chinese National Commission for UNESCO and the Ministry of Environment of Germany) and co-organizers [International Knowledge Centre for Engineering Sciences and Technology (IKCEST) and International Centre on Space Technologies for Cultural and Natural Heritage (HIST) of China];

Taking note of the recent adoption by the United Nations General Assembly of the Agenda 2030 and the Sustainable Development Goals (SDGs); Sendai Framework on Disaster Risk Reduction, Regional strategic plans, such as African Union 2063 Development Agenda; Samoa Pathway, the adoption of the Paris Agreement on Climate Change; and the commencement of UNESCO's preparations for the 39th Programme and Budget;

Recognizing the rapid global increase in the number of UNESCO Science Centres and range of science and technology domains they cover, representing a new modality for delivery of UNESCO's science mission and programmes;

Recognizing the difference in the coordination mechanisms; the lack of diversification in the themes of the centres and low number of Category II Centres in Africa compared with other regions;

Emphasizing that substantial contributions from the sciences will be required to attain the 17 SDGs and associated targets and other global and regional Strategic Development Agenda;

Further emphasizing that these contributions will in turn require institutional capacity-building in both developed and developing countries, towards which UNESCO's Science Centres represent a highly effective modality;

Stressing that UNESCO's Science Centres and affiliated institutions constitute a vast pool of high specialized scientific knowledge and expertise across the full range of UNESCO's science mandate – ranging from science policy, to basic and engineering sciences, to water, ecological and earth sciences to disaster risk reduction – and are positioned to make a decisive contribution towards attaining the SDGs and other global and regional Strategic Development Agendas;

Taking note that in order to fully realize this potential, coordination, collaboration and sharing among UNESCO's Science Centres should be further enhanced and aligned with UNESCO's overall contributions towards the SDGs with consideration to UNESCO's strategic plans and programmes along with other global and regional Strategic Development Agendas.

Agreed Actions

Therefore, within the mandate of UNESCO and its Natural Science Sector, we aim to:

Align the strategic plans and programmes of each UNESCO Science Centre with the relevant SDGs, regional development agendas, the Paris Agreement on Climate Change and the Sendai Framework on Disaster Risk Reduction, and map the contributions of each Centre towards these agreements;

Make available and regularly update standardized information brief on the mandate, areas of expertise, deliverables, services, products and tools of each Centre for dissemination to UNESCO's member states and for the attention of the Governing Bodies of the Organization;

Enhance coordination and exchange between UNESCO Science Centres through existing and new UNESCO initiatives, as well as bilateral or multilateral collaboration;

Welcome the establishment of an Information and knowledge Sharing Platform based on proposals such as the one presented to the meeting by IKCEST or others;

Facilitate the Member States to strategically diversify Category 2 Centres especially in Africa and Arab States, in all mandates of Natural Science Sector;

Build mutual capacity realizing the full potential of cooperation among the Centres;

Encourage member states on a voluntary basis to enable the organization of regular meetings of UNESCO Science Centres at global, interregional and regional levels;

Develop joint efforts to approach funding bodies for cooperative projects and programmes that bring together complementary resources and scientific expertise to meet the specific needs and requirements of UNESCO's member states;

Promote and advocate through public information channels - including UNESCO publications, workshops and information meetings - best practices that demonstrate how UNESCO Science Centres benefit societies.

Closing Remarks by Zhong Zhihua, Secretary-General of CAE on the occasion of the UNESCO Science Centres Coordination Meeting

Respected Assistant Director-General Flavia Schlegel,
Ladies and Gentlemen,
Dear Friends,

Good afternoon!

It's a great honor to join over 120 representatives from UNESCO science centres coming from 38 countries for the first UNESCO Science Centres Coordination Meeting in Beijing.

Over the past three days, directors and representatives from 45 science centres located in 23 countries have conducted extensive and in-depth exchanges on how to contribute to the implementation of the UN Sustainable Development Goals (SDGs) and 2030 Agenda.

Meanwhile, the meeting has made important progress in increasing the cooperation among regional/similarly-themed centres, clarifying the role of category 2 centres in science projects implementation and enhancing the contribution of category 2 centres to the mid-term strategic plan of the Sciences Sector. It has also shared the best practices of category 2 centres.

