**The 8th Guangdong Hong Kong Macao Sustainable Development Conference**

The eighth Guangdong Hong Kong Macao Sustainable Development Conference was organized by the Environmental Division and Civil Division of the Hong Kong Institution of Engineers and co-organized by the Guangdong Provincial Association of Science and Technology and the Macao Institute of Engineers. The Conference explored the opportunities and challenges of sustainable development in the Pearl River Delta Bay Area under the Belt and Road Initiative.

Ir Elvis Au, the Chairman of Environmental Division of the Hong Kong Institution of Engineers delivered the Welcome Speech, followed by the speeches of officiating guests Mr. KS Wong, Secretary for the Environment, Hong Kong Special Administrative Region, Guangdong representative Mr. Li Taoran, Deputy Director of the Guangdong Provincial Housing and Urban and Rural Construction Department, Hong Kong representative Ir Joseph Choi Kin-hung , the President of Hong Kong Institute of Engineers, and Macao representative Dr. Wong Seng Fat, Deputy Chairman of the Macao Institution of Engineers.

There were eight keynote speakers. First of all, Dr. W. K. Lo, Chairman of the Hong Kong Green Strategy Alliance, briefed Hong Kong’s development and achievements in green buildings, smart buildings and energy conservation and emission reduction. Dr. Lo also advocated that in order to promote the green smart cities in big bay area, Guangdong, Hong Kong and Macao should further exchange the research results and technologies and further apply these technologies. Then, Professor Chen Guanghan, Vice Dean of the Guangdong-Hong Kong and Macao Development Institute of Sun Yat-sen University, introduced the three stages of the opening of the Mainland market and elaborated five trends in Guangdong, Hong Kong and Macao during the 13th Five-Year Plan period: from manufacturing to service industry; from spontaneous cooperation to self- cooperation; from the positive to negative signing up; from economic and trade cooperation to all-round cooperation; from the introduction to going out. The third keynote speaker Prof. Wang Zhishi of Institute of Environmental Studies, Macao University of Science and Technology, shared the information on Macao's research and research on persistent organic pollutants (POPs) in the air and the ecological footprint of Macao, which indicated that Macao was in a state of weak sustainable development. Ir James Chiu, OBE, JP, the Chairman of Paul Y Engineering and Wu Xiao, chief engineer the China Environmental Protection Group presented that Hong Kong and Macao construction expertise is good at building a smart city system, Hong Kong and Macao could strengthen the financial advantages of the infrastructure to provide professional knowledge through the "construction, operation, transfer" (BOT) or "public Cooperation system "(PPP).

The keynote speaker after the tea break in the morning session was Prof. Ir Daniel M Cheng, Chairman of Federations of Hong Kong Industries, who introduced the concept of Re-industrialization – integrating manufacturing technology and information technology to provide products and to explore opportunities more efficiently. The sixth keynote speaker was Mr Shi Hai Ou, Deputy Chief Engineer of Guangzhou Metro Group Co. Ltd. Mr. Shi discussed several aspects of the sustainable development of urban rail transit and introduced the current situation and planning of Guangzhou urban rail transit development. He proposed to explore the network and diversified urban rail transit, to solve the technical problems brought by the urban network such as planning, passenger flow forecasting, comprehensive economic evaluation, hub transfer and others. Relying on the government's financial investment and policy support, constantly expand the domestic financing channels, and actively build a diversified financing channels, which could provide a strong financial protection to the construction of the subways. Next, Ms Feng Pei Shan from Department of Civil and Environmental Engineering, University of Macau, assessed the relationship between sustainability and transportation on the new University of Macau campus by establishing a set of indicators. To establish a campus sustainable transportation framework, four main directors were set up to select the potential indicators: pedestrian-friendly campus; environmental-friendly campus; campus infrastructure improvement; and green traveling behaviours. The last keynote speaker was Mr. KK Ling, JP, Director of Planning, HKSAR. Mr Ling shared the sustainable development of the Pearl River Delta Bay Area from Hong Kong’s regional strategy and vision. He suggested that Hong Kong's urban planning could promote the sustainable development of Hong Kong, Guangdong and Macao. It could provide high efficient and reliable platform for cooperation, livable green environment and close communication channels.

The afternoon session of the Conference was conducted in two halls in parallel. There were four speech directions: Intelligent City; Sustainable Infrastructure Development; Built Environment, Green Development Green Building; and Sustainable energy, Water Supply, and Use of Challenges and Opportunities from Climate Change.

In the Intelligent City part, three speakers shared about their research directions and reports. The session was commenced by the sharing of Prof Liu Yung Gang and Ms Hou Lu Lu from Sun Yat-Sen University. Prof Liu shared about the standard and construction method of the urban and rural life circle between Hong Kong, Macau and Zhuhai. Prof Liu analyzed the idea of building life cycle in the Pearl River Delta and presented the development of a sustainable city from the concept of life cycle. The second speaker was Ir Bruce Chong from Ove Arup & Partners Hong Kong Ltd. Ir Chong shared about the idea and strategy of developing an infrastructure plan in a city. An integrative system was necessary for the city planning, which should include three key elements: “Green”, referred in low-carbon, saving and nature; “Smart”, referred to optimization, flexibility and integration; and “Resilient” referred to toughness, reliability and robustness. The third speaker was Dr Francisco Leandro from University of Saint Joseph. Prof Leandro believed that Hong Kong and Macau had the branding power which grounded on four pillars: location, heritage, specialization and international status would be advantageous to One-Belt-One-Road. Prof Leandro also expected that the superiority would facilitate the transferring of the economic power from the Atlantic to the Indo-Pacific Region.

