CHINA SCIENCE AND TECHNOLOGY NEWSLETTER

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

No.10
May 30 2016

Latest news of international scientific and technological cooperation

Review of the 12th Five Years: National Major S&T Projects

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Sino-Dutch DG-level Consultation on S&T Cooperation Held in Beijing

Chen Jiachang, Deputy Director General of International Cooperation, Chinese Ministry of Science and Technology and visiting Director-General Hans Schutte, Dutch Ministry of Education, Culture and Science attended a DG-level consultation meeting on May 19, 2016. The two sides had an in-depth exchange of views on advancement and cooperation in science, technology and innovation (STI).

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DDG Chen Jiachang stressed the long-term, close and stable relations between China and the Netherland in STI. During the 13th Five-Year Plan period, China will embrace the ideas of innovative, coordinated, green, open and shared development and implement the Strategy of Innovation-driven Development. China will deepen reforms of S&T programs management and further integrate resources of innovation in a bid to promote application of scientific outcomes. It is hoped that the two countries could strengthen the exchange of innovation policies and advance socioeconomic development of both countries through closer ties of STI cooperation.

DG Hans Schutte agreed with DDG Chen's ideas. He was impressed by China's policies and actions in advancing scientific innovation. The Netherland is willing to work with China for innovative modality of cooperation to push forward cooperation between the two countries under the Sino-Dutch Scientific Strategic Alliance Initiative. DG Hans Schutte also briefed the Chinese side on the Dutch National Innovation Action Scheme and the latest developments of university cooperation between two countries.

(Source: website of China International Science and Technology Cooperation, 27 May 2016)

1st China-US Innovation and Investment Summit Held in Houston

From 16 to 18 May 2016, the first US-China Innovation and Investment Summit was held in Houston, USA. The summit was co-sponsored by China Science and Technology Exchange Center, US China Innovation Alliance (UCIA) and the International Technology Transfer Network.

Focusing on such key sectors as life science and health, IT and the Internet, environmental protection and new materials, new energy and advanced manufacturing, the summit included panel discussions on the topics of healthcare, energy and the Internet. Some 400 delegates from Chinese and American investment agencies, industrial corporations, innovation companies, entrepreneurship leaders and innovation teams attended the summit and explored opportunities of cooperation.

Mr. Jin Xiaoming, Director-General of International Cooperation of the Ministry of Science and Technology, Mr. Li Qiangming, Consul-General of the Chinese Consulate-General in Houston, Mr. Bernard Harris, President of UCIA, and Mr. Sylvester Turner, Mayor of Houston, attended and addressed the opening ceremony of the Summit. The summit, which was the first large-scale investment conference for Chinese and American investors and entrepreneurs held in southern regions of the United States, built a high-level platform for Chinese enterprises to expand cooperation with their American partners and jointly promote China-US innovation cooperation.

(Source: website of China International Science and Technology Cooperation, 23 May 2016)

9th China-Russia Innovation Working Group Meeting Held in Moscow

On April 26, 2016, the 9th China-Russia Hi-tech and Innovation Working Group Meeting was held in Moscow, Russia. DDG Zhang Jian, Department of International Cooperation, Chinese Ministry of Science and Technology and DDG Andrey Polyakov, Department of Science and Technology, Russian Ministry of Education and Science co-chaired the meeting.

During the meeting, the two sides exchanged views and reached broad consensus on an array of issues including the joint call for research proposals, cooperation under the framework of NICA project, joint development of China-Russia Technological Property Rights Exchange Center,

cooperation between Russian Science Foundation and Chinese partners, organization of science and technology activities, and Sino-Russia inter-regional S&T innovation cooperation. The two sides finalized the procedure and the time table of the joint call. After the meeting, the two sides signed the Minutes of the 9th Hi-tech and Innovation Working Group Meeting of China-Russia S&T Cooperation Sub-committee. As agreed upon by the two sides, the 10th Hi-tech and Innovation Working Group Meeting will be held in China in 2017.

