Speech of Kuang Shangfu at the Forum on Modern Water Governance and Technological Innovation

Distinguished Minister E Jingping, Vice minister Lu Guihua, Former minister Wang Shucheng, Former director Zhang Jiyao, Academician Lu Youmei, and President of World Water Council, Mr. Benedito Braga, Distinguished leaders, guests, ladies and gentlemen,

Good morning! Today, we celebrate the 60th anniversary of China Institute of Water Resources and Hydropower Research (IWHR), and hold the Forum on modern water governance and technological innovation to review water management experiences and advance technological innovation. Taking this opportunity, on behalf of IWHR leadership team and all the staff, I would like to express my heartfelt thanks to all the leaders who attend our event. I would like to extend warmest welcome to the leaders and representatives of international organizations, international friends, overseas Chinese and compatriots of Hong Kong, Macao and Taiwan! I would like to express my sincerest gratitude to all ministries, commissions, river basin authorities, water conservancy departments and bureaus, research and design institutes, water enterprises, academic societies, and the media who have supported the development of IWHR! I wish to pay tribute to the founders and predecessors of IWHR! And I wish to express cordial greetings to all retired staff and all employees!

2018 represents the first year of fully implementing the spirit of the 19th CPC National Congress and the 40th anniversary of reform and opening up. At such an important juncture, it is important and relevant for us to take stock of the 60 years of history of IWHR. IWHR has been forging ahead and conquering new heights, has been closely intertwined with the fate, and the demand of the nation, and has shared the same mission of national rejuvenation. Numerous chapters of successes have been written!

Time, is the most objective witness. In the spell of 60 years, IWHR has gone through a road of hardship, downs and turns and hard-won victories. It has weathered through vicissitude, revived in reforms, and flourished upon opportunities. IWHR keeps its spirit high and hold its head high in the history of water development in China.

In 1933, proposed by Li Yizhi, the founder of China's modern water conservancy, Hydraulic Laboratory, China's first water research institution, was established in Tianjin. In 1935, the Central Hydraulic Laboratory was established in Nanjing. They both are the precursors of IWHR. In the tumultuous warring period, our predecessors persisted in scientific research regardless of relocation and re-naming.

In 1958, in order to accommodate the needs of national economic construction, Hydraulic Laboratory of the Chinese Academy of Sciences (CAS), Beijing Institute for Water Resources Science of the Ministry of Water Resources and Hydropower Science Institute of the Ministry of Power Industry were merged due to their similarity in nature and content, forming Institute for Water Resources Science of CAS and the Ministry of Water Resources and Power Industry. Under the leadership of the First President Zhang Zilin, IWHR started its magnificent voyage to serving China's water conservancy and hydropower construction.

In 1978, the National Science Conference was successfully held, which ushered in the spring of science, and Institute of Water Resources and Hydropower Research, which was forced to dissolve for nearly a decade, gained opportunities of restoration and rebuilding. Under the leadership of President Zhang Guangdou, IWHR completed the reconstruction in merely one year by preparing for rebuilding, reorganizing and conducting research simultaneously. In doing so, scientific research quickly returned to normal.

In 1994, advocated and driven by the former President Liang Ruiju, Institute of Water Resources and Hydropower Research was renamed China Institute of Water Resources and Hydropower Research, referred to as IWHR with the approval of the State Scientific and Technological Commission. For the ten years thereafter, closely centering around the national needs and drawing on advanced experience at home and abroad, IWHR improved the layout and system, and its scientific research continuously grew from strength to strength.

In 2005, IWHR responded to the adjustment of the national development strategy and put forward the overall development thinking of "aiming at 1 goal, focusing on 2 priorities, enhancing 3 capabilities, building 4 major bases, improving 5 construction aspects and achieving 6 first-classes", officially starting its new journey of building a world-class research institute.

The mountain becomes towering because of its steepness and the sea becomes magnificent because of its surging. In September 2013, Wang Yang, then Vice Premier of the State Council, applauded IWHR during his visit: IWHR is a national team in the field of water conservancy science and technology,boasting excellent traditions of research and development. It enjoys large-scale, full-range of disciplines, good facilities, strong comprehensive strength. IWHR has made tremendous contributions to China’s water science and technology development.

Time, is the greatest author. Over the past 60 years, generations of IWHR people have worked to tackle difficulties, conduct reform and innovation, and forge ahead. They have made important contributions to the progress of China's water conservancy and hydropower science and technology and to underpinning the rapid and sound development of water conservancy and hydropower and written the development road of water conservancy science and technology.

This is a road of strengthening the institute through talents. Talent is the foundation of a nation and a cause. IWHR has always adhered to the philosophy of strengthening the institute through talents, attracted and fostered a wealth of talents and has built a scientific research team that are diligent, proactive, innovative and dedicated, wisdom to recognize talents and open-mindedness.

IWHR has generated three ministers and deputy ministers of PRC like Yang Zhenhuai, Lou Puli and Jiao Yong, heads of local party committees and governments like Wang Weizhong and global 500 entrepreneurs like Yan Zhiyong; 12 academicians, including 6 academicians of the Chinese Academy of Sciences, namely Zhang Guangdou, Lin Bingnan, Huang Wenxi, Wang Wenshao, Qian Ning and Chen Zuyu respectively, and 6 academicians of the Chinese Academy of Engineering, namely Zhu Bofang, Chen Houqun, Chen Zhikai, Han Qiwei, Wang Hao and Hu Chunhong; this team has trained a large number of academic leaders, engineering and technical experts and international interdisciplinary talents.

