China Science & Technology NEWSLETTER

Department of International Cooperation Ministry of Science and Technology(MOST), P.R.China

No.6
Mar.31 2018

Sponsor: Department of International Cooperation,Ministry of Science and Technology(MOST), P.R.China

Organizer: China Association for International Science and Technology Cooperation

Add：Room 1059 , Office Building , 11 B Fuxing Road , Beijing , P.R.China 100038

E-mail：caistc@126.com

Wang Zhigang serves as Minister of reshuffled MOST

Recently, the CPC Central Committee issued the *Plan on Further Reform of CPC and State Agencies*. With the orientation to modernization of national governance system and capacity and the focus on efficient coordination among CPC and state agencies, we will embark on reform of the agencies, optimize the allocation of their missions, further the efforts to transform style and mission of work, increase working efficiency and set up a CPC and state governance system featuring well-established framework, scientific management and efficient operation. All this will serve as concrete institutional guarantee in the new journey to build a modernized socialist country in all respects.

The 31st article in the Plan is reshuffle of the Ministry of Science and Technology (MOST). President Xi Jinping signed Order of the President to appoint Wang Zhigang as Minister of Science and Technology.

The main missions of MOST are to formulate and implement innovation-driven development strategy and plans and policies concerning S&T development and basic research, coordinate the efforts in building national innovation system and advancing S&T system reform, organize and coordinate basic and applied research of national major importance, compile and monitor implementation of national major plans of S&T projects, take the lead in establishing unified national S&T management platform and mechanism for coordination, evaluation and supervision of research projects, and introduce talented figures from foreign countries.

(Source: Xinhua News Agency, March 21, 2018)

5th China-New Zealand Joint Commission Meeting on Science and Technology Cooperation Held in Beijing

On March 2, 2018, Vice Minister Huang Wei of the Ministry of Science and Technology and Deputy Chief Executive Paul Stocks of the Ministry of Business, Innovation and Employment of New Zealand co-chaired the Fifth China-New Zealand Joint Commission Meeting on Science and Technology Cooperation. At the meeting, Vice Minister Huang Wei talked about strategic plans for speeding up the building of China into an innovative country unveiled at the Nineteenth National Congress of the Communist Party of China as well as important documents including the Plan for Implementing the National Strategy of Innovation-driven Development and 13th Five-Year National Science, Technology and Innovation Plan which have been released by the Chinese government, stressing the important significance of science, technology and innovation in promoting economic development and accelerating transition from old to new driving forces for development. Vice Minister Huang affirmed the pragmatic cooperation between the two sides under the *China-New Zealand Five-Year Roadmap Agreement on Science and Technology Cooperation* and hoped that at the current meeting the two sides could specify key areas of cooperation for the next stage and continue to deepen bilateral cooperation.

Deputy Chief Executive Paul Stokes expressed his appreciation of the Chinese proposal and said the New Zealand government equally recognized the key role of science and innovation in improving people‘s lives and promoting social progress. He expressed the hope that the two sides could further enhance bilateral cooperation in science and technology against a backdrop of both countries attaching great importance to science, technology and innovation.

Participants exchanged views on the development trends of science and technology in the two countries, reviewed the progress and highlights of bilateral cooperation, and discussed future cooperation based on the development trends of science and technology in both countries and the status quo of their cooperation. Both sides expressed satisfaction with progress in the implementation of strategic research alliance projects in the three priority fields of food safety and security, water resources, non-contagious disease prevention and control, and agreed to continue to promote joint sponsorship of R&D projects in wider fields in the next five years. Meanwhile, the two sides also explored opportunities for project cooperation in a larger scale. Both sides affirmed the positive role of the China-New Zealand Scientist Exchange Program in enhancing mutual trust and fostering cooperation and expressed willingness to explore and support the exchange of innovators between the two countries. The two sides paid high attention to the joint laboratories and joint R&D centers established by research institutions of the two countries, as well as overseas innovation centers established by universities and enterprises, hoping that these platforms can promote the development of bilateral cooperation in innovation. After the meeting, Vice Minister Huang Wei and Deputy Chief Executive Paul Stokes signed the *China-New Zealand Five-Year Roadmap Arrangements for Science and Technology Cooperation (2018-2022)*.