As the first of its kind in the UNESCO history, the meeting has produced fruitful results. The Beijing Action Plan has been reviewed and approved at the meeting, which is of great importance in guiding the future work and development of category 2 centres. Beijing Action Plan includes the important agreement to encourage establishment of an information sharing platform based on proposals such as the one presented to the meeting by IKCEST or others.

On behalf of the Chinese Academy of Engineering (CAE), I would like to extend warm congratulations on the success of the meeting.

China has been committed to supporting the UNESCO's efforts in education, science & technology and culture. With the support of UNESCO, CAE launched the International Knowledge Centre for Engineering Sciences and Technology (IKCEST) and jointly applied for the establishment of the International Centre for Engineering Education (ICEE) with Tsinghua University, both of which received the recognition and approval of the UNESCO General Conference.

With these two centres servings as bridges with UNESCO, CAE is ready to fulfill their vision and mission, to promote exchanges and cooperation with other centres within the UNESCO framework, to support the implementation of sustainable development, and to make contributions to other developing countries esp. in capacity building, thus promoting the development of international engineering sciences and technology.

On behalf of CAE, I would like to express heartfelt thanks to the UNESCO Secretariat, the Chinese Academy of Sciences, the Chinese National Commission for UNESCO, IKCEST and HIST, for their significant contributions to the success of the meeting.

Finally, on behalf of CAE, I would like to extend my genuine thanks and best wishes to all the guests and participants. Your presence and contribution have helped tremendously to make the meeting a success. Let us join hands and work for new progress in engineering sciences and technology for humanity.

Wish you a pleasant trip back home. Hope to see you again in Beijing.

Thank you all!

Closing Remarks by CAS Member Guo Huadong, on the occasion of the UNESCO Science Centres Coordination Meeting

Dear Dr. Flavia Schlegel, Assistant Director of UNESCO
Distinguished Guests, Friends,
Ladies and Gentlemen,

I'm very pleased to have the honor to speak at the closing ceremony of UNESCO Science Centers Coordination Meeting on behalf of HIST, one of the co-organizers of this event.

After nearly three days of discussion and communication, thanks to the hard work of UNESCO staff and all the representatives of the science centres here, we have reached agreement on Beijing Action Plan. This is a great achievement which has set up a mechanism for the future cooperation among all the science centres under the instruction of UNESCO.

Three days are short. However, within such a short time, understanding has been facilitated between UNESCO Sector of Natural Sciences and the science centres, friendship has been set up among us all.

IKCEST and HIST have taken the lead in organizing the first event of this kind. I hope we will meet again some time next year in Malaysia, at least for the category 2 centers in Asia and Pacific. I also hope that all of us will meet again for the second time some time in 2018 in another country.

Last but certainly not the least, I would like to thank UNESCO for giving us this opportunity to host such a meeting. In particular, my great thanks go to Flavia, Qunli, Gifty and all the other UNESCO staff for your hard and productive work. I also wish to thank our co-organizer - IKCEST for your close cooperation. Special thanks should go to Mr. Song Dexiong、Ms. Liu Chang and their team.

Ladies and gentlemen, wish you a very nice tour to Summer Palace, a World Cultural Heritage of UNESCO, in a few minutes. Enjoy the rest of your stay in Beijing.

Thank you all.

Signing and Unveiling Ceremony of International Centre for Engineering Education held in Beijing

The signing and unveiling ceremony of the International Centre for Engineering Education under the auspices of UNESCO was held at Beijing Hotel, on the morning of June 6, 2016. Ms. Irina Bokova, Director-General of UNESCO, Prof. Zhou Ji, President of the Chinese Academy of Engineering (CAE), Prof. Qiu Yong, President of Tsinghua University, and Prof. Wu Qidi, Former Deputy Minister of Education were present at the ceremony. Prof. Zhou Ji and the Director-General signed the agreement on behalf of the Chinese government and the UNESCO respectively. Then, Prof. Zhou Ji, the Director-General, Prof. Qiu Yong, and Prof. Wu Qidi jointly unveiled the International Centre for Engineering Education. The ceremony was presided over by Prof. Zhao Xiangeng, Member of the CPC Leading Group at the Chinese Academy of Engineering.