IWHR has 1,367 existing employees, including 866 with master's degree or above, of whom 505 are doctors, and 823 with deputy senior engineer titles and above, of whom 323 are professorial senior engineers. It is the "Demonstration Base for Innovative Talents Training" of the Ministry of Science and Technology.

自主创新之路

Dedication to indigenous innovation

This is a road to independent innovation. Just as jade needs to be polished, one needs to go through trials and tribulations to be strong. Over the past 60 years, IWHR has been adapting to the needs of the country in different periods by adhering to the scientific development idea of "emphasizing key disciplines, consolidating superior disciplines, developing emerging disciplines, and strengthening interdisciplinary disciplines". The research fields of the whole institute have developed from 8 specialties at the beginning of the founding to 18 disciplines covering water conservancy and hydropower and 93 professional directions, forming a discipline system marked by distinctive characteristics of water conservancy and hydropower and complete professional categories today.

IWHR has set up a laboratory system supporting the development of disciplines, including 1 national key laboratory and 2 ministerial key laboratories, and 36 professional laboratories.

The R&D platform system includes 4 national research centers and 9 ministerial ones. All of this has underpinned the whole institute and helped achieve remarkable results in innovation-driven development.

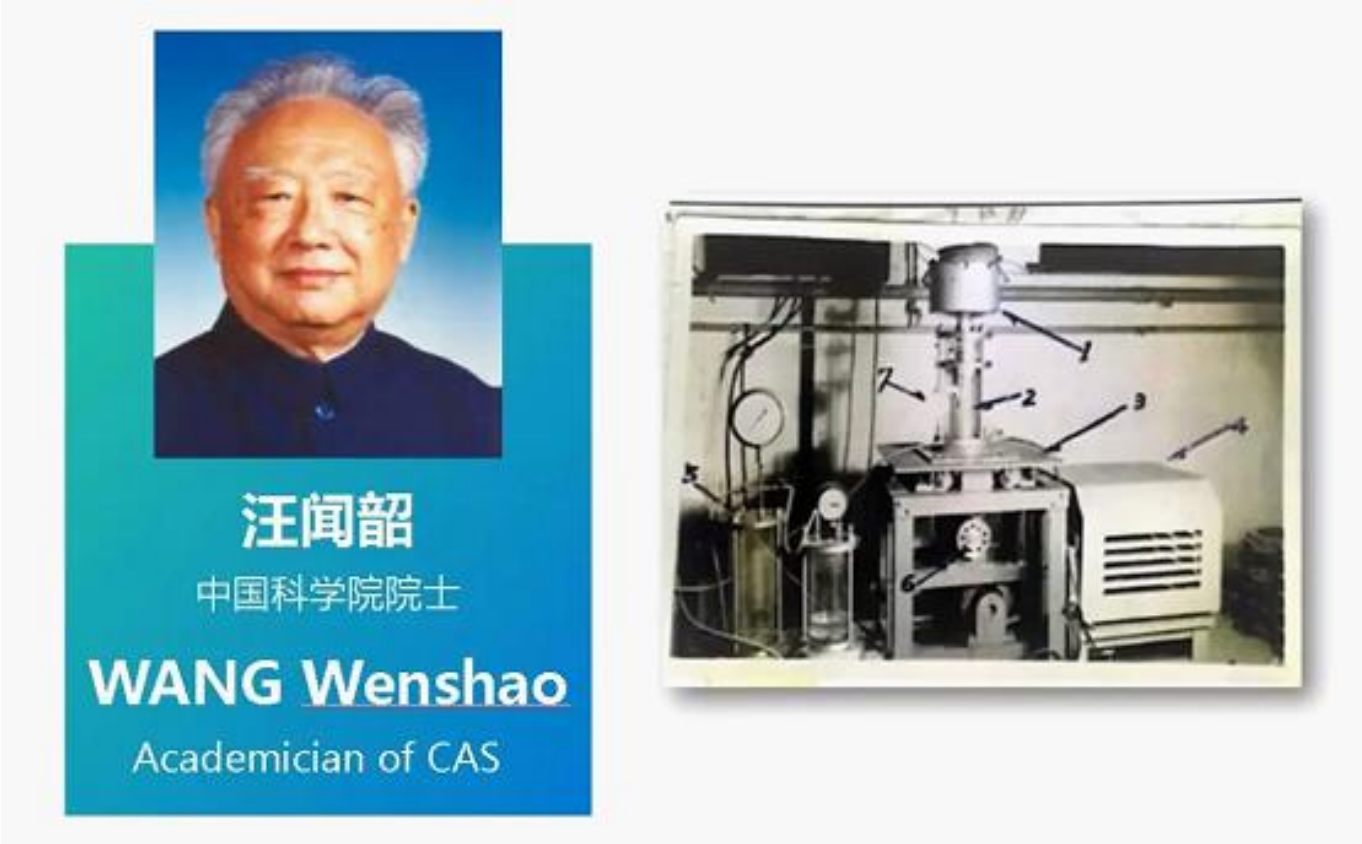
100 original achievements of IWHR have won national awards for progress in science and technology, and more than 640 achievements won provincial and ministerial awards for progress in science and technology. IWHR has edited or participated in the preparation of 470 national and industrial standards, and obtained more than 900 national patents. The advantages of disciplines have become increasingly prominent. Among them, sediment, water resources and dam construction technology have been among the international leading or advanced ranks from theory to practice.

