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Special Issue: Science and Technology Policy Update

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China Starts to Formulate 13th Five-Year Plan

According to the message released by the National Development and Reform Commission (NDRC) of China in mid-April, a videophone conference was convened for the formulation work of the country's development program for 2016-2020, the 13th Five-Year Plan. The conference signaled a full-fledged start of the compilation of national plan for economic and social development. In the meantime, NDRC announced 25 major auxiliary pre-compilation research projects, which covers macro-economy, education, agriculture, real estate and the reform of the state-owned enterprises (SOEs).

Officials from NDRC's Department of Development Planning expressed that the 13th Five-Year Plan is of particular significance, and that it will be a key issue to

Monthly-Editorial Board:Building A8 West, Liulinguan Nanli, Haidian District, Beijing 100036, China
Contact: Prof.Zhang Ning E-mail: zhangn@most.cn hixiaosun@163.com http://www.caistc.com

handle the relationship between government policy and market role. In order to give full play to the decisive role of the market in resource allocation, government interference will be reduced in competitive sectors and fields and there will be less government planning, or no such planning in some fields.

According to the same source, NRDC is considering to encourage the micro-blogging site Weibo and the messaging app WeChat involving the formulation, so as to invite broader participation from the public. During the solicitation period, NDRC will use such platforms as Weibo and WeChat to communicate with various sectors of the society for public opinions and suggestions on the 13th Five-Year Plan. Such platforms are more efficient than newspapers, mails and e-mails that were used before, thus bringing wider public participation.

(Source: Science and Technology Daily, April 24, 2014)

National Science and Technology Major Project's 13th Five-Year Plan Begins Formulation

In late June, the Ministry of Science and Technology (MOST), the National Development and Reform Commission (NRDC) and the Ministry of Finance (MOF) jointly held meeting to launch the formulation work of the 13th Five-Year Plan for the National Science and Technology Major Project (NMP), national program that funds major scientific and technological projects, and made further deployment for its compilation. The focus and plans for the next phase of NMP were also released at the meeting.

Guided by the overall requirements and work plans for the compilation of the 13th Five-Year Plan for the Economic and Social Development and the 13th Five-Year Plan for the Development and Science and Technology, and based on NMP's 2014 priority work program, MOST, together with NDRC and MOF, announced a work plan for the compilation of NMP's Five-Year Plan after an extensive study. During the meeting, NMP office of MOST gave a detailed introduction of the work plan, explaining its general ideas and background, objectives and missions, specific arrangements, deadlines and basic requirements, and made specific requirements for the next phase of work.

According to the head of NMP office, the 13th Five-Year Plan period is the last five year for pursuing an all-round completion of the strategic missions of NMP. It's also a key period for implementing a series of decisions and strategies, including the central government's strategy of deepening the reform in the science and technology management system and the strategy for innovation-driven development. Therefore, the research and compilation of the development plan for NMP is of great significance. This plan should, on one hand, help NMP complete its missions and overall objectives set to be finished by 2020 and demonstrate the adjustment in priority focus and integration of scientific and technological resources as required after the mid-term assessment. On the other hand, the plan must be made to comply with the development trend of the new round revolution in science and technology and the domestic industrial reform, and include arrangement to meet the technological needs of the sectors and fields with strategic importance. Market should play a decisive role in resource allocation, and new ways should be found to

enable enterprises to play a main role in technological innovation; attention should be paid to the needs and willingness of enterprises. The outcomes of NMPs should be applied with effectiveness and the application should be customized based on the regional development and industrial development; policies for industrial development, financial and fiscal support, and taxation should be put in place to supplement the application. The overall requirement of deepening reform in the science and technology management system should be highlighted.

(Source: China Hi-Tech Industry Herald, June 23, 2014)

Strategic Study launched for National Major Scientific Research Program in 13th Five-Year Plan Period

In late June, a strategic study for National Major Scientific Research Program (NMSRP), a key program that funds major scientific research, launched in Beijing towards the 13th Five-Year Plan period. To prepare for the related work, a dedicated team of experts was organized by the Department of Basic Research of MOST. At the launching ceremony, experts made an extensive discussion on the work plan, preliminary research framework and the steps of doing the study. The study for the formulation of MNSRP's strategy in the 13th Five-Year Plan period will focus more on the top-level design and the coordination and integration of different plans under the framework of the strategy facing the frontiers of science development. The forward-looking deployment and key missions set by the State will be highlighted, including systematic summary and in-depth research into such advanced research fields as nano-science, quantum study, proteins, fertility and reproduction, stem cell and global change.