CAE and Tsinghua University applied to the UNESCO for the establishment of International Centre for Engineering Education, and the application was approved by the 38th session of the General Conference of UNESCO in November 2015. The Centre is the first one and only UNESCO Category 2 centre that focuses on engineering education, and demonstrates that the development of engineering education in China has been well recognized by the international community. Sticking to the objectives and principles upheld by the UNESCO, the Centre will encourage research, cultivate high-caliber engineering talent, foster innovation and improve industry-university cooperation. The Centre is dedicated to pushing forward the 2030 Agenda for Sustainable Development, enhancing the quality and equality of engineering education around the world, and building a high-level talent training base, a think-tank-oriented research and consulting centre as well as a platform for international exchange. The Centre will be based in China and benefit the developing world, especially African countries and nations along the Belt and Road areas, and it strives to develop into a comprehensive, international and think-tank-oriented academic institution.

Address by Irina Bokova, Director-General of UNESCO on the occasion of the Inauguration Ceremony of the International Centre for Engineering Education, comprising the signing of the Agreement establishing the Centre as a Category 2 Centre, under the auspices of UNESCO

Excellency Professor Zhou Ji, President of the Chinese Academy of Engineering,
Mr Qiu Yong, President of Tsinghua University,
All good friends from the Ministry of Education and the Chinese National Commission for UNESCO, Excellences,
Ladies and Gentlemen,

I am deeply honoured to sign in person this agreement establishing the International Centre for Engineering Education, as a Category 2 Centre under the auspices of UNESCO.

I wish to express deep gratitude to Professor Zhou Ji for his leadership in this process.

I am very grateful to the Universities of Tsinghua and Beihang for their engagement.

Most of all, let me thank the Government of the People's Republic of China and the National Commission of China for UNESCO for their constant support.

I can hardly think of a better place than China to celebrate the power of engineering.

Over the past decades, China has amazed the world through its transformation – and engineering has been one of the engines sustaining, nourishing and driving this all-encompassing process.

Engineering is vital to all countries today, especially in the developing world, which face considerable challenges that require all the creativity and innovation that engineering can muster. This is why engineering must stand at the heart of all efforts to take forward the 2030 Agenda for Sustainable Development and the Paris Climate Change Agreement, to eradicate poverty and advance inclusive growth, to respond to the consequences of climate change, to promote the sustainable development of all societies.

The power of the sciences was evoked by President XI Jinping on 27 March, 2014, when he paid the historic visit to UNESCO. He spoke then of the importance of scientific cooperation "to spread the seeds of peace so that they will take root in the hearts and minds of the world's people".

This spirit underpins the International Centre for Engineering Education, to focus on deepening industry-university cooperation and on widening educational innovation, across the region and internationally. This same spirit guides the longstanding cooperation between China and UNESCO in this field.

In June 2014, I was honoured to participate in the International Conference on Engineering, Science and Technology, organised by the Government of China and the Chinese Academy of Engineering, and opened by President Mr. XI Jinping.

Last November, the International Forum on Engineering Education strengthened further the foundations for collaboration between Chinese

science and engineering communities and UNESCO, namely in shaping the second edition of the UNESCO Engineering Report.

Just a few days ago (15-18 May, 2016), UNESCO, the Chinese Academy of Engineering and the Chinese Academy of Sciences organized here in Beijing the first UNESCO Science Centres Coordination Meeting, bringing together 45 science centres from across the world -- I believe the Beijing Action Plan, adopted at the meeting, provides the basis to deepen the role of engineering in taking forward the 2030 Agenda for Sustainable Development.

In this spirit, let me thank you all once again for your support to the International Centre for Engineering Education, which will join with the International Knowledge Centre for Engineering Sciences and Technology that Professor Zhou Ji and I inaugurated two years ago, here in Beijing, to strengthen ever more our work to harness the power of engineering and the sciences for the benefit of all.

Thank you for your attention.

Acceptance meeting of IKCEST platform held in Shanghai

On June 15, 2016, the IKCEST Project Management Office under the General Administration Department of the Chinese Academy of Engineering (CAE) held an acceptance meeting of the IKCEST platform in Shanghai. The meeting was presided over by Song Dexiong, Director of the IKCEST Project Management Office.

