China Science & Technology NEWSLETTER

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

No.20
October.31 2017

[Introduction to Major Program]

Plan on Building National Technology Transfer System
Issued by State Council

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Plan on Building National Technology Transfer System Issued by State Council

A national technology transfer system is an eco-system that promotes the continuous production of scientific and technological achievements and their dissemination, diffusion, sharing and application, leading to the realization of their economic and social value. To build such a system is essential to the capitalization and industrialization of sci-tech achievements, to improve the overall efficiency of the national innovation system, to invigorate the whole society for innovation and entrepreneurship and to integrate sci-tech advancement with economic development.

National Technology Transfer System

Background and Arrangement

Abstract: In line with the spirit of the 3rd Plenary Session of the 18th CPC Central Committee and to implement the ***Law on Promoting the Transformation of Scientific and Technological Achievements***, the Ministry of Science and Technology (MOST), along with relevant departments, has drafted the ***Plan to Build a National Technology Transfer System*** (hereinafter referred to as the Plan).

Background

The Plan has been reviewed and approved by the 37th Meeting of the Central Leading Group for Comprehensively Deepening Reforms chaired by General Secretary Xi Jinping; recently, it has been signed by Premier Li Keqiang and officially issued in the name of the State Council.

The Plan is an important document of the systemic arrangements on the transfer and transformation of sci-tech achievements since the 18th CPC National Congress; it is an overarching guideline to build a national technology transfer system; it also represents an essential layout for the three-step approach in promoting the transfer and transformation of scientific and technological achievements.

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The Plan identifies the following principles:

Leading role for the market with government support. We will give full play to the decisive role of the market in promoting technology transfer and will enhance the market functions in accelerating the diffusion and dissemination of sci-tech achievements and optimizing the allocation of innovation factors. The government will focus on strategy, planning, policy and service to provide a favorable environment for technology transfer.

Reforms as the driver with innovation in institutional arrangements. We will follow the laws of technology transfer and heed the new features for open, network-based and non-linear innovation. We will explore flexible and diversified institutions and mechanism for technology transfer and mobilize various innovation and technology transfer entities.

Problem-driven approach with a focus on key aspects. We will focus on the weak links and bottlenecks for technology transfer and transformation to adopt targeted and feasible policies; in this way, we make up for the shortcomings in technology transfer and open a smooth pathway for technology transfer.

Vertical linkages with enhanced coordination. We will enhance the linkages between central and local governments and the coordination among authorities and industries. We will combine sci-tech achievements for military and for civilian purposes and integrate international and domestic markets. We draw upon various resources and coordinate different localities, departments and industries to support technology transfer.

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Policy design: three-stage arrangement to promote the transfer and transformation of scientific and technological achievements

In recent years, we have taken a three-stage approach in facilitating the transfer and transformation of sci-tech achievements: amending the ***Law on Promoting the Transformation of Scientific and Technological Achievements,*** issuing the ***Opinions on the Implementation of the Law on Promoting the Transformation of Scientific and Technological Achievements***, and planning actions to facilitate such transfer and transformation. Technology market has developed in an orderly manner with rapidly expanding technology service institutions and increasingly dynamic technology exchanges.

The policy framework for technology transfer has been improved. Departments of the central government have enhanced policy coordination and focused more on details and implementation, **issuing 20 plus policy documents.** Local governments have improved their policy systems based on central government policies; **30 plus local governments have adopted nearly 60 supporting regulations and policies.**

The transfer of scientific and technological achievements in various localities has shown a momentum of rapid expansion. The MOST has supported Hebei and Zhejiang Province in establishing National Demonstration Zones for Scientific and Technological Transformation and Transfer. These localities have pioneered in terms of promoting coordinated innovation for Beijing-Tianjin-Hebei and combining Internet Plus and the transformation of sci-tech achievements.

Social participation: Enthusiasm for the transfer and transformation of scientific and technological achievements.