IWHR has blazed new trails over the past 60 years. Academician Zhang Guangdou created China's disciplines of hydraulic structure and hydropower engineering. His monograph Hydraulic Buildings became a main textbook for graduate students of hydraulic structures in China.

Academician Huang Wenxi is one the founders of soil mechanics. The vibration triaxial equipment method, on of his creations, is widely applied at home and abroad.

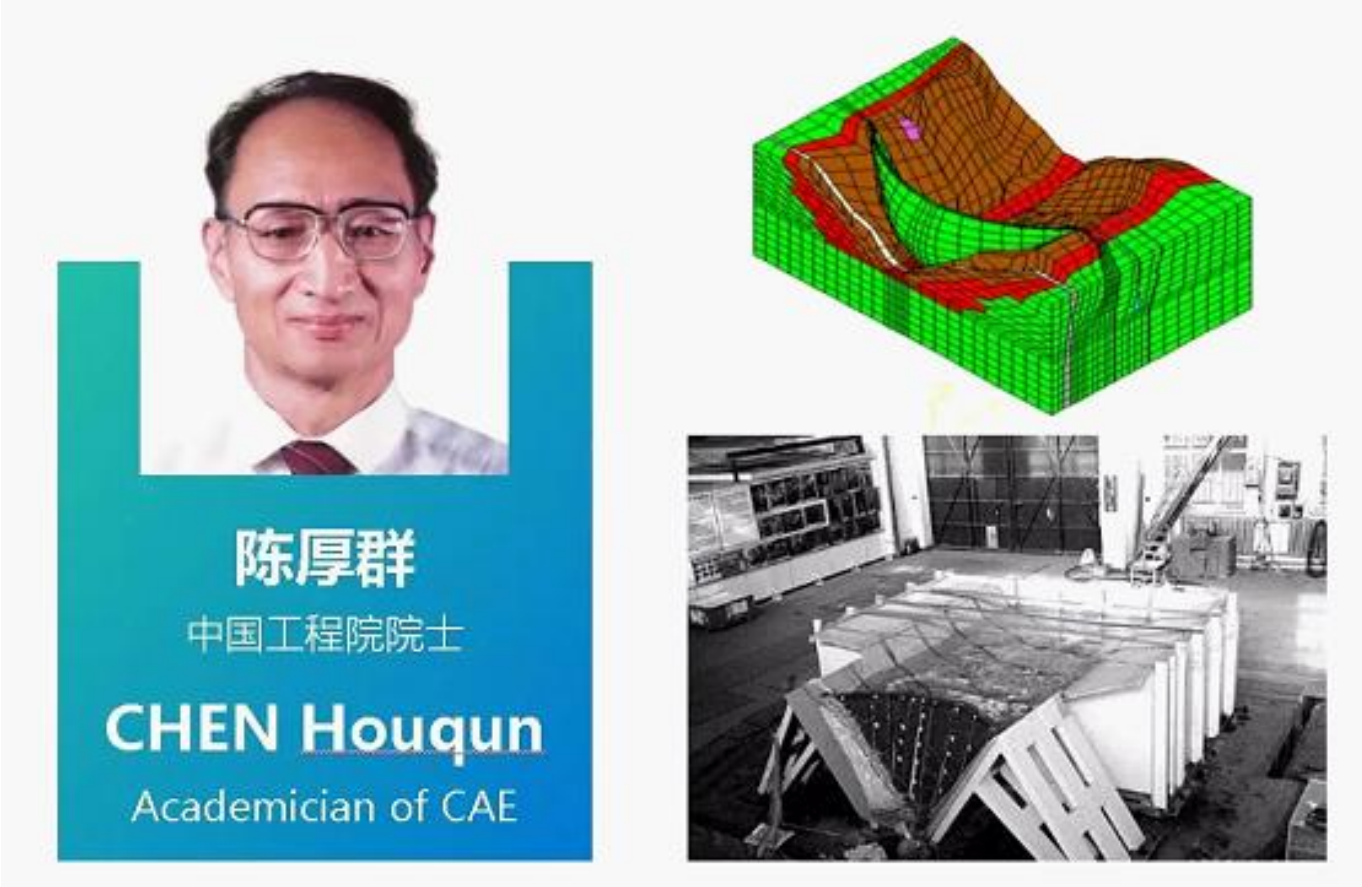
Academician Qian Ning established a theoretical system for non-equilibrium sediment transport, and his monograph Sand Movement Mechanics became the authoritative work in the field of sediment research.

Academician Lin Bingnan led the independent research and development of new energy dissipation technologies on flaring piers and slit-type buckets which are widely applied in water conservancy and hydropower projects at home and abroad.