The IKCEST Project Management Office invited five experts to examine review and evaluate the platform. Prof. Chen Zuoning, Vice President of CAE, led the experts panel. Members include Zhang Xiangyang, Chief Engineer at the Software Centre, Chinese Academy of Sciences, Professor Wang Xin, Director of Information Office at Fudan University, Prof. He Liang, Dean of the Department of Computer Science and Technology, East China Normal University, and Tang Jie, Associate Professor from the Department of Computer Science and Technology, Tsinghua University.

The panel listened to a report made by Shanghai Softline Information Technology Co., Ltd., which was mandated to establish the platform, and watched live demonstration of the platform. They examined documents concerning the platform construction and management and reviewed an independent test report issued by the Computer and Microelectronics Development Research Centre (China Software Testing Centre) under the Ministry of Industry and Information Technology. After that the experts raised questions regarding the platform development. Based on conscientious discussions and comprehensive evaluations, the experts considered the IKCEST platform was developed in accordance with the requirements specified in contract and technical appendix to the contract, and concluded that the original objectives were satisfied and the platform passed the acceptance test.

A delegation of IKCEST visited National Disaster Reduction Center of China

A delegation of International Knowledge Centre for Engineering Sciences and Technology (IKCEST) visited National Disaster Reduction Center of China (NDRCC) on June 23, 2016. The delegation was led by CAE Member Sun Jiulin, and joined by Song Dexiong, Executive Deputy

Director of IKCEST, Liu Chang, Director of the Division of International Cooperation, IKCEST, Liu Hongyang, Project Manager from IKCEST, and Wang Juanle, Deputy Director of Department for Geo-data Science and Sharing, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences. The delegation was received by Yang Siquan, Chief Engineer of NDRCC, Luo Yong, Deputy Director of the General Office, Zhang Yunxia, Director of the Data Centre, Zhang Lei, Director of Science & Technology Standards, Wang Jianhua, Deputy Director of Technical Equipment, and Guan Yan, Deputy Director of International Cooperation.

Firstly, Yang Siquan briefed NDRCC's major functions and its core businesses in data collection and management, disaster loss evaluation and international cooperation on disaster reduction. Song Dexiong introduced the background and framework of IKCEST and its work arrangement for the knowledge service of disaster risk reduction in response to UNESCO's needs. Wang Juanle reported on the overall framework of the Disaster Risk Reduction Knowledge Service of IKCEST as well as the technical demands of this visit. Both sides made thorough discussions about the disaster risk reduction meta data standards, database and international cooperation, reached some consensuses and reaffirmed the direction of future work, laying a solid foundation for the development of the knowledge service and for future cooperation.

Both sides agreed to strengthen cooperation in drafting the disaster meta data standards and expand cooperation to other fields, such as proposing to launch an advisory programme on disaster risk reduction and jointly hold international training sessions on disaster risk reduction. Both sides also agreed to build a strategic liaison mechanism for further exchange and cooperation.

IKCEST popularized science knowledge among young people

In order to accommodate the Campaign on "Teenagers Go into the Chinese Academy of Engineering (CAE)" launched by the CAE, the International Knowledge Center for Engineering Sciences and Technology (IKCEST) was open to youngsters on April 8, 15, 22, May 27, June 16 and 24 respectively, in order to introduce the concepts of building the centre and popularize related science knowledge.

CKCEST News

The China Knowledge Centre for Engineering Sciences and Technology (CKCEST) is a significant part of and vital support for the International Knowledge Centre for Engineering Sciences and Technology (IKCEST).

First CKCEST Work Conference of 2016 held in Hangzhou

On May 6, 2016, the first CKCEST Work Conference of 2016 was held in Hangzhou, Zhejiang. Pan Yunhe, Former Executive Vice President of Chinese Academy of Engineering (CAE) and Chen Zuoning, Vice President of CAE attended the conference and gave some instructions. The conference was jointly presided over by Song Dexiong, Director of CKCEST Project Management Office and Zhuang Yueting, Dean of the College of Computer Science and Technology of Zhejiang University, and was attended by 84 staff from the project management office, technology centre, platform development team and all the sub-centres.