For more than a year, various regions, departments and innovation entities have participated actively and achieved substantial results. ***In 2016, the turnover for technology contracts reached RMB 1140.7 billion, a year-on-year growth of 15.97% and the first time for this figure to exceed RMB 1 trillion. In January to August 2017, 150,353 technology contracts were concluded with a turnover of RMB 531.84 billion, a year-on-year growth of 14.4%.***

The service system for technology transfer has been improved. In 2016, **1,337 creators'** spaces were registered at the MOST and **4,298 creators'** spaces and 3,255 incubators have been taken into statistics. In 2016, these entities have served nearly 400,000 enterprises with an investment of **RMB 93 billion** and provided **more than 2 million jobs.**

A diversified mechanism of investment has taken shape more rapidly. In 2016, venture capital funds have increased by 45% to **RMB 350 billion.**

Universities and research institutions have transferred more scientific and technology achievements with better quality. In 2016, the technology contract turnover for universities and research institutions have increased by **14.56% and 25.8%** respectively.

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Synergy: The Plan in Building a National Technology Transfer System

The most outstanding feature: a systemic framework. The Plan has initiated a more comprehensive, systematic and coordinative approach to facilitate the transfer and transformation of scientific and technological achievements. Based on the three-stage arrangement, the Plan identifies where breakthroughs can be made for the reforms to facilitate technology transfer and to optimize the policy environment.

Arrangements and plans to build the national technology transfer system

Two-step approach and its targets

1

First step, by 2020, we will have basically built a national technology transfer system suited to new conditions; we will have also built relevant institutions and mechanisms favorable to the capitalization and industrialization of scientific and technological achievements.

2

Second step, by 2025, we will have built a national technology transfer system that features reasonable structure, sophisticated function, comprehensive institutions and efficient operation. We will achieve smoother diffusion, transfer, sharing and application of scientific and technological achievements.

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Three priorities:

First, optimizing the basic structure for the national technology transfer system. We will build the **8 pillars in 4 aspects** of the national system. We will mobilize innovation entities for technology transfer and enhance the demand-oriented production of scientific and technological achievements. **Efforts will also be made to establish an integrated and open technology market and establish a national exchange network with inter-connectivity, develop technology transfer institutions and enhance universities,** research institutes and social institutions for technology transfer and build up specialized personnel for technology transfer and improve the multi-layered mechanism for the development of talents.

Second, expanding the channels for technology transfer. We will magnify the radiative and disseminative function of the technology transfer system. **We will rely on innovation and entrepreneurship for technology transfer and deepen the two-way transformation of military and civilian technologies.** We will facilitate the cross-border transfer and dissemination of scientific and technological achievements and broaden international technology transfer.

Third, improving policy environment and supporting measures. We will ensure the efficient operation of the national system. **We will uphold the correct direction to evaluate scientific and technological achievements, pushing forward differentiated evaluations respectively for the personnel of universities and research institutes. We will establish a system of differentiated evaluation based on the quality, contribution and performance of scientific and technological innovations.** We will enhance the alignment and coordination of policies, improving the management system for state-owned technology-related intangible assets. We will coordinate tax policies on the personal income for technology transfer. We will improve diversified investment and financing services, enhance the protection and operation of intellectual property rights and intensify the sharing and targeted alignment of information. In this way, we will nurture a favorable social environment for technology transfer.

To optimize the basic structure of the national technology transfer system, the Plan has proposed four measures:

I. Mobilizing innovation entities for technology transfer

We should strengthen the demand-oriented supply of scientific and technological achievements. We should give full play to leading role of enterprises in the R&D and implementation of market-oriented sci-tech projects. We will facilitate enterprises and other technology users to participate in the management, acceptance, evaluation and other stages of relevant projects. For major national projects, we will focus on technology transformation as an integral task and set up directly related indicators. We will improve the mechanism that scientific and technological achievements are transformed without undue delay and narrow the gap between sci-tech achievements and the market. We will guide universities and research institutes to undertake innovation, transformation and transfer of technologies based on their own positioning and the market demand. We will emphasize the submission and use of universities´ and research institutes´ annual reports on the transformation of scientific and technological achievements.