(Source: website of China International Science and Technology Cooperation, 18 May 2016)

Japanese New Technology Release Held in Shandong University

In a bid to promote S&T cooperation between universities, research institutes and businesses between China and Japan, China S&T Exchange Center (CSTEC) and Japan Science and Technology Agency (JST) organized a release of Japanese new technologies in Shandong University on May 10. Ms. Wang Yan, Deputy Director General of CSTEC and Hitoshi SAITO, Deputy Executive Director of JST addressed the opening ceremony. Also present at the ceremony were DDG Yu Shuliang, Shandong Provincial Department of Science and Technology and Kazuki OKIMURA, Special Advisor of JST.

Science and technology cooperation is highly complementary between Japan and China and the two sides have wishes and demands for cooperation in various fields at multiple levels, DDG Wang Yan said. In recent years, there have been more and more S&T exchanges between the two countries. For example, the SAKURA Exchange Program in Science is proceeding vigorously. This time, the JST headed a delegation to China to promote new technologies from Japan. This will surely promote technical cooperation between research institutes and businesses on two sides. CSTEC will remain committed to S&T cooperation and exchanges between the two countries.

During the session, a total of 11 universities, research institutes, and businesses from Japan released their latest technologies encompassing both cutting-edge areas like environmental monitoring and foot safety, and a series of practical technologies like weeding robots for paddy fields. Meanwhile, representatives from 70 strong Chinese institutions attended the event and actively engaged in discussions with Japanese counterparts, achieving satisfactory results.

(Source: website of China International Science and Technology Cooperation, 17 May 2016)

National Major S&T Projects in the 12th Five Years

As the main force in China's strategic R&D activities, National Major Science and Technology (S&T) Projects have provided an important pillar for ensuring state security, adjusting industrial structure, shifting growth model and improving people's livelihood.

The 12th Five-Year period was a crucial period for China to strengthen the innovation capability and build an innovative country. The National Major S&T Projects were the top priority for China's scientific and technological development. By pooling the resources of the entire nation, the Projects have generated breakthroughs in key areas, providing important support for aligning S&T development with economic growth and social progress.

In 2006, the National Medium- to Long-term Program on Scientific and Technological Development (2006-2020) was promulgated, which called for the launching of the Major S&T Projects in line with the national goals. A number of strategic products, key generic technologies and major projects were supported by mobilizing the strengths of the whole nation and give full play to the role of the market, thus achieving a leapfrogging growth in productivity through the advances of science and technology.

In an interview with Science and Technology Daily, Xu Jianguo, Director General of the Office of Major S&T Projects of the Ministry of Science and Technology, said that the country placed high hope on these projects because they aim to remove the obstacles in strategic areas where breakthroughs are urgently needed. When these projects were first implemented, China was still lagging far behind major developed countries in terms of the sophistication of key technologies and industrial competitiveness in the relevant fields. Yet, with successive breakthroughs made in recent years under the Major S&T Projects, such a situation of technological dependence had been notably reversed.

In terms of the project on core electronic devices, high-end generic chips and basic software as an example, China is already a world leader in the designing and R&D of super computer CPU, and domestic software and hardware are now widely used in space, power generation, office application and mobile intelligent terminals, providing important guarantee for the assurance of information security.

Through implementation of the project on integrated circuit (IC) equipment, China has made significant progress in developing world-leading, high-end IC manufacturing equipment and achieved a faster-than-average upgrade in whole-set manufacturing technologies. 55nm and 40nm IC products have achieved mass production, and 28nm IC products are also starting production. China is also an emerging world leader in IC packaging technology, with mass production already achieved in high-density encapsulation and innovation realized in wafer-level packaging technologies.

The major project on numerical control machine tools has notably enhanced China's R&D capability of machine tools and raised the technology performance of the industry. The key technology indicators of China's multi-channel, multi-axis numerical control system have basically reached the international mainstream level. China has also gained import substitution capability for more than 20 products including the automatic press line for the covering parts of large vehicles.