(Source: Science and Technology Daily, June 23, 2014)

MOST and MIIT Released Action Plan on Energy Saving and Emission Reduction Science and Technology

In March 2014, the Ministry of Science and Technology (MOST) and the Ministry of Industry and Information Technology (MIIT) jointly formulated and published the *2014-2015 Action Plan of Science and Technology for Energy Saving and Emission Reduction* (the "action plan"). The action plan specifically states that by the end of 2015, innovation in science and technology will provide significant support to realize China's goals in energy saving and emission reduction (ESER), ESER technologies and equipment system with independent intellectual property right will take shape, ESER-related technical standard and specification system will be further improved, ESER science and technology innovation and service capabilities will start to grow, and economies of scale will be achieved in the demonstration and application of ESER technologies.

The action plan aims at the objectives and missions brought up by the State Council's *12th Five-Year Plan for Energy Saving and Emission Reduction and the Comprehensive Work Plan for Energy Saving and Emission Reduction in the 12th Five-Year Plan Period*. It will enable science and technology to play a leading and supportive role in transforming economic development mode, optimizing energy structure, relieving the constraints from resources and environment and addressing global warming, and the work related to ESER science and technology will be comprehensively pressed ahead in 2014-2015 according to the action plan.

As stated in the action plan, by the end of 2015, 150 key generic technological breakthroughs will be made, raising the energy efficiency of main relevant equipment by over ten percent and 100 national or industrial technical standards will be revised or formulated. In key industries, 300 applicable technologies are to be promoted and 100 major technology demonstration projects are to be carried out, driving the application penetration rate by 30 percent. The action plan also proposes to establish 20 national demonstration bases for science, technology and innovation and forge at least 20 strategic alliances for technological innovation in ESER-related sectors. The action plan maps out the following five major tasks.

First, accelerate the research and development of key generic ESER technologies. To meet the substantial technological needs in ESER and industrial optimization and upgrading in such sectors as industries, energy and transportation, the technological upgrades regarding the cascaded use of energy and waste source reduction will be accelerated in the key industries of electricity, iron and steel and construction supply. Technologies that boost the fuel efficiency and reduce the tail gas pollution of transportation vehicles will be developed. The R&D of key generic technologies including control of agricultural diffused pollution and treatment of small and non-point pollutants will be strengthened.

Second, accelerate the extension and application of advanced ESER technologies and formulate ESER technology policy platform that is compatible with industrial policies and policies that guide the assessment of environmental impact of business activities. It is encouraged to formulate a list of key ESER technologies to be disseminated and select several major technological advances with significant ESER effectiveness and commercial potential and spread these advances for application through information platform for ESER technologies and standards and technology exhibitions. In the meantime, local authorities are also welcomed to explore their extension mechanisms and innovation models regarding ESER technologies.

Third, carry out the demonstration projects of ESER science, technology and innovation. The New Energy Vehicle Technological Innovation Demonstration Project, the Key Industry ESER Technology Demonstration Project and the Capital Blue Sky Action will be carried out so that the projects and action can play a leading role and become scientific and technological extension models that are universally applicable. To address the ESER needs of key industries, the capabilities of R&D, production, system integration and commercial application of key ESER products and core ESER technologies will be enhanced. Moreover, support will be given to enterprises with R&D strength and big market share.

Fourth, improve ESER technological innovation platform and service system. National key laboratories, national engineering technology research centers and strategic alliances of industrial technological innovations will be given full leverage to act as platforms that promote innovations. Enterprises will be encouraged to take the lead in horning its innovation capabilities; policies, measures and popularization mechanisms for ESER will be improved; the system of ESER technological standards will be established and improved; the test and certification service for

advanced ESER technologies and products will be set up; the policy environment, investment environment and industry environment for technological service will be established; several ESER technological service bases with strong core competencies will be nurtured.

Fifth, launch an ESER campaign with wide public participation. Publications will be designed to promote the participation of a nationwide ESER campaign and online educational materials will be developed. Databases and information networks that contain universally applicable ESER technologies will be used as new channels to digitalize and spread the ESER research results. National sustainable communities, national hi-tech industrial development zones and other science and technology demonstration projects will also provide support to organize various kinds of activities to demonstrate ESER technologies to the public.

Going forward, MOST and MIIT will enhance overall planning and coordination together with related authorities and key regions to establish a coordination mechanism. They will innovate the way of implementation, as well as promote the combination and synchronization of ESER technology integration, innovation in process and innovation in business models. The channels of financial input will be expanded, with increased support from the public finances and social funding that comes from different channels and levels. Innovative talents and teams will be nurtured to build the overall quality and innovation capacities of the researchers. International communication and cooperation will also be strengthened and ESER agenda will prioritized in bilateral and multi-lateral intergovernmental agreement and framework for science and technological cooperation.