We should strengthen the joint efforts of industries, universities and research institutes in technology transfer. We will give full play to platforms like the National Technological Innovation Center and national manufacturing innovation centers and push forward the transfer and dissemination of key technologies. We will rely on enterprises, universities and research institutes to build bases for pilot and mature production focusing on specific segments. We will promote the maturity evaluation of technologies and facilitate large scale application of technological achievements. We support enterprises in taking the lead and, together with universities and research institutes, establishing strategic alliances of industrial technology innovation. We push forward technology transfer and dissemination through cross-licensing and patent pools. We will develop new types of research institutes to explore new mechanisms for the R&D of generic technologies and technology transfer. We will give full play to academic associations, industrial associations, research societies and other sci-tech organizations, relying on the synergy of universities, research institutes and industries to push forward technology transfer.

We will advance technology transfer especially in the fields urgently needed by social and economic development. We will focus on the demand for sci-tech achievements in environment governance, targeted poverty alleviation, health, public security and other areas concerning the society and people´s livelihood. We will give full play to non-profit technology transfer platforms like clinical medical research centers and issue directories on non-profit technological achievements. We will demonstrate advanced technologies for their promotion and application so that the people can share the advanced sci-tech achievements. We will focus on areas of strategic importance for long-

term development and better align the supply and demand of technologies. We will accelerate the transformation and application of major sci-tech achievements. We will target at key areas such as artificial intelligence of wide coverage and substantial economic benefits and step up the promotion and application of key and generic technologies. In this way we will facilitate industrial transformation and upgrading. Focusing on rural areas´ demand for scientific and technology achievements, we will give full play to the promotion system of agricultural technologies with non-profit institutions as the mainstay and social service providers as the complement. Efforts will be made to enhance the system of agricultural technology transfer.

II. Establishing an integrated and open technology market

We will establish an inter-connected national network of technology exchanges. We will rely on the existing pivotal online platforms of technology exchanges and contact with technology transfer institutions, financing and investment institutions and various innovation entities through the Internet. Therefore, we will pool innovation factors including sci-tech achievements, funds, talents, service and policy and combine online and offline in technology exchanges.

We will accelerate to nurture the technology market; develop national technology exchanges with comprehensive functions and wide coverage; improve regional and industrial technology exchanges that are also linked with national markets; push forward the correlation and integration of technology and capital markets and expand the channels that various capitals can invest in technology transfer, participate in technology turnover and exit from such activities.

We will improve the services for technology transfer; promulgate service regulations for technology transfer and improve the market-oriented pricing mechanism that suits the needs for the exchanges of sci-tech achievements; clarify the procedures for sci-tech achievements to be audited, to get listed and traded in technology exchanges and to be disclosed for a concluded transaction; improve establishment of a specialized statistics system for technology transfer services and improve the rules and regulations on identifying, registering and managing technology contracts.

III. Developing technology transfer institutions

We will enhance government guidance and service and consolidate management authorities for technology transfer and enhance the overall planning, guidance and coordination on technology exchanges and technology transfer institutions nation-wide. For sci-tech achievements with fiscal support we will enhance information gathering, evaluation and transfer; guide technology transfer institutions to target the market and become standardized and to improve their competence and service; nurture a batch of technology transfer institutions that play a demonstrative and exemplary role.

We will strengthen technology institutions under universities and research institutes; encourage universities and research institutes, without increasing officially budged posts, to establish professionalized institutions for technology transfer; explore new markets and enhance marketing, promotion and after-sale service for scientific and technological achievements; innovate in managing and operating technology transfer under universities and research institutes; establish a mechanism to disclose service invention and adopt a system of contractual employment for technology managers. In this way, we will delineate interest allocation and guide professionals to focus on serving technology transfer.

We will accelerate the development of other technology transfer institutions in the society; encourage intermediaries to offer professional services including IPR consultation, legal counselling, asset valuation and technology evaluation; encourage innovation entities and technology transfer institutions to jointly establish alliances for technology transfer, thus enhancing their cooperation and information sharing; encourage local governments with proper means to support technology transfer institutions based on their service performance.

IV Expanding professional personnel for technology transfer

We will improve the multi-layered mechanism for the development of talents; nurture more managerial staff, brokers and managers for technology transfer and ensure a clear career path and prospect for higher academic/professional titles. We will support and encourage universities and research institutes to set up dedicated posts for innovative talents in technology transfer. Performance-related pay should favor personnel making outstanding contribution to technology transfer; encourage retired professionals to undertake technology transfer; coordinate policy guidance and market incentives in an appropriate manner and focus more on market returns for research personnel. Through multiple channels, we will also encourage research personnel to undertake technology and step up policy support for personnel engaging in the R&D and transfer of cutting-edge and national defense-related sci-tech achievements.