The attendees reported on and discussed the work plan of 2016 and the relevant progress. Firstly, Fu Jintao, representing the platform development team from Inspur, briefed the report on the work plan of 2016. Professor Wu Fei from the College of Computer Science and Technology of Zhejiang University reported the progress of the technology research on behalf of the technology team. After that, the five sub-centres for environment, ocean, information technology, creative design and geology, which plan to be launched in 2016, reported the development of their systems. The four sub-projects affiliated to the International Knowledge Centre for Engineering Sciences and Technology (IKCEST), i.e. Intelligent City Knowledge Service, Silk Road Science and Technology, Engineering Education Knowledge Service and Disaster Risk Reduction Knowledge Service reported on the progress made since the launch of the projects and their development plans. At the end of the conference, Song Dexiong introduced the work plan and key tasks for 2016 and elaborated reoriented development direction of CKCEST.

After the reports, Vice President Chen Zuoning asked the platform development team to further improve top-level designs, clearly define orientation and goals of development, and focus on strengthening the two specialized services of “strategic advisory programme” and “Mass Entrepreneurship and Innovation platform”. On the research work of the technology team, Chen Zuoning pointed out that it would be a long-term effort for the technology team to provide knowledge service tools to the sub-centres.

CAE member Pan Yunhe also put forth three specific requirements concerning the contents of the report. First, the various sub-projects of CKCEST started on different original states. Some of them are overlapping, and some of them are not covering enough areas. Therefore, it is imperative to ensure three

integrations, namely, integrating industries with universities, integrating technologies with systems, and integrating the categorization of knowledge with demands. Second, CKCEST should strengthen its service function, data services and knowledge services in particular. In data services, efforts should be made to expand the scope of knowledge delivery, analyze user feedback and constantly improve the quality of knowledge delivered. Third, the criteria currently used by CKCEST for measuring data volume, either by the number of pieces or by file size, are not precise enough. The project management office and the technology team of CKCEST should conduct a research on how data volume could be defined in a more scientific way and set out relevant standards, so as to lay the foundation for scientific research in the era of big data.

CKCEST Mass Entrepreneurship and Innovation Platform launched

On May 11, 2016, at the 2016 International Intelligent Manufacturing Conference, Zhou Ji, President of the Chinese Academy of Engineering (CAE) announced the launch of CKCEST Mass Entrepreneurship and Innovation platform to the guests from all over the world. After the announcement, Lu Yongxiang, CAE member and Honorary Chairman of the Chinese Mechanical Engineering Society, and Miao Wei, Minister of Industry and Information Technology unveiled the platform.

The Mass Entrepreneurship and Innovation platform is an entrepreneurship and innovation platform for engineering sciences and technology developed under CAE's leadership. Based on CKCEST's public and open data resources of engineering sciences and technology, the platform aims to provide engineering knowledge services to small- and micro-sized enterprises and makers in China through the application of big data and Internet technologies. It is an important effort of CKCEST to drive development through sciences and technology innovation.

The platform will be guided by the vision of "deepening the implementation of innovation-driven development" and the goal of serving "Mass Entrepreneurship and Innovation" and the "Made in China 2025" strategy, and will follow the principle of "supporting innovation and serving entrepreneurship" with pilot programs in such fields as manufacturing, creative design, strategic emerging industries. The Mass Entrepreneurship and Innovation model experimented in these three priority fields, once matured, will be applied in other sectors. The platform aims to raise China's scientific research level and ability to convert research outcomes, boost China's independent innovation capability and technology strength, leverage the multiplying effect of "Mass Entrepreneurship and Innovation" and "Internet Plus" to pool public wisdom and resources, further stimulate innovation and entrepreneurship activities in the society, accelerate the conversion of research outcomes into real productivity, thus giving new impetus to the growth of real economy.

A delegation of CKCEST visited the Institute of Scientific and Technical Information of China (ISTIC)

On March 9, 2016, a delegation led by Song Dexiong, Director of CKCEST Project Management Office visited the Institute of Scientific and Technical Information of China (ISTIC). Dai Guoqiang, Director-General of ISTIC and Yao Changqing, Director of the Research Center for Information Science Methodology (RCISM) provided an overview of ISTIC and introduced the progress and follow-up plan of the establishment of Knowledge Organization System, a sub-project of CKCEST. The attendees also discussed the fundamental role of knowledge organization in the development of CKCEST and its function as the "neuron" and "gear" to connect interdisciplinary knowledge services. At the end of the meeting, Song Dexiong and Dai Guoqiang both expressed the hope to further strengthen cooperation, especially in promoting the application of knowledge organization in the development of CKCEST.