(Source: MOST, March 6, 2018)

Vice Minister Huang Meets with SKA Director General

On February 6, 2018, Huang Wei, Vice Minister of Science and Technology, met with the delegation led by Philip Diamond, Director General of the SKA Organization. Huang Wei expressed thanks to the delegation for attending the inauguration ceremony for the first prototype SKA dish and affirmed the international R&D collaboration between the two sides over the recent nearly five years. Huang Wei expressed the concerns of the Chinese side regarding matters such as the schedule of the initialing and signing of the International Convention on Observatories, preparation of the governing board, construction of SKA phase I and its operating cost accounting and cost control, and the SKA Organization's strategic deployments, and reiterated China's commitment to deepening cooperation with the SKA. Huang Wei also pointed out that as the SKA is an international collaboration project, the member states should, by maintaining the sense of community of common destiny and seeking agreement while reserving differences, cooperate amid competition, seek win-win outcomes in cooperation, and make concerted efforts to advance the SKA project.

Philip Diamond gave replies to all the concerns expressed by Huang Wei and spoke highly of the outstanding performance of the Chinese side in the SKA collaboration, especially with the R&D and inauguration of the first prototype SKA dish, which is a great achievement and milestone of the project. He looked forward to deepening cooperation with China and hoped for sustained support to the SKA project.

(Source: MOST, February 12, 2018)

Plan on Organizing International Mega-science Programs and Mega-engineering Projects Issued by State Council

Recently, the State Council issued *Plan on Organizing International Mega-science Programs and Mega-engineering Projects* (hereinafter referred to as the Plan). As required by the Plan, we should, in line with the *National Outline on Innovation-driven Development Strategy*, devote ourselves to research areas of common concern of the international science community and of profound significance to human society and S&T progress; lead the efforts in organizing mega-science programs; focus on enhancing innovation capacity and international influence in strategic frontier areas; provide strong underpinning in building an innovative country and a country strong on science and technology in the world; make important contributions to big-country diplomacy with Chinese characteristics.

In line with the basic principles of "international advanced level, science frontier areas, strategic orientation, capacity enhancement, Chinese dominance, win-win cooperation, innovation mechanism and phased implementation, " the Plan identified "three-step" goals in leading the organization of mega-science programs: first, by 2020, develop 3 to 5 programs, choose from them 1 or 2 mega-science programs organized by China, and confirm mechanisms for organizing those programs; second, by 2035 develop 6 to 10 programs, launch mature programs, put in place the initial layout of organizing those programs and enhance the impact in science areas in the world; by mid-21st century, develop multiple projects and launch mature programs, markedly enhance our STI capacity and sustain our contributions to deal with science issues of global importance.

The Plan puts forward four major missions: first, formulate strategic plans and confirm priority areas; second, select projects, develop initiatives and launch their implementation; third, establish management mechanisms in line with the characteristics of projects; fourth, participate in mega-science programs organized by other countries.

The Plan points out that in line with the *National Outline on Innovation-driven Development Strategy* and current development trend in strategic frontier areas and in consideration of our basic conditions and potential risks, we should formulate plans for organizing mega-science programs, focus on the prioritized directions, potential projects, major areas and organization in areas of material sciences, evolution of universe, origin of life, earth system, environment and climate change, map out development roadmaps and facilitate the implementation in a scientific and orderly manner.

The Plan identifies that with reliance on national labs, research institutes, universities and science societies and based on inter-institutional and inter-governmental cooperation, we should organize specialized research institutes, shareholding companies or inter-governmental organizations, to take care of planning, development and operation of mega-science programs.

The Plan stresses that we should set up a diversified investment and management mechanism, strengthen development of high-level talents, and set up a supervision and review mechanism of mega-science programs.

(Source: S&T Daily, March 29, 2018)

China's 2017 R&D expenditure reaches 1.75 trillion yuan

According to the statistics released by National Bureau of Statistics on February 13 and the initial estimation of the *Annual Report of S&T Statistics*, China's R&D expenditure in 2017 stood at 1.75 trillion yuan.

R&D expenditure refers to the actual expenditure on basic research, applied research and experimental development of the whole society within one year. Generally used for evaluating the research strengths and innovation capability of a country, the R&D expenditure includes the actual expenses for human labor, raw material, fixed asset purchasing and management in research and experimental activities.