The project on oil and gas development has significantly boosted China's capability of oil and gas exploration and exploitation. Localization of major oil and gas equipment has been basically realized, laying the foundation for the expansion of proved oil and gas reserve during the 12th Five-Year period and ensuring energy security. The 981 drilling platform, which was designed by China, conducted a successful maiden operation in the South China Sea. The leap from 500 meters to 3,000

meters makes China the third country in the world with the capability required for the designing and building of ultra deep-water semi-submersible drilling unit, only next to the United States and Norway.

During the 12th Five Years, major projects have proceeded smoothly on the whole, and basically achieved the planned targets. Notable breakthroughs have been made in a number of crucial science and technology issues.

The breakthroughs in technology have given fresh impetus to industrial upgrading and economic development. The implementation of major S&T projects has cultivated a number of international flagship enterprises, supported the rapid growth of SMEs, promoted the concentration of innovation factors at the regional level, facilitated the creation of IC manufacturing, biomedicine and nuclear power equipment production bases as well as high-tech industrial clusters. Some industries are moving up the value chain and some products have formed a complete industrial chain. All these have boosted the innovation capability of enterprises, provided support for the development of emerging industries and the growth and transformation of companies, and given a strong boost to mass entrepreneurship and innovation.

With the support of the project on broadband mobile communication, the 4G TD-LTE mobile communication network is rapidly expanding in size. A complete end-to-end industrial chain with Chinese leadership and global participation has taken shape, and domestic application has achieved a leap from "catching up in 2G technology", "making breakthrough in 3G technology" to "reaching the top in 4G technology". China Mobile has built the world's largest 4G network based on the TD-LTE technology, with 65 commercial networks and over 1.3 million base stations around the world and over 270 million domestic users. The implementation of the project has supported the growth of China Mobile, Huawei, ZTE and other world-class Chinese companies, and cultivated a number of emerging chip design companies like Spreadtrum Communications and RDA.

With the support of the project on IC equipment, more than 30 IC manufacturing equipment and dozens of IC materials have passed production line examination and verification and entered the market. The project has boosted the market competitiveness of flagship Chinese companies like SMIC, taken backbone companies like Jiangyin Changdian Advanced Packaging (JCAP) and Tianshui Huatian to the forefront of the world, and also fostered a group of "little giant" companies.

With the support of the project on nuclear power, localized production has been by and large achieved in key equipment and materials such as pressure vessel, evaporator, helium fan, U tube and nuclear grade zirconium, paving the way for the transformation and upgrading of the nuclear industrial chain.

The project on new drug creation has boosted the innovation momentum and strength of flagship biomedicine companies. According to statistics, the number of companies in the medical industries with a primary business revenue of over RMB10 billion has increased from 2 before the implementation of the project to 11, and 2 of them have a business revenue of over RMB40 billion. Companies like Hengrui Medicine, Innovent and Hutchison Medi Pharma are even able to transfer new drugs to foreign enterprises.

Under the project on water pollution management, critical technologies of intensive sewage treatment have been developed for petrochemical, iron and steel, pulping and other key industries, which have contributed to emission reduction, clean production and industrial upgrading. The technology of combined control of point and non-point source agricultural pollutants has been applied in the Taihu Lake region and the Three Gorges region, reducing nitrogen and prosperous emission by 44,000 tons.

With the joint push of the major proejct on transgenic technologies and other science and technology programs, the new BT cotton varieties have been cultivated on 400 million mu (15 mu=1 hectare) of land, and the proportion of domestic BT cotton has reached 96%, saving 400,000 tons of pesticide and increasing profits by RMB45 billion yuan.

The major project on infectious disease prevention and treatment has also achieved significant results. With the implementation of the project, a comprehensive

technology network for the prevention and control of infectious diseases has been established and improved, providing science and technology support for strengthening prevention and control of new emerging infectious diseases. Thanks to the experience gained over the years through this major project, China was very quick in developing diagnostic reagents and vaccines in both the H7N9 epidemic and the 2014 Ebola epidemic in West Africa.