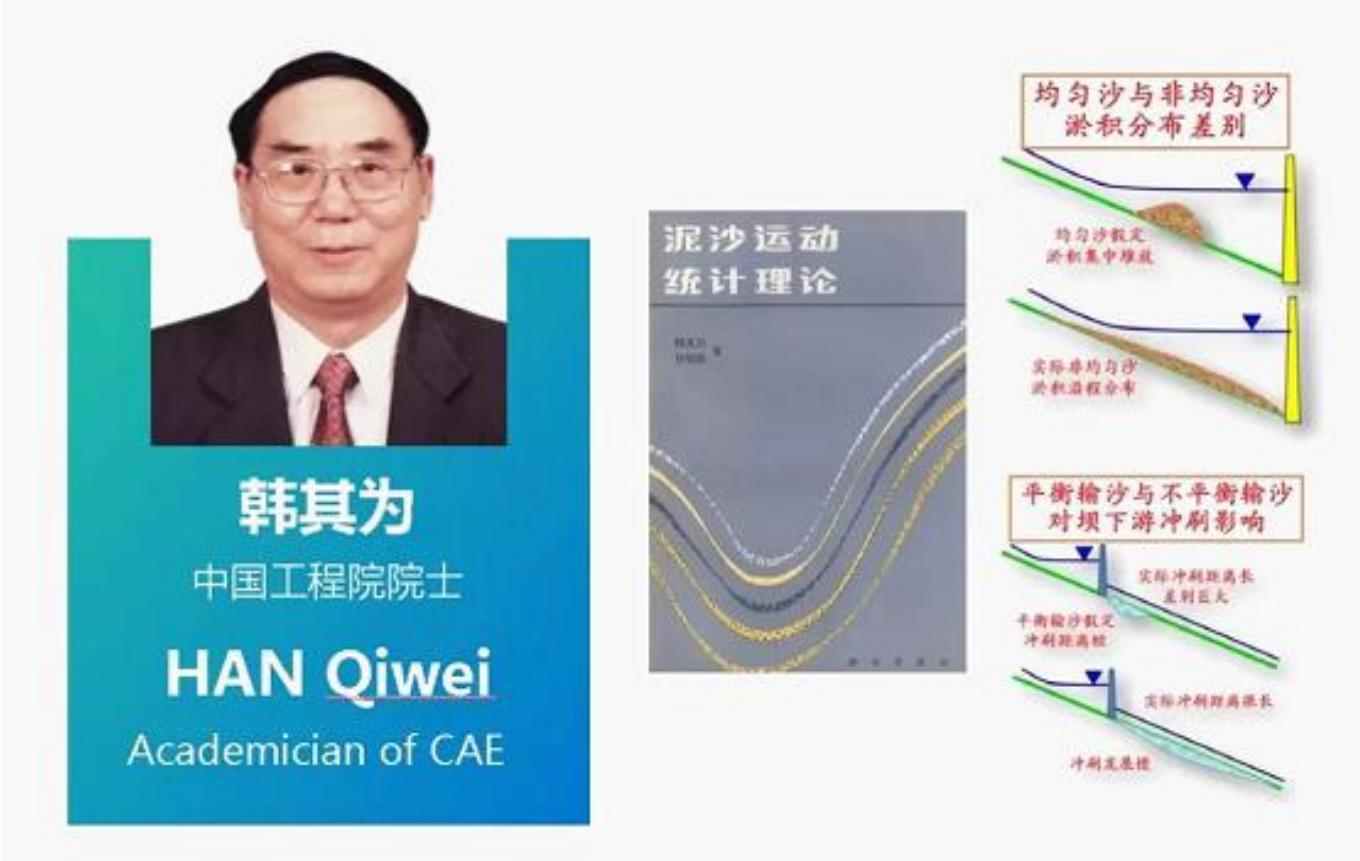


Academician Wang Wenshao presided over the development of China’s first vibrating triaxial equipment, took the lead in studying the liquefaction characteristics of soil and the seismic safety evaluation method of earth-rock dams, laying the foundation for soil dynamics.

Academician Zhu Bofang created the theoretical and methodological system of concrete temperature stress and temperature control, established the optimized design method of arch dams, and constantly opened the whole process simulation analysis and intelligent temperature control technology of concrete dams.