Comparatively speaking, the total expenditure saw a year-on-year increase of 11.6%, one percentage point higher compared with the previous year. That expenditure is ranking No.2 in the world, only next to the US.

In 2017, the R&D intensity (share of R&D expenditure in GDP) stood at 2.12%, 0.01 percentage point higher compared with the previous year.

According to the National Bureau of Statistics, in 2012 the expenditure on basic research was 92 billion yuan, a year-on-year increase of 11.8%; the expenditure on basic research accounted for 5.3% of the R&D expenditure, 0.1 percentage point higher compared with the previous year.

In terms of the major players of R&D activities, in 2017 the R&D expenditure of enterprises stood at 1.3733 trillion yuan, a year-on-year increase of 13.1% and double-digit growth for two consecutive years; that of government-affiliated institutions and universities reached 241.84 billion yuan and 112.77 billion yuan respectively, a year-on-year increase of 7% and 5.2% respectively.

(Source: China News, February 13, 2018)

Mega-science Infrastructures in China

China's First Spallation Neutron Source (CSNS)

Reviewed and accepted by the Chinese Academy of Sciences (CAS), the construction of China Spallation Neutron Source (CSNS) was completed in high quality on March 25, 2018 as scheduled. Once put into operation, it will be China's first and the world's fourth pulsed spallation neutron source. CSNS is scheduled to apply for national acceptance in late May this year.

Chen Hesheng, CSNS chief commander and CAS member, stated that with independent and integrated innovation, CSNS has achieved a series of technological progress in accelerators, target stations and instruments and over 90% of the equipment can be manufactured in China. This has dramatically boosted China's technological competence and independent innovation capability in areas of magnets, power supplies, neutron detectors and electronics, enabled a major breakthrough in fields of high-intensity proton accelerators and neutron scattering and promised China a niche among world front-runners in terms of the technology and holistic performance of the equipment of the same type. Once completed, CSNS will give full play to the role of three instruments in the first phase in the fields of materials science, life science, condensed matter physics and chemistry, and offer an internationally-advanced research platform for its users.

Beijing Electron Positron Collider

The Beijing Electron Positron Collider (BEPC) is one of the eight high-energy accelerator centers in the world. It is China's first high-energy accelerator and also a key scientific and technological infrastructure for high-energy physics research. It consists of a 202-meter-long linear accelerator, transport line, and a 240-meter-long sports track shaped accelerator (also called a storage ring), 6-meter-high 500-ton Beijing Spectrometer (BES), and the synchrotron radiation facility surrounding the storage ring. The BEPC was the world's only large-scale electron positron experimental installation that studied τ-charm physics in the region near the production threshold of τ leptons and charm particles. So far in this energy region, it is the collider of the highest luminosity.

Shanghai Synchrotron Radiation Facility

The Shanghai Synchrotron Radiation Facility (SSRF) is China's largest cross-century science project with an investment of over 1.2 billion yuan. Constructed in December 2004, it is located in Shanghai's Zhangjiang Hi-Tech Park. As a national large scientific installation and multidisciplinary experimental platform, the SSRF consists of a full-energy injector (including a 150MeV linear accelerator, a full-energy booster with a circumference of 180 meters and injection/extraction system), an electron storage ring (perimeter 432 meters, 3.5GeV), beam lines and experimental stations.

At the experimental stations, the synchrotron radiation is “irradiated” to a variety of experimental samples. The scientific instrument records their reaction information or changes which will be processed and presented in a series of curves or images reflecting the natural mysteries. Scientists and engineers can use the powerful light speed to quickly determine the three-dimensional crystal structure of proteins, and even attend to the details of VLSI circuit. From the start of construction on December 25, 2004 to its opening to the users after the commissioning in April 2009, the energy of this third-generation SRF with a total investment of more than 1.2 billion yuan, is only behind three other high-energy radiation facilities in the world.

National Laboratory of Heavy Ion Accelerator, Lanzhou

The National Laboratory of Heavy Ion Accelerator in Lanzhou (NLHIAL) is a national laboratory supported and developed by the Chinese Academy of Sciences (CAS). Heavy Ions Research Facility Lanzhou (HIFRL) was built and delivered beams in December 1988. In August 1991, the then State Planning Commission approved the establishment of the National Laboratory of Heavy Ion Accelerators in Lanzhou and opened it to domestic and international researchers. Designed and built by the Institute of Modern Physics, Chinese Academy of Sciences (CAS), HIFRL is the first large-scale heavy ion accelerator system in China.