There were four speakers in the Built Environment, Green Development Green Building part. The first speaker was Ir Cary Chan, Executive Director of the Hong Kong Green Building Council. Ir Chan discussed the unique advantage and internal experience of Hong Kong in sustainable development. Hong Kong was prestigious worldwide in infrastructure including the bridges, sewage treatment works, international airport and railway. Hong Kong has also developed his own professional certification system in classifying the local green buildings. All these value were beneficial for Hong Kong to further develop in the Big Bay Area. The second speaker was Dr Li Jian Xin from Guangdong Provincial Institute of Building Research Group co. LTD. Dr Li introduced his research in the integrated green and energy-saving construction technology of the cast-in-place lightweight concrete wall. Dr Li elaborated the process flow and the major nodes of the lightweight concrete wall production. One point to note was that Dr Li’s product had 70% less carbon emission than the conventional one. Learnt from this encouraging result, Dr Li’s product not only followed industrialization of the construction materials, but also effectively promoted the low-carbon and energy saving construction development. The third speaker was Mr Yip Wai Leung, senior project engineer from CLP Power Hong Kong Limited. Mr Yip shared about the “green” development policy of the substations, such as the Building Information Modeling (BIM) system. BIM system was used to construct a compact architectural design in order to lower the carbon footprint. In addition, BIM system was able to help the outlook design of the new substation become more compatible to the surrounding as well as to lower the impact to the public and the environment, and hence promote a sustainable substation development. The last speaker was Ir Xu Yan Lu from Guangdong Provincial Institute of Building Research Group co., LTD. Ir Xu introduced the technical specification of managing the places on collecting and dealing with urban construction waste residue. The specification stated the principle requirement of the project planning, site selection, safety level classification, safety control measures, environmental protection measures, etc. to recycle the construction waste residue by sorting, removal or crushing as renewable resources.

There were four speeches delivered in Sustainable Infrastructure Development session in the afternoon. Prof Thomas Ng and Dr. Xu Jun from Department of Civil Engineering, The University of Hong Kong, proposed a management framework for analysis and comparison of cities’ resilience policies and mentioned that PPRD cities needs deep collaboration and cooperation for enhancing the regional resilience. Prof Mao Yan Hua then discussed One Belt One Road and Hong Kong ‘s third economic transition. From the perspective of economic development and industrial restructuring, he said Hong Kong’s service sector was the main theatre of the transition. Hong Kong’s service sector would become more important, its main industries are being upgraded to high value-added segments and its economic function are being transformed to offshore service. Prof Mao also discussed that with the five major goals of the Belt and Road Initiative - policy co-ordination, facilities connectivity, unimpeded trade, financial integration, and people-to-people bonds, it provided Hong Kong new opportunities to strengthen its status as the managerial centre of Asia and global value chain. The third speaker in this session was Mr. Eric Ching, Director of Mott MacDonald (Hong Kong). Mr Ching shared the key concepts and strategies to develop smart cities. Mr Ching also shared his company’s smart city projects and proposed his idea for the PRD Bay Area. Ms Wong Yui-kei, General Manager (Business Development) of Hong Kong International Airport (HKIA) then shared HKIA’s opportunities and challenges under the Belt Road Initiative.

There were three speakers in the Sustainable Energy, Water Supply and Use and Challenges and Opportunities from Climate Change. Firstly, Ir Dr Ye You Hua discussed the natural resources of capital balance guided by the theory of “two mountains”. He emphasized fully considering the construction of ecological civilization system in China, based on the natural resource asset accounting system, the natural resource balance sheet - the statistical report for the management of natural resources assets, should be constructed from the perspective of the marketization of natural resource assets, which reflected the natural resource asset management in a certain period of time to occupy the reportable, verifiable, assessable natural resource assets. The second speaker Ir Dr Chan Hon Fai, Chairman, Advisory Committee on Water Supplies and Managing Director of Cinotech Consultants Ltd, shared the challenges of water supply facing Hong Kong, including population growth, economic development, the growing needs of Dongjiang River by Guangdong residents and climate change. He proposed the comprehensive water management concept – control the water consumption growth by introducing water conservation measures and initiatives; increase water supply sources such as promoting seawater desalination, grey water recycling and rainwater harvesting. Lastly, Ir Hao Quan Cheng from Guangdong Meteorological Service shared cold winter frequency analysis in recent 10 years in Guangdong under climate change. Ir Hao pointed out that the Siberian high pressure enhancement was an important reason for the cold winter in recent 10 years and the cumulative impact of the relocation of 55 sites in the past 15 years is an important human factor in the winter temperature drop.

Dr Xu Xiang Rong from South China Sea Institute of Oceanology delivered the closing theme, the sustainable development of Guangdong Pearl River Estuary mangrove swamp. Followed by Ms Christine Loh, JP, Under Secretary for the Environment to share about the way that Hong Kong to further develop from sustainable development to ecological civilization. Hong Kong was also able to participate in solving the national environmental problems with the initiative of One-Belt-One-Road. Ir S S Kong, Chairman of Civil Division, HKIE delivered the closing remark and sent his gratitude to the support of various speakers and the participants. Ir Elvis Au, the OC chairman of the Hong Kong Institution of Engineers handed over the flag to Dr Wong Seng Fat, Deputy Chairman for the Macau Institution of Engineering, representative of the organizer of the 9th SGM Conference.