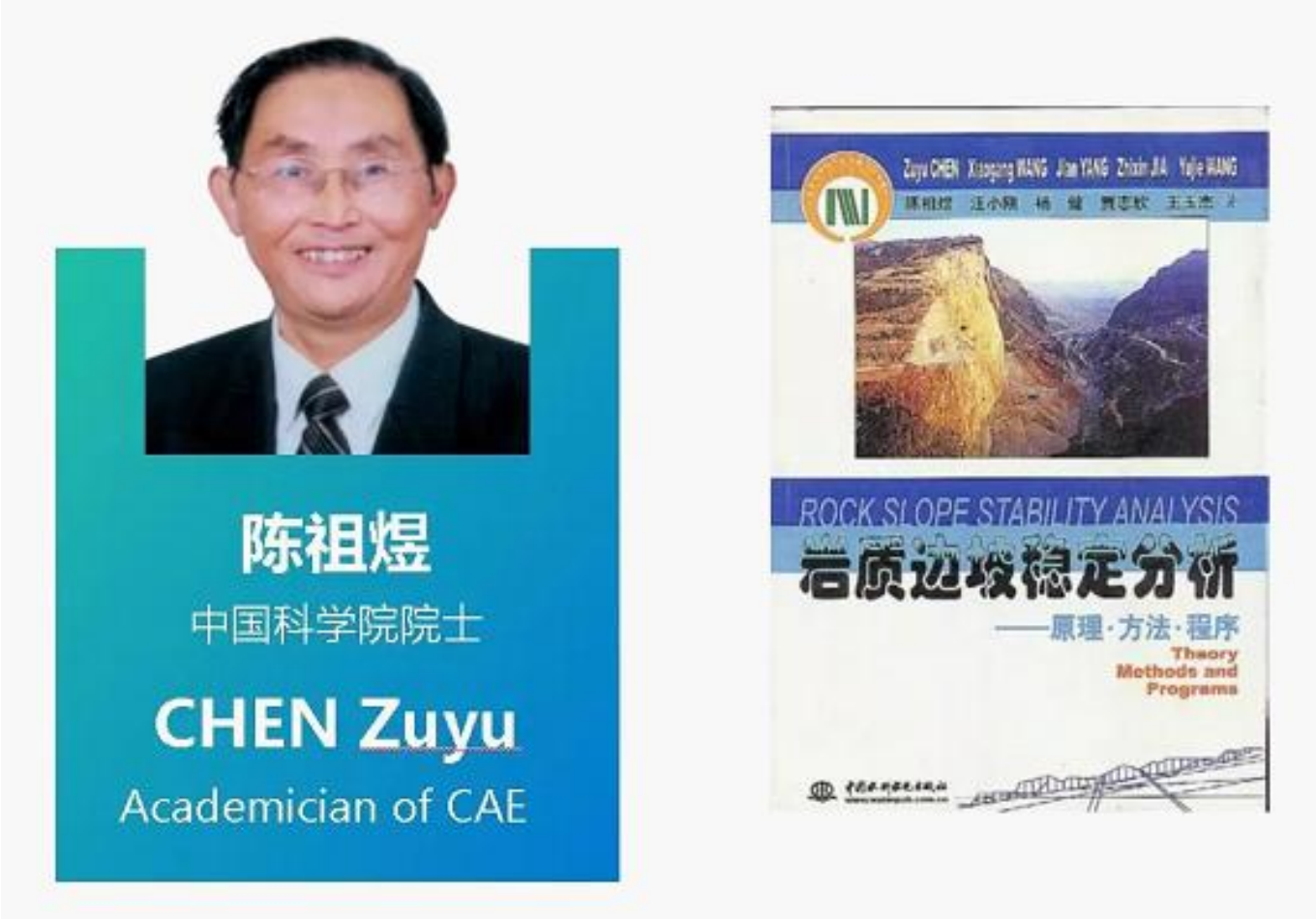


Academician Chen Houqun studied and established the dynamic effect mechanism, analysis method and design standard on seismic resistance of engineering structures, and prepared the first Specifications for Seismic Design of Hydraulic Structures in China.



Academician Han Qiwei created a theoretical system of uniform non-equilibrium sediment transport and sediment statistics which became one of the cornerstones of the sediment discipline theory; and he has long studied the sediment issue of the Three Gorges Project, the relationship between rivers and lakes in the lower reaches of the Yangtze River and several important Chinese river improvement schemes.

Academician Chen Zhikai presided over and completed the important basic research work such as the calculation method of rainstorm flood frequency and the preliminary evaluation of China's water resources, which filled the gap of China's water resources foundation.



Academician Chen Zuyu established a more rigorous analysis method on slope stability, and a series of slope stability analysis programs developed have been widely applied in engineering practice.

Academician Wang Hao established the theory and method of water resources allocation for economy and ecology, and created the "nature-society" binary water cycle theory.

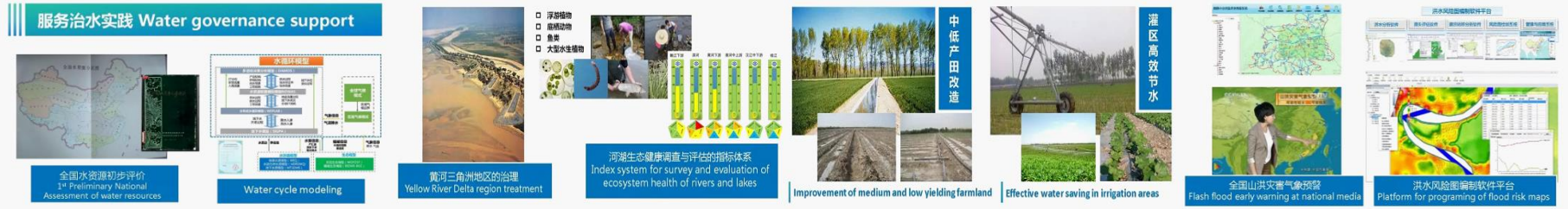
Academician Hu Chunhong long studied the theory and application technology on sediment movement mechanics, riverbed evolution and river improvement, and established the theory and technology on water and sediment regulation and optimized sediment allocation of the Yellow River.