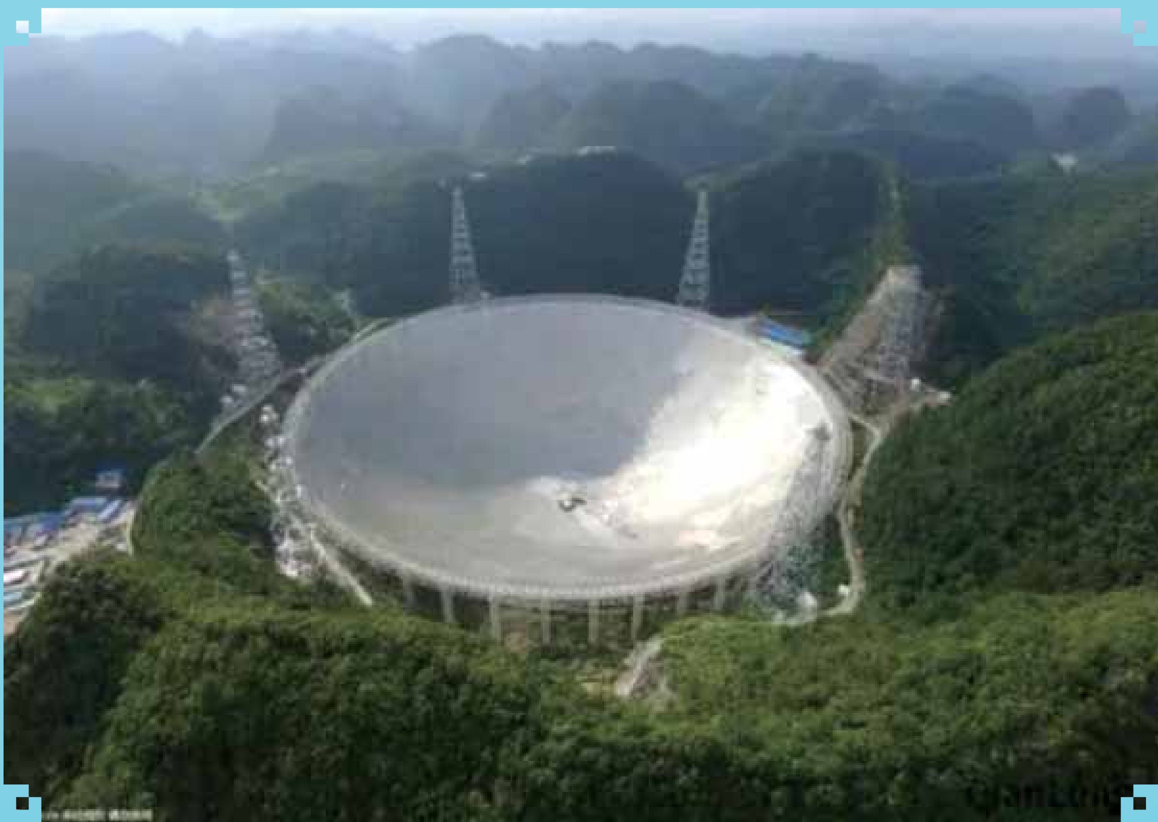
The NLHIAL is engaged in such research areas as physics of radioactive beams; the synthesis and decay properties of new radionuclides away from stable lines; heavy ion collisions and thermonuclear properties in low-medium energy; high-spin nuclear structures; nucleus theoretical research; and interdisciplinary application of heavy ion beam in solid physics, material science, life science and astrophysics; and study of the physics and technology of heavy ion accelerators.

"The Eye of Heaven"

(Five-hundred-meter Aperture Spherical Radio Telescope) in Guizhou

The Five-hundred-meter Aperture Spherical Radio Telescope (FAST) is located in the karst depression in Pingtang County, Guizhou Province.

FAST was nicknamed as "China's Eye of the Heaven." Proposed by Chinese astronomers in 1994, it was put into use on September 25, 2016 after 22 years of construction. It is built under the leadership of the National Astronomical Observatory of the Chinese Academy of Sciences. With China's independent intellectual property right, it is the world's largest single aperture radio telescope, both in size and sensitivity.



(Source: stdaily.com, March 26, 2018)