We will try to nurture more and better talents; give play to enterprises, universities and research institutes and attract high-level, overseas talents or teams for technology transfer through multiple forms and arrangements including projects, bases and academic cooperation; encourage universities with conditions to set up majors or disciplines for technology transfer as well as joint-programs with enterprises, research institutes and sci-tech societies; incorporate high-level talents for technology transfer in the national and local plans to offer special support to high-level talents.

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To expand technology transfer channels, the Plan has put forward four measures:

I. Relying on innovation and entrepreneurship to promote technology transfer

We will encourage research personnel to innovate and start their own businesses and researchers to take temporary or part-time posts in enterprises or to start their businesses with or without holding their current positions. Through various forms and channels, we will facilitate the technology transfer to micro, small and medium-sized enterprises (MSMEs). We will support universities and research institutes to set up flexible posts and attract business talents to take up part-time responsibilities of technology transfer; guide research personnel in targeting at enterprises for the assignment, development, service and consultation of technologies. Funds for research projects in cooperation with enterprises will be managed according to the contracts.

We will enhance the role of innovation and entrepreneurship entities for technology transfer. We will focus on the real economy and superior industries and guide businesses, universities and research institutes in setting up professional creators´ spaces. Based on open source software and hardware, 3D printing, online manufacturing etc., we will establish open and sharing platforms for innovation to offer service and support to technology transfer including proof of concept and commercialized development; encourage leading enterprises to open their resources for innovation and entrepreneurship, supporting their own employees to start businesses and pooling outside startups; push forward the cooperation and integration of large, medium-sized and small enterprises across sectors and achieve coordinated innovation in various links including R&D, manufacturing and service; optimize incubation entities including incubators, accelerators and science parks under universities; establish a full-chain incubation system covering R&D, business incubation and industrial development. We will strengthen rural incubation entities and give play to science and technology correspondents in facilitating technology transfer toward rural areas and agriculture. Targeting at the state´s, industries´ and businesses´ new demand for technology innovation, we will solicit solutions from all the society through various forms like contests, competitions and biddings for bottleneck technologies.

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II. Deepening two-way transformation of military and civilian sci-tech achievements

We will strengthen the alignment of demand and supply across military and civilian technologies. Regarding civil-military integration, we will further enhance the public service platforms for technological achievements and provide services like evaluation, information retrieval and policy consultation. We will enhance information platforms for the procurement of military equipment and establish platforms to align demand and supply across military and civilian technologies; introduce superior civilian entities to participate in military research and production. We will also strengthen the sharing of R&D resources.

We will optimize institutions and mechanisms for the transfer of military and civilian technologies. Under civil-military integration, we will establish national pilot platforms for patent management. We will explore to set up national technology transfer centers under civil-military integration and national-level alliance for the transfer of laboratory technologies and demonstrate the transfer and transformation of typical sci-tech achievements.

III. Promoting cross-regional transfer and diffusion of sci-tech achievements

We will strengthen technology transfer in key regions. Beijing and Shanghai are sci-tech innovation centers and there are other regions with the cluster of innovation resources. We will give play to these regions in leading innovation and providing resources; optimize partner assistance mechanisms and achieve targeted poverty reduction through technology support; facilitate the transfer and transformation of new technologies and achievements to poor areas.

We will improve the gradient layout of technology transfer. We will offer differentiated support to central-western regions to utilize technology transfer and transformation; align sci-tech achievements in a targeted way with the demand of key industries; explore the interest-sharing mechanism and mutually beneficial cooperation model in the gradient and orderly transfer from eastern, central to western regions; optimize the industry allocation and layout across the country; establish and improve a three level (provincial, municipal and county) working network for technology transfer; accelerate the transfer and transformation of advanced and applicable technologies at the county level and push forward innovation-driven development at this level.

We will undertake regional pilot and demonstration programs. We will support qualified regions in establishing national demonstration zones for the transfer and transformation of sci-tech achievements; innovate in institutions and mechanisms and take initial steps in adopting new policies; explore a series of replicable and promotable experience and models; allow national universities, research institutes and businesses to implement policies of the demonstration zones according to regulations.