(Source: Science and Technology Daily, March 26, 2014)

MOST's Guidelines on Building National Science and Technology Reporting SystemApproved by the State Council

Early this September, the State Council approved and transmitted the document *Guidelines on Accelerating the Establishment of a National Science and Technology Reporting System*, which was formulated by the Ministry of Science and Technology (MOST) and mapped out the acceleration of a national science and technology reporting system with an aim of improving the complete archiving, accumulation, open sharing, transformation and application of science and technology achievements.

The guidelines note that establishing a national science and technology reporting system and including science and technology reports in the management system will facilitate the coordination and succession of science and technology planning, and in the meantime avoid overlapping of projects. It will help the researchers with their access to the research results and drive up the country's return on its input in science and technology. It will also benefit the public as they get a better understanding of the development in science and technology, and the commercial potential of these results will be tapped.

As stated in the guidelines, for project funded by public organizations or programs, reports must be submitted. Following the principles of universal standards, gradual implementation, categorized management and collaboration, administrative departments of science

and technology, authorities in charge of the projects and those carrying out the projects should assume their responsibilities. A national management mechanism and open sharing system on science and technology reports should be established and improved, and policies, standards, and specifications should be put in place in a bid to construct a unified national reporting system which then should underline the country's drive to strengthen its capabilities in science and technology and implement the strategy of driving development by innovation.

The guidelines consist of thirteen paragraphs covering four aspects, relevant measures of which include:

First, strengthening the coordinated management of the national science and technology reporting system. MOST should focus on the overall planning, organization and coordination, supervision and inspection of the reporting system, set up relevant policies, standards and specifications and service systems, and offer professional guidance to local governments and relevant departments on science and technology reporting. Local governments and relevant departments should incorporate the reporting into their mandates as science and technology planning, projects, and funds.

Second, defining the responsibilities of every management entity. All local governments and relevant departments should, in the research contracts or assignment documents, state the specific requirements of the reporting for those carrying out the projects. The management and archiving of science and technology reports should be assigned to established institutions, and non-classified and declassified reports should be regularly submitted to MOST. Those responsible for projects should establish a reporting mechanism, organize researchers to complete reports as required by their contracts or assignment documents and promptly submit them to the authorities overseeing the projects.

Third, ensuring that the science and technology reports are perfectly archived and centrally collected. Local governments and relevant departments should strive to collect and study the report of completed and closed projects. Besides the collection of reports of publicly funded projects, it is also encouraged for researchers working on projects sponsored by social capital to submit their reports to MOST or its agencies commissioning the projects through the national science and technology reporting services system. MOST and commissioning agencies should be in charge of processing, collection and management of reports received from all over the country.

Fourth, establish a sharing mechanism for science and technology reports. MOST and the commissioning agencies should provide open sharing services to the authorities in charge of projects, those who carry out the projects, researchers, and also the public through the national science and technology reporting service system. MOST and the authorities in charge of the projects should organize relevant departments to study the in-depth development and application of the report resources and focus on ensuring security, confidentiality and the protection of intellectual property in sharing services, so as to protect the rights and interests of researchers and those carrying out the projects.

Fifth, establishing an incentive and punishment system. Authorities overseeing a project should use the submitted reports and their sharing and access as a criterion for determining whether the leading researcher and those carrying out the project will get renewed support. Projects with reports that are not submitted on time or failing to meet the requirements will be considered unsuccessful and incomplete and will not get a proper conclusion. Regarding incidents of plagiarism, falsification of data and other academic misconduct related to the reports, the incidents will be clearly stated in the professional files of the researchers and the organization, and will be made public in accordance with relevant regulations.

Sixth, creating a favorable environment for science

and technology reporting. MOST and other departments will establish a consultation mechanism to strengthen the exchange and consultation on major topics of the national reporting system. Local governments and relevant departments should improve regular mechanisms to enhance coordination and cooperation and spare no efforts on implementation. Training in such reporting should be organized to assist researchers in drafting reports, and to standardize the management of the reports by supervising departments and research institutes.

(Source: Xinhuanet, September 10, 2014)

China to Build Smart Cities by 2020

Early this September, the National Development and Reform Commission (NDRC), the Ministry of Science and Technology (MOST), the Ministry of Industry and Information Technology (MIIT) and five ministries and commissions jointly released the *Guidelines on Promoting the Healthy Growth of Smart Cities*. The guidelines require that several smart cities with unique features should be built by 2020, and they are to serve as an impetus significantly driving the development of the surrounding regions. The comprehensive competency of them will be increased, and achievements will be made in protecting and improving the well-being of their residents, as well as innovating the management of social affairs and safeguarding the security of the cyberspace.

Smart cities is a new concept and model whereby the new generation information technologies such as the internet of things, cloud computing, big data, geographic information system are used to improve the urban planning, construction and management and the digitalization of services.