Symposium on knowledge services for the CAE Members strategic advisory programme held by the sub-centres for metal materials, chemical engineering, metallurgy and testing technology

On March 11, 2016, the four sub-centres for metal materials, chemical engineering, metallurgy and testing technology jointly held a symposium knowledge services for the CAE Members strategic advisory programme. Wang Haizhou, a CAE Member and Song Dexiong, Director of CKCEST Project Management Office attended the meeting. Wang Haizhou briefed the suggestions for CKCEST made by some of the CAE Members in the standing committee of the Department of Chemical Engineering, Metallurgy and Material Science in February, introduced the efforts made by the four sub-centres for the strategic advisory programme of the Department, and made arrangements for next steps. Song Dexiong endorsed the plans of the four sub-centres to provide support services for the advisory programme and proposed to set up a joint knowledge service team which consists of staff both from the four sub-centres and CKCEST to ensure close and unimpeded communication with the advisory programme, and, on that basis, explore a model of advisory services with standard procedures, mechanisms and patterns, and make sure that the knowledge services of CKCEST are fully delivered.

Support service of the sub-centre for testing technology: advisory programme on the "study of the development strategy of material performance evaluation system"

On April 26, 2016, the feasibility study meeting of the advisory programme "study of the development strategy of material performance evaluation system" was held. Xu Delong, Vice President of the Chinese Academy of Engineering (CAE) and five other CAE members Wang Haizhou, Yin Ruiyu, Li Wei, Tu Hailing and Mao Xinping, together with the staff of the Division of Chemical Engineering, Material and Metallurgy, Song Dexiong, Director of CKCEST Project Management Office, Pan Gang, Deputy Director CKCEST Project Management Office and Tong Yanchun, Director of China NIL Research Centre for Proficiency Testing and Director of sub-centre for testing technology attended the meeting. During the meeting, Wang Haizhou, CAE member and head of the advisory programme, introduced the background, goals and research plans of the programme, and confirmed that the CKCEST sub-centre for testing technology would serve as the guarantee for resource collection and data analysis. Tong Yanchun said the centre would designate dedicated staff to take part in the whole advisory process and maintain close contact with the advisory programme to ensure full effect of the support service of the sub-centre.

Support service of the sub-centre for energy: advisory programme on "Energy Revolution"

On April 27, 2016, the launch meeting of the research programme "the knowledge system for energy production and consumption in China's rural areas, western regions and the 'Belt and Road' areas" was held in North China Electric Power University, which was attended by Xie Kechang, a member and Former Vice President of Chinese Academy of Engineering (CAE), Song Dexiong, Director of the CKCEST Project Management Office, Yang Yongping, Vice President of North China Electric Power University, relevant leaders and experts.

The launch meeting marked the beginning of data resources support and information services by the CKCEST sub-centre for energy to the strategic advisory programme. Dr. Tian Yajun, Technical Director of the sub-centre made a presentation on how the sub-centre could serve the strategic advisory programme for CAE members from three perspectives, i.e. the establishment of a knowledge base, the establishment of a database covering the full life cycle from energy production to consumption, and the establishment of an online platform.

The meeting praised the preliminary work of the energy knowledge service system, and requested the sub-centre to support the "Energy Revolution" programme with a focus on data collection, research output publication and platform development.

Knowledge Alliance for Manufacturing Industry established

On May 11, 2016, the summit forum on manufacturing knowledge services 2016 hosted by the Chinese Mechanical Engineering Society (CMES) was held in Beijing, in which China Knowledge Alliance for Manufacturing Industry was established. At the 2016 International Intelligence Manufacturing Conference held in the afternoon, Lu Yongxiang, CAE member and Honorary Chairman of the Chinese Mechanical Engineering Society, and Miao Wei, Minister of Industry and Information Technology unveiled the alliance.