The 60-year mission falls on our shoulders. Closely following the needs of the country and facing the forefront of the world's science and technology, IWHR presided over and accomplished a large number of major national scientific research projects and solved a series of major scientific and technological problems, and undertaken research and consultancy on key technical problems of almost all major domestic water conservancy and hydropower projects.

The footprints and pioneering work can be found in all corners of the motherland, main positions of water conservancy and hydropower endeavor, the forefront of floods, earthquakes and other emergency rescue and disaster relief.

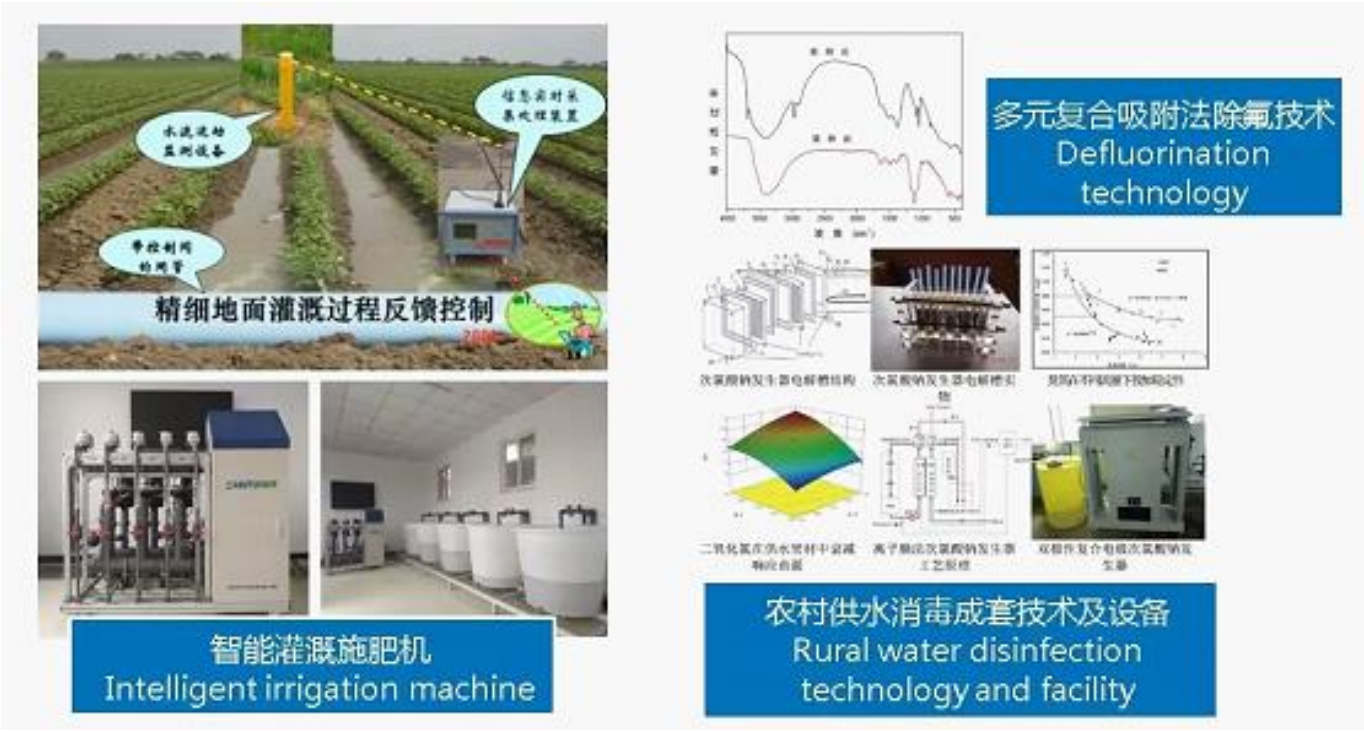
IWHR has been working to serve strategic decision- making. It has actively participated in all previous comprehensive water resources planning, flood control and drought relief planning, agricultural water saving irrigation development planning, rural drinking water security planning and so on.

IWHR participated in the preparation of the plan for water-saving society construction and the plan for the construction of pilot ecological civilization cities, implemented the most stringent water resources management system and plan for river and lake chief systems, which has provided strong scientific and technological services and support for national and industrial scientific decision-making and management.