The guidelines propose that in building smart cities, the overall requirement of promoting intensive, smart, green and low-carbon urbanization through new approach should be followed, and the decisive role of the market in resources allocation should be brought into full play. The guidance of the government should be improved to coordinate material, information and intellectual resources, promote the innovation and application of the new generation information technologies, accelerate the digitalization of municipal management and service system, develop smart way of improving the people's wellbeing, enhance cyber security, increase the bearing capacity of the cities and the happiness of their residents, and improve comprehensively the quality and level of urbanization.

Regarding the funds to support the growth of smart cities, as urged in the guidelines, local governments should put in place a formal financing and investing mechanism. They should direct the market funds to fuel the growth through franchise operation and service purchases, encourage eligible enterprises to issue bonds to raise funds, and prohibit disguised sale of land rights and unreasonable debt-raising in the name of constructing smart cities.

The guidelines state the following five features that are expected in smart cities built up by 2020.

First, accessible public services. An information service network should basically be establish in public service areas of education and culture, health care, family planning, labor market, social security, housing support, environmental protection, transportation, disaster prevention and relief and inspection and testing.

This network should cover urban and rural residents, migrant workers and their families, so that the public will get access to services in a more convenient, prompt and efficient way.

Second, elaborate social administration. A digitalized social administration system that encompasses municipal administration, population, transportation, public security, emergency response, social integrity, market supervision, test and quarantine, food and drug safety and drinking water supply will take initial shape. Digital city management information system, geographic information system and architecture (structure) database should be coordinated to make urban planning and infrastructure administration significantly more digitalize and elaborate and improve the executive efficiency and capacity of the governments.

Third, livable environment. The urban resident should have a more digital way of life. A smart system that monitors the water, atmosphere, noise, soil and vegetation environment and an online system that prevents and controls the emission of pollutants and energy consumption will be set up, increasing the liveablity of cities.

Fourth, smart infrastructure. The next generation IT infrastructure that promises broadband, compatible, secured and ubiquitous access will be established by and expanded. The public infrastructure such as electricity, gas, transportation, water supply and logistics will be managed in a smarter way, and the operation and management of different infrastructures will be precise, synchronized and unified. The industrialization drive will be further IT-based, and the development of information services will be accelerated.

Fifth, stronger cyber security. The cyber security system and administrating regulation system will be established, and a secured and controllable fundamental network and crucial information system will be maintained, so that the security of important information is safeguarded and the information of residents, businesses and governments will be effectively protected.

(Source: China Hi-Tech Industry Herald, September 1, 2014)

National Seed Industry Innovation Foundation Launched

On September 9, the Ministry of Science and Technology (MOST) and the municipal government of Shenzhen jointly held a press conference on rebuilding the national innovation system of seed industry and launched the National Seed Industry Innovation Foundation. During the conference, science, technology and finance were, for the first time, identified as a basis to map out the top-level design system and solutions of the innovation system of the seed industry. Launched at the conference, the National Seed Industry Innovation Foundation was the first seed foundation that are funded by social capital, signaling a breakthrough of the construction of an innovative science, technology and finance system in the seed industry.

Vice Minister of Science and Technology Zhang Laiwu said at the conference, rebuilding the seed industry of China is a strategic work commissioned by the Party Central Committee and the State Council. The work covers science and technology management, research activities, product exchange and the entire science, technology and finance system. The financial support of the international capital market will also

be enlisted. The aim of the rebuilding is to develop a robust seed industry in China. From the perspective of science, technology and finance, a funding system that features "1+1+M" will be set up. The first "1" stands for the 1.5 billion yuan seed industry foundation that was established by MOST and the Ministry of Agriculture. The second "1" represents the National Seed Industry Innovation Foundation initiated by MOST and sponsored by local governments in Shenzhen city and Henan province. The "M" represents the many regional and specific foundations. The new innovation foundation will be based on science, technology and finance and used to facilitate the cooperation between science and technology and business enterprises, so as to form a financial innovation chain that covers every aspect of the seed industry and the whole industrial chain. The initial size of the innovation foundation is 500 million yuan, while the foundation's following addings may be worth 5 billion yuan. Including credit support from the banking sector, its scale may exceed 50 billion yuan, and if international participation is counted, there may be 500 billion yuan worth of financial support.

Xu Qin, Major of Shenzhen, said that for Shenzhen which was chosen as the base for the innovation foundation, it was a great opportunity to combine the national strategy with the unique position of Shenzhen as a Special Economic Zone and accelerate the innovation and development of the country's seed industry. According to him, Shenzhen will leverage on its advantages in terms of institution, mechanism, technology, management and market to build a modern crop system that empowers the industry, enterprises and various bases as main players and features the combination of production, study and research and the integration of seed breeding, production and marketing, raise the development level of China's crop seed industry, and make China a strong player in the world's crop seed market.

(Source: Science and Technology Daily, September 10, 2014)