Li Peigen, Vice Chairman of CMES and a Member of the Chinese Academy of Engineering (CAE), was elected the first Chairman of the alliance. Yang Haicheng, Vice Chairman of CMES and Chief Engineer of China Aerospace Science and Technology Corporation (CASC), was elected the Secretary-General. Knowledge Alliance for Manufacturing Industry was jointly initiated by 55 enterprises, public institutions, institutions for higher education and scientific research. Following the purpose of "developing China into a manufacturing power relying on knowledge and innovation" and upholding the principles of openness, cooperation, equality, voluntarism, risk and benefit sharing, the alliance explores new models and means of knowledge services by promoting collaborative research and pooling knowledge in order to build an open knowledge environment and to support the transformation of China's manufacturing industry.

Training session on active pushing service to CAE Members held in Beijing

On May 12, 2016, CKCEST held a training session on active pushing service to Members of Chines Academy of Engineering (CAE). Trainees are relevant personnel from four new sub-centres for environment, ocean, innovation and geology, who work on active pushing service to CAE members.

During the training session, Professor Cai Zhiyong, the specially invited expert made a detailed presentation on the model, process and contents of the active pushing service to CAE members as well as the issues to pay attention to when delivering the service. Xiao Jiahong, a customer service assistant, introduced how to use the various information resources on the CKCEST platform and explained the requirement on the format of the active pushing service to CAE members. At the end of the training session, Pan Gang, Deputy Director of the CKCEST Project Management Office made a summary and gave further instructions on the active pushing service to CAE members to the four sub-centres.

News for Big Data Era

Big data becomes a new economic growth point, trillion RMB yuan ready for disposal

In the economic life today, big data is not only playing the supporting role of "tools" and "roll boosters", but also generating real productivity and emerging as a new economy industry. According to the statistics of Analysis International, the size of the big data market in China reached 10.2 billion RMB yuan in 2015, and is expected to grow to 17 billion RMB yuan by 2017. The report of Shenwan Hongyuan Securities predicts that big data can catalyze trillions of RMB yuan of GDP in a decade.

Excerpted from Xinhua News Agency

IBM: big data and analysis launch three new services, cognitive technology to be applied in multiple industries

Artificial intelligence, which is based on cognitive technology, is growing by leaps and bounds, and will undoubtedly bring tectonic changes to the business world. As can be seen from Google AlphaGo's victory over Go world champion Lee Sedol, IBM DeepBlue's victory over chess world champion Garry Kasparov, and IBM Watson's victory over its human opponent in Jeopardy, the most popular quiz show in the United States back in February 2011, artificial intelligence and cognitive business have been changing the business and life.

Because of cognitive technology, a new business age is dawning. The launch of cognitive business strategy in March marked the beginning of IBM's journey to take cognitive technology and capability to China.

Excerpted from Netease News

Outline of the 13th Five-Year Program: implementing the national big data strategy

The 13th Five-Year Program points out that China should comprehensively advance the efficient collection and effective consolidation of big data in key areas, deepen connected analysis and integrated utilization of government and non-government data, and improve the precision and effectiveness of macro control, market regulation, social management and public services; accelerate inter-departmental sharing of data resources through the unified platform for the sharing and exchange of government data; speed up the building of a unified national platform for opening government data, and promote the connectivity, openness and sharing between the government information system and public data; set up a catalogue of shared and open government data, and promote the opening of data resources to the public in accordance with law; make coordinated plan for the building of national big data platform, data centre and other infrastructures; work out the laws and regulations regarding data opening and protection, and formulate methods for managing government information resources.

Meanwhile, China need to deepen innovative application of big data in various industries, explore new business forms and models in harmony with traditional industries and accelerate the development of big data industrial chain; speed up the research of critical technologies in massive data collection, storage, cleaning, analysis, visualization, security, privacy protection and other fields; promote the development of both software and hardware products of big data; improve the public service support system and ecological system of big data industries, and strengthen the building of standards and the foundation of quality technologies.

Excerpted from Hongkan Finance

Terms on Big Data

Knowledge Organization

Knowledge organization refers to the process of arranging, processing, describing and controlling knowledge, or narrowly speaking, the process of indexing the themes, categories of literature. Knowledge organization standardizes presentation of knowledge units, reveals association of knowledge, and efficiently provides users with useful knowledge or information. According to the CKCEST Overall Implementation Plan (Trial), constructing and sharing Knowledge Organization System (KOS) is required for the demonstration sub-centres and is optional for other sub-centres.

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