Developing Concrete Cooperation for Academic Exchanges

By BI Weizi

Luc Taerwe is a member of the Royal Flemish Academy of Belgium, and a senior professor in the field of concrete structures at Ghent University (GU). He has also been a Chair Professor at Tongji University, Shanghai since 2018.

He recently spoke to *Science & Technology Daily* to introduce some of the most important cooperation projects between China and Belgium, and the latest development trends in the construction industry.

Science & Technology Daily: What's your first impression of China? How did you start the cooperation with Chinese counterparts?

Luc Taerwe: The first time I travelled to China was in 2004. When I arrived in Shanghai I was really impressed by the city size, the traffic density, the lively atmosphere, the Chinese food and last but not least, the variety in building styles. At that time the Oriental Pearl TV Tower and the Jin Mao Tower were the only high-rise structures in the Pudong area.

For my first visit to China, I was contacted by Prof. Yuan Yong of Tongji University to visit the Siping campus and its test facilities. Yuan is a renowned expert in the field of underground construction. I was very impressed by the test facilities at Tongji in the field of civil and structural engineering and the high level of research that was being performed. Prof. Yuan and I discovered that we had many common research interests and this was the start of a long-lasting and intensive scientific cooperation.

As director of the China Platform of GU, what role do you think the Platform plays in strengthening cooperation and exchanges between Tongji and Ghent University?

Professor Luc Taerwe. (COURTESY PHOTO)

As far as I know, Ghent University is the only Belgian University with a specific China Platform that coordinates the cooperation with Chinese universities and scientific institutes, both in the fields of research and education. The Platform was established in 2006. We are also the only Belgian University with a representative office in China. This office facilitates the exchange of information with Chinese universities and Chinese organizations like the China Scholarship Council (CSC).

The China Platform offers support to staff members who want to set up cooperation with Chinese colleagues and also to exchange students in both directions. Ghent University has more than 100 cooperation agreements with Chinese universities , which means that we have established a very broad academic network.

All these efforts resulted in the fact that we have about 750 Chinese students at GU, and Chinese students are the biggest group of international students at GU.

One of the most successful achievements to mention is the establishment of 11 Joint Laboratories with different Chinese Universities in different research disciplines. Personally, I am involved in the Joint Lab for industrialized construction with Tongji University.

As an accomplished expert in the field of Concrete Structures, could you please introduce the latest development trend in the construction industry?

In recent years, there is a trend to move from classical construction, which is very labor intensive, to smart construction in which the latest technologies are applied. Taking an example of precast concrete, the concrete elements are cast in a factory whilst being assembled at the building site. In this way, the quality of the elements are much better as the manufacturing is almost independent of the weather conditions and the tolerances on the dimensions are smaller, compared to the on-site casting. Moreover, the construction speed can be increased.

Another trend is sustainable construction, where reduction of the CO_2 footprint is the main concern and this is for the complete life cycle of a concrete structure, from cradle to grave, including recycling after demolition. Applied to buildings, we speak about the "green building concept" where also the energy consumption during use is considered.

It is also a trend to use other binders apart from cement. It is known that a lot of CO_2 gets into the atmosphere during the production of cement. By replacing a part of the cement by other materials, the CO_2 emission related to concrete can be significantly reduced.

What do you think of China's efforts in achieving green and sustainable development of construction?

All the trends I just mentioned, are the results of recent scientific and technological developments. However, a lot of issues still need to be solved if we want to make the applications in daily construction practice possible. At many universities in China, I could see that high-level experimental facilities have become available with up-to-date research equipment, especially in some important laboratories. In this way China will be at the forefront of the development of the new and advanced building materials and construction techniques.

In what ways do you think people's livelihood has been improved by scientific and technological development in China?

In the past, many Chinese people were living in rather old traditional houses with little comfort, especially in rural areas. During the last decades, a lot of investments were made in new housing projects, where people can now live in a much more comfortable way. Also, the infrastructure (highways, high-speed railway lines, bridges) has evolved tremendously at a very high speed, which is really a unique achievement at the international level.

Traditional Eastern Wisdom

Hani Rice Terraces: a Model of Harmony Between People and Nature

By BI Weizi

Hani Rice Terraces, the system of Hani rice-growing terraces, are mainly located in Honghe prefecture, Yunnan province, China, with a total area of over 160,000 acres and a history of more than 1,300 years. In 2013, the Terraces were listed as a World Heritage Site, since "The resilient land management system of the rice terraces demonstrates extraordinary harmony between people and their environment, both visually and ecologically" as stated by the UN agency.

The Hani people are a mountainous agricultural people and have shown great wisdom and ability in cleverly utilizing the mountain climate, soil and water resources. With forests on top of mountains collecting rainfall water, villages were usually built in the middle of the mountain about 1000 meters below the forests, with terraces on the bottom, and the intricate water system of canals and ditches running through them. This structure of "four degrees of co-construction" of forest, villages, terraces and water supply creates a high degree of integration between humans and nature, and reflects the characteristics of compound agriculture with reasonable structure, complete functions, various values and strong self-regulating ability.