President Xi Jinping stressed at the seventh meeting of the Central Leading Group on Economic and Financial Work in 2014 that efforts must be made to "speed up the implementation of the 16 national major S&T projects with clearly defined targets and priorities". Premier Li Keqiang also stressed that "the mechanism for the implementation of national major S&T projects should be improved". Vice Premier Liu Yandong provided direct leadership on the organization and implementation of the major projects, and made important instructions, called special meetings and inspected the progress of implementation on numerous occasions.

The achievements and breakthroughs of major projects would not be possible without the support of authorities and contributions of professionals. The individual tasks of the major projects are carried out by thousands of research agencies, universities and enterprises scattered around 31 provinces and municipalities. More than 200,000 research personnel are involved in the various projects, including over 4,000 overseas professionals, and the number of senior research personnel accounts for 60% of the total. The new type of national mobilization system in a market economy condition allows the government to efficiently organize and fully utilize the innovation resources and strengths of the country, and guarantees the smooth implementation of major S&T projects.

(Source: Science and Technology Daily, 9 March 2016)

Achievements of National Major Science and Technology Projects

Investment

Over the last five years, a total of RMB 75.9 billion has been invested in ten major projects for civilian purposes, spurring an additional investment of RMB108 billion by local governments, enterprises and other organizations.

Coverage

The implementation of the major projects involves thousands of research institutes, universities and enterprises in 31 provinces and municipalities.

Professionals: 243,000 research personnel have taken part in the R&D activities of major S&T projects, 60% of which are senior researchers. The projects have also attracted over 4,000 professionals from overseas, including 585 professionals under the "International Talents Recruitment Program".

Platforms: the major projects have helped build 442 technology platforms, including the broadband mobile communication experiment and verification platform and the National Shanghai Center for New Drug Safety Evaluation and Research Center, 94 experiment or industrial bases such as the Huang Huai Hai national pilot test and industrial base for genetically modified wheat and corn varieties, and 515 demonstration projects and zones in such fields as infectious disease prevention and control, and water pollution management.

Broadband mobile communication

The 4G TD-LTE mobile communication network is rapidly expanding in size, and a complete end-to-end industrial chain with Chinese leadership and global participation has been formed. China Mobile has built the world's largest 4G network based on the TD-LTE technology, with over 270 million domestic users and 65 TD-LTE commercial networks around the world and over 270 million domestic users. The implementation of the projects has supported the innovation of China Mobile, Huawei, ZTE and other world-class Chinese companies, and cultivated a number of emerging chip design

companies like Spreadtrum Communications and RDA.

Integrated circuit equipment

More than 30 IC manufacturing equipment and dozens of IC materials have passed production line examination and verification and entered the market. The major project has boosted the market competitiveness of flagship Chinese companies like SMIC, taken backbone companies like Jiangyin Changdian Advanced Packaging and Tianshui Huatian to the forefront of the world, and fostered a group of "little giant" companies like AMEC, Beijing NMC and China Wafer Level CSP.

New drug development

The major project has boosted the innovation momentum and strength of flagship biomedicine companies. According to statistics, the number of companies in the medical industries with a primary business revenue of over RMB10 billion has increased from 2 before the implementation of the project to 11, and 2 of them have a business revenue of over RMB40 billion. Companies like Hengrui Medicine, Innovent and Hutchison Medi Pharma are even able to transfer new drugs to foreign enterprises.

Infectious disease prevention and treatment

A comprehensive technology network for the prevention and control of infectious diseases has been established and improved, providing science and technology support for strengthening prevention and control of emerging infectious diseases. In 2013, China set up a successful line of defense against the H7N9 epidemic in only three days, established the drug reserve in just one month and developed the vaccine in eight months. This was praised by the World Health Organization as a "role model" for the world. In the wake of the Ebola crisis in 2014, China successfully developed diagnostic reagents and vaccines for clinical use. China's timely technical assistance to countries affected by the epidemic was applauded by the international community.

Large aircraft

On 2 November 2015, the C919 large passenger aircraft went off the assembly line of COMAC. Over 200 enterprises from 22 Chinese provinces were involved in the research and production of the aircraft. Now, C919 has formed a complete industrial chain, value chain and innovation chain, and received 514 intentional orders.

(Source: Science and Technology Daily,
9 March 2016)