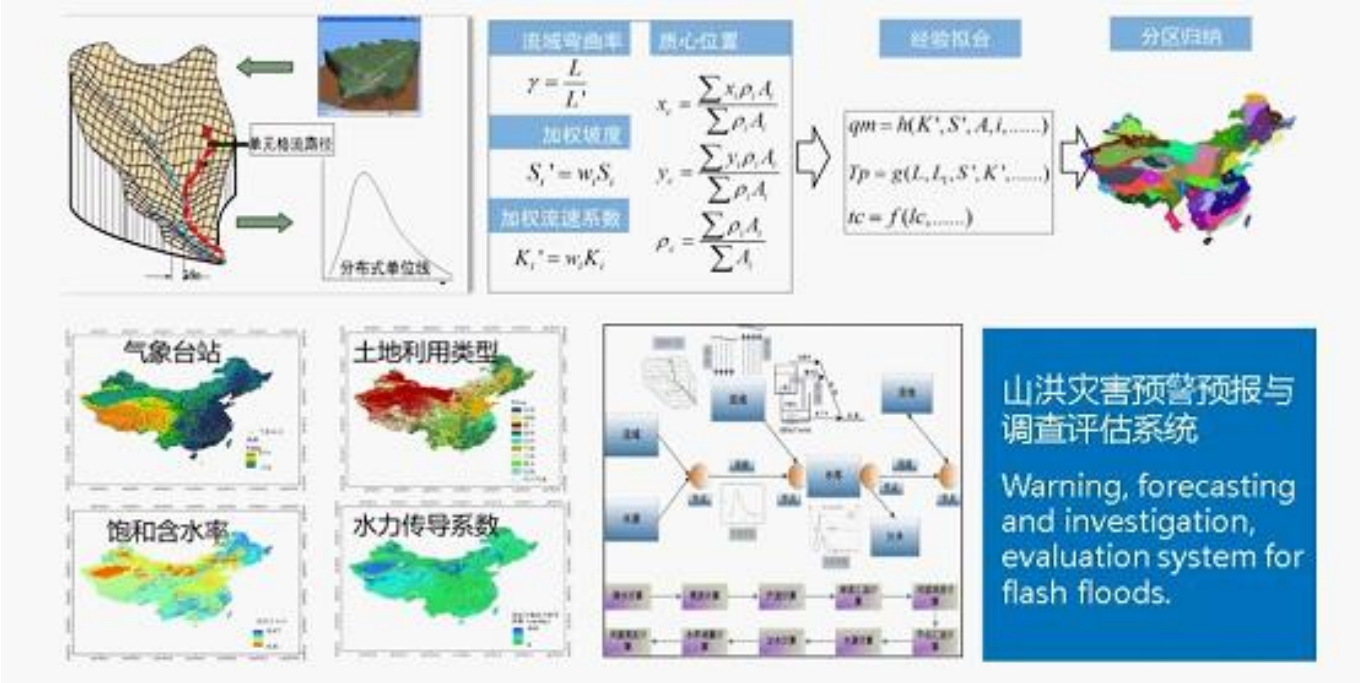


IWHR has been working to serve water management practice. From water resources survey and evaluation, optimal allocation to efficient utilization and effective protection, from river governance to ecological civilization construction, from low-yield field improvement to water-saving, increased grain and emission reduction of large-scale irrigation areas, from flood and drought disaster warning and forecasting to risk management and emergency rescue and disaster relief, from the planning, verification, design, construction all the way to operation management of major projects such as the Three Gorges Project and the South-to-North Water Transfer Project, IWHR people have written their papers on the motherland to support the practice of water management.

IWHR has been working to serve the national economy and people's well-being. IWHR has developed the flood risk analysis and decision-making system, mountain flood disaster warning and forecasting system, drought remote sensing monitoring system, water pollution warning and forecasting system, engineering safety intelligent temperature control system, hydropower station automation monitoring systems and the like.



IWHR developed a series of rural water-saving irrigation products, rural water disinfection and high fluoride water treatment technologies and relevant equipment. These practical technologies have been extensively applied.



For example, the mountain flood disaster warning, forecasting, survey and evaluation system, has helped the initial establishment of a mountain flood disaster prevention system in more than 2,000 county-level administrative regions in China, providing strong support for ensuring the safety of life and property in mountainous areas.

This is a road of opening up and being inclusive and insightful. With the advancement of reform and opening up, IWHR adheres to the strategy of "bringing in and going out" with a global vision and open thinking, make plans and promote technological innovation from a global perspective, and strengthen domestic and international exchanges and cooperation in all-round way.

It actively participates in world water activities, consecutively organizes China Water Conservancy Experts Group to attend the World Water Forum, takes the lead in organizing and coordinating the themes or topics of the World Water Forum and Asia International Water Week; in addition, it also undertakes the boards of directors of the World Water Council and the Asia Water Council, hosts and undertakes large numbers of International symposiums on highly influential dams, irrigation and drainage, water conservancy & environment, floods, sediments, hydropower and other areas.

IWHR is the host unit of the International Research and Training Center on Erosion and Sedimentation and 9 large international academic organizations or conference mechanism headquarters or the Chinese Committee Secretariats.

IWHR has signed scientific and technological cooperation mechanism with nearly 40 foreign scientific research institutions, prestigious universities, international organizations and enterprises.It also works to actively introduce overseas intellectual resources, and distinguished foreign experts are honored with the China Friendship Award granted by the Chinese government. More than 10 experts serve as chairman, vice-chairman, secretary-general and other important positions in the international organizations, which greatly enhances the influence and say of international water-related affairs.

IWHR has successively undertaken international scientific research projects of UNESCO, UNDP, European Community, World Bank, ADB, UNEP and the like, and has participated in a number of scientific research, consulting and construction tasks in water conservancy and hydropower projects in countries and regions such as Asia and Africa.

It has also undertaken cooperation projects of the countries along the Belt and Road related to water resources management, flood control and disaster mitigation, water environmental protection, automation monitoring and electromechanical equipment, as well as those that the government should render emergency support. All of this has effectively enhanced the influence, shaping force and appeal of China's water conservancy.