IV. Broadening international technology transfer

We will accelerate the global layout of technology transfer entities. We will accelerate to establish the international technology transfer center and set up platforms for international technology transfer cooperation and information alignment; enhance international cooperation in introducing, incubating, absorbing and exporting technologies and in introducing overseas talents. By doing so, we try to integrate and utilize global technology resources. We will better align domestic and international technology transfer and innovate in cooperation mechanisms and try to set up a pathway of two-way technology transfer.

We will undertake sci-tech cooperation and technology transfer in the Belt and Road region; cooperate with countries along the Belt and Road to set up technology transfer centers and innovation cooperation centers; set up the coordination network for technology transfer and transfer advanced and applicable technologies to countries along the Belt and Road; give full play to the leading role of technology transfer in the capacity cooperation under the Belt and Road Initiative.

We will encourage enterprises to participate in international technology transfer; guide enterprises in establishing international technology management companies and overseas R&D centers and cooperating with overseas technology transfer institutions, incubation entities and venture capitals; undertake international technology transfer in various forms and set up mechanisms of regular exchanges with international organizations in this respect. For specific industries, we will set up platforms of demonstration and exchanges for enterprises´ technology transfer.

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To improve policy environment and support, the Plan has put forward six measures:

I. Setting up appropriate standards for evaluating sci-tech achievements and personnel

We will facilitate universities and research institutes in improving the differentiated evaluation for research personnel and establishing a system of differentiated evaluations based on the quality, contribution and performance of sci-tech achievements. For research personnel focusing on the application, development and transfer of technologies, we will increase the weight of such indicators as technology transfer, dissemination and service. We should incorporate the contribution of sci-tech transfer to social and economic development as a key basis for the promotion, academic/professional title and performance of research personnel.

II. Enhancing policy coordination and support

We will improve the management system for intangible assets that are state-owned, and technology related. Based on the features of sci-tech achievements transfer, we will optimize the procedures for asset evaluation and management and explore new ways such as advance disclosure to streamline registration. Efforts will be made to set up policies in line with international rules for the procurement of innovative products and the insurance for first set of equipment, improve the mutually-supportive mechanism for technology innovation and standardization and undertake pilot efforts to transform sci-tech achievements into technology standards.

III. Improving diversified financing and investment services

The National Fund for Technology Transfer and Commercialization will set up venture capital sub-funds and provide loan risk compensation. In this way, the fund will guide social capital in investing more in early-stage projects of technology transfer and technology-oriented SMEs. We will implement pilot tax incentives for venture capitals and angel investors to invest in seed/early stage technology-oriented SMEs. The taxable income of these investors will be deducted by 70% of their investment in the tech-based SMEs.

IV. Enhancing IPR protection and management

We will improve our IPR protection to suit the needs of the new economy and new growth model to release and stimulate the vitality and enthusiasm for innovation and entrepreneurship; give play to the leading role of judicial protection for IPRs and improve the IPR protection model where administrative enforcement and judicial protection are mutually complementary and effectively coordinated; use more technology investigators and unify the standards for rulings; reform and optimize the administrative protection system for IPRs; better the reviewing procedure for patents and brands and expand the international cooperation network under the Patent Protection Highway (PPH); improve the quality of IPRs.

V. Enhancing the sharing and targeted alignment of information

We will establish the national information service platform for scientific and technological achievements; take a demand-driven approach and encourage various institutions to release supply and demand information through technology exchanges and other channels; use big data, cloud computing and other technologies to have an in-depth analysis of the information on sci-tech achievements; set up a mechanism to release sci-tech achievements packages in key areas and undertake demonstrations and roadshows for sci-tech achievements; facilitate the targeted alignment among technologies, experts and businesses.

VI. Nurturing a favorable social environment for technology transfer

We will improve mechanisms of incentives, fault tolerance and correction as well as policies on diligent and responsible performance; nurture a favorable environment where people are willing to transfer technologies without undue fear; improve the credit system of the society and give play to public opinions to nurture a market environment with fair rights, opportunities and rules.

(Source: Ministry of Science and Technology, 26th, September 2017)