Ecological interactions also play a pivotal role in the Hani Rice Terraces system with a maximum vertical span of 1500 meters, a maximum slope of 75 degrees, and a maximum field area of 2828 square meters. The main crop of the terraces, red rice, is cultivated on the basis of a complex, integrated farming and breeding system. In this system, ducks fertilize the young rice plants, while chickens and pigs provide fertilizer for more mature plants. Buffaloes plough the fields for the next year's planting, and snails eat up pests in the water.

For more than a thousand years, Hani Rice Terraces have made full use of and follow the traditional agricultural methods, creating a rich and splendid terrace culture of the Hani people.

PHOTO NEWS

The National Archives of Publications and Culture for preserving bibliology resources was inaugurated on July 23. Besides the main archives in Beijing, there are three other branches in Xi'an, Hangzhou, and Guangzhou respectively. All of them will be responsible for inheriting and preserving national bibliology resources. The picture shows an interior view of the National Archives of Publications and Culture in Beijing. (PHOTO: XINHUA)

Recently, the Zhejiang Recreational Vacation of Foreign Experts was held in the city of Ningbo. Co-sponsors of the event included the Zhejiang provincial Bureau of Foreign Experts and the Ningbo municipal Bureau of Science and Technology. Nearly forty foreign professionals from 22 countries were invited to participate in a series of academic exchanges. Ningbo has placed tremendous emphasis on providing international talents with high-quality service. In 2021, Ningbo was ranked among the top ten most attractive Chinese cities in the eyes of foreign talents.
(PHOTO: Ningbo Science and Technology Personnel Management Service Center)

Service Info

China-made Vaccines Safe, Effective

By Staff Reporters

In order to contain the spread of COVID-19, China launched a nationwide mass vaccination campaign in early 2021. By the end of July, more than 3.4 billion COVID-19 vaccine shots had been administered on the Chinese mainland, according to the National Health Commission (NHC).

Among those aged 60 and above, 89.6 percent have received at least one dose, while the full vaccination rate and booster vaccination rate are 84.7 percent and 67.3 percent respectively.

The leaders of the Communist Party of China and the central government have all been vaccinated with the domestic COVID-19 vaccines, Zeng Yixin, vice-minister of NHC, said during a news conference held on July 26, noting that Chinese leaders attach great significance to the pandemic control work and have tremendous confidence in the domestically developed COVID-19 vaccines.

Zeng added that all three vaccines developed domestically had obtained emergency use authorization from the World Health Organization, and over 100 countries have approved Chinese-made shots for public use. Some countries take China-produced vaccines as the only ones that can be used on underage children.

Moreover, Zeng said that the leaders of more than 30 countries, including Turkey, Serbia, Cambodia and Chile, have been vaccinated with Chinese vaccines. All of these facts demonstrate that vaccinations made in China are widely approved by the global community, he emphasized.

Data collected during the mass vaccination campaign showed that China-produced vaccines are safe, Feng Zijian, executive vice president and secretary general of the Chinese Preventive Medicine Association, said at the press conference.

According to Feng, as of May 30, a total of 238,215 side effect cases following vaccinations had been reported, equal to an incidence rate of 70.45 per one million shots.

Overall, the rate of side effects after administering Chinese COVID-19 vaccines was lower than that of other normal vaccines, including polio and flu vaccines, administered in China in 2020. Feng noted that there had been no safety issues over Chinese shots reported in overseas countries and regions, fully demonstrating the safety of China's vaccines.

Regarding developing vaccines against Omicron, China is currently conducting monovalent and multivalent vaccine research and development against Omicron variants through multiple technical routes. "Chinese vaccines still protect against severe illness and death caused by Omicron variants," Feng told reporters.

As to rumors against use of China's COVID-19 vaccines, Wang Fusheng, an academician of the Chinese Academy of Sciences, emphasized at the press conference that COVID-19 vaccines do not cause leukemia or diabetes, nor do they cause tumor spreading or antibody-dependent enhancement, as some critics had claimed. The ingredients used in the vaccines are safe for humans.

Wang further noted that clinical monitoring and statistical data show that in the four years before and after the COVID-19 outbreak, the number of visits and hospitalizations for diabetes and leukemia are virtually the same, with no significant changes.

Multi-Media

Tech for Better Life in China-EP.3

From poverty alleviation to rural revitalization, what is the secret of China's success?

Michael Hermann, China representative of Humana People To People, said China's effort on alleviating poverty is a complete and hard action, not just a slogan.

Having been in China for 17 years, Hermann believed that it's a combination of extensive initiatives, such as establishing e-commerce stations and launching loan support for rural residents, and the Chinese government's comprehensive planning and the joint efforts of society and individuals, that make China succeed.

For more details, please scan the QR code above.

Hainan Aims to Spearhead Biomedical Industry Development

From Page 2

Wang Lidong, general manager of Hainan Chang'an International Pharmaceutical Co., LTD. said, "Preferential fiscal and tax policies, convenient platforms, sound business environment, and policies for expert shave created better conditions for enterprises to develop in Hainan."

Furthermore, to solve the difficulty in importing items for biomedical research and development, the Haikou government, together with other related departments, is formulating an innovative mechanism for joint supervision of imported items for biomedical R&D, which is expected to be announced and implemented soon.