精神传承之路

Pass on the torch

This is more a road of passing on the torch, featuring innovation, truth-seeking, dedication and contribution. This is the spirit and original aspiration of IWHR.

It is such a tradition that has made IWHR come a long way: facing difficult situations of the construction era, IWHR people were filled with passion and selfless dedication.

Facing ten years of turmoil, they persevered with a firm faith, never giving up.

Facing heavy responsibilities of reform and reconstruction, they bravely assumed responsibilities despite dangers and hardships.

Until today, their morale and original aspiration keep unchanged. It's unswerving persistence, continuously enterprising endeavors, rigorous and pragmatic pursuit, and selfless and steadfast bravery that guide us to climb the infinite peak of science and technology.

Among majestic ten thousand mountains, there must be a main peak. Over the past 60 years, on this road of innovation and self-improvement with great determination, every step of our development is inseparable from the strong leadership of the Party, and each step carries the cordial care of the leaders!In 1956, when Chairman Mao met with representatives of the National Agricultural Science and Technology Conference, he shook hands with Zhang Zilin, the first president of IWHR.

In 1994, Hu Jintao, then Vice President, visited to our institute and made important instructions on the work of water conservancy and hydropower technology.

In 1985, Li Peng, then Vice Premier of the State Council, learned about the research on calculation of the Three Gorges sediment model from the expert of our institute Han Qiwei.

In 2002, when then Vice Premier of the State Council Wen Jiabao inspected Longyangxia, he personally operated the H9000 computer monitoring system independently developed by our institute.

In 2013, Wang Yang, then Vice Premier of the State Council, inspected our institute and pointed out the direction for water conservancy science and technology innovation.

In April 2018, when General Secretary Xi Jinping inspected the Three Gorges Project, he listened to the report in front of the H9000 screen in the central control room of the Three Gorges Power Station developed by Beijing IWHR Technology Co., Ltd. and proposed a new call that "the pillars of a great power must be in the grip of its own hands."

Not long ago, Chairman Qian put forward new hopes for our institute, "basing on national conditions and opening eyes to the whole world."Later, Minister E Jingping will set forth new and higher requirements for the future development of IWHR.

In the 60-year journey, every and each step is inseparable from the care and love of the Party group and departments and bureaus! Every and each step is inseparable from the strong support and assistance of our associate units! Every single step is inseparable from the friendly cooperation of our international water conservancy peers! Every single step is inseparable from the regretless dedication and quiet pay of the older generation of IWHR people! Every single step is inseparable from diligence and perseverance of all the staff!

let us express our loftiest respect and sincerest gratitude to them, especially those present here, with warm applause!

60 years is too long, and too much gratitude cannot express our gratitude either. Yet 60 years is too short, and we will turn all care and love into the inexhaustible driving force forward, and head for the grand journey of the new era!

Time, will also continue the bright future of IWHR. An era has a great cause of its times, and a generation has mission of his generation. The orientation of a new era, marks a new historical starting point. In the golden autumn of 2018, IWHR will set off again. "Never be proud of victory, never slack off because of achievements, and must not draw back due to difficulties", which implies making sustained efforts, and making innovation at the present and striving in the drive.

A new start to strive for national prosperity. We must hold high the great banner of Xi Jinping's thought on socialism with Chinese characteristics for a new era and stand at a higher starting point to plan and promote the development of water conservancy and hydropower science and technology. We need to deeply implement the development concept of "innovative, coordinated, green, open and shared development", positively practice the water management guideline of "water saving first, spacial balance, system governance and all-out efforts in all aspects", work to figure out "five whats", effectively find out solutions to old and new technical difficulties, forge ahead with unbent determination, climb the peak with great courage, and write a new chapter in developing water conservancy and hydropower through science and technology.

A new start to go far with viable approaches. It is necessary to take comprehensively upgrading independent innovation capability as the main principle, work hard with practical and pragmatic attitudes, and further strengthen the construction of disciplines, talents, and condition platforms; further deepen basic theoretical research, applied technology research and development and high-tech utilization, propose more edge tools of science and technology with independent core technology and train more talents to serve the country and society.

A new start to go fast with clear visions. We should implement General Secretary Xi Jinping's three-step strategy for building a world power with powerful science and technology, and work with unremitting efforts to realize the three-stage development goals already defined by IWHR: that is, entering the ranks of world-class research institutes by 2020, entering the top of world-class research institutes by 2035, and becoming the vanguard steering the world's water conservancy and hydropower science and technology by 2050.

Dear leaders and distinguished guests,

Looking upon the past, the world has undergone earth-shaking changes, and in such a backdrop, only those who strive can cleave through the waves and keep at the top. Looking at the present, we are in the midst of great times, full of enormous confidence and pride. In the face of the great cause, we feel highly responsible. Let us gather together and start again, work hard to create new achievements in water conservancy and hydropower that are worthy of our history and the new era through science and technology, and strive with more efforts to enter the ranks of world-class research institutes as soon as possible, build a moderately prosperous society in all aspects and realize the Chinese Dream of the great rejuvenation of the Chinese nation!