

OECD SCIENCE, TECHNOLOGY AND INDUSTRY OUTLOOK 2004
COUNTRY RESPONSE TO POLICY QUESTIONNAIRE

CHINA

1. General S&T and Innovation Policies and Associated Development Trends

China's S&T system reform and S&T innovation policy framework, targeting at the national innovation system construction, has entered a new phase striving for optimized structures, rationalized systems and capacity building. Major policies adopted for the purpose are as follows:

- Continuously deepened S&T system reform. While focusing on changing the old property ownership system, the reform is going deeper in further promoting the conversion of R&D institutes. Efforts have also been made in providing guidance for full fledged reform of public good institutes on a categorized basis, and in coordinating the issuance of new reform policies concerning key reform issues, including staff recruitment plan, property ownership system, preferential taxation policies, customs taxation, small scale infrastructure construction, etc.
- Increasing R&D input and enhancing the capacity building of major innovation entities. China has maintained its increasing input in R&D innovation activities. For example, China's total R&D expenditure in 2002 reached RMB 128.76 billion, or RMB 24.52 billion up with a 23.5% growth, as compared with the preceding year. China's R&D expenditure has, since 1995, kept a sustained growing share in GDP for seven consecutive years, from 0.60% in 1995 to 1.23% in 2002.
- Environment construction. 2003 marks a special year for S&T intermediary firms' capacity building. This has greatly spurred the development of S&T intermediary firms in serving innovation activities. S&T resources have got consolidated and integrated through infrastructure platform constructions. The soft environment including legislation has also been improved. These efforts have, in turn, resulted in an effective utilization of S&T resources and improved scientific research level.
- While taking advantage of the leverage role of tax holidays, S&T planning has become a major means, through which the Chinese government gets itself involved in technology innovation activities. Along with change of time, S&T planning begun reflecting changes in government interference, especially in approaches, targets and contents. For example, mandatory planning is changing in the direction of guidance oriented planning. Government, in governing technology innovation activities, is now more of a role to provide service and policy guidance, rather than providing endless administrative instructions as in the past. Government has shifted its focus from the simple establishment and approval of a project to more functions, including staging

demonstrations. The newly merged new mechanisms, including venture capital investment, government procurement and tendering invitation, have created more market oriented approaches in encouraging technology innovations.

Enjoying a new round of fast S&T development, China has defined its general S&T development goals to improve the national innovation system, make China's S&T competitiveness among world advanced ranks, and provide powerful S&T support for the construction of a well-to-do society. China will establish a national innovation system basically in line with the socialist market economy and natural rules of S&T development. It strives to eradicate major obstacles blocking S&T development. Through deploying major dedicated projects to accommodate national strategic needs, and creating a more rational S&T development pattern, China strives to attain major breakthroughs and leaping development in some areas, being part of world advanced ranks. China supports the construction of a number of world class research institutes and research oriented universities, and creation of its own multinational S&T business groups ranking among the world top 500. China is also working hard to produce a group of academic leaders of international influence. Further improving Chinese people's scientific literacy constitutes an important element in laying a solid ground for a sustained and fast S&T development.

2. Public Research Institutes and Organizations

Policy changes concerning universities and public research institutes

China has seen an increasingly accelerated R&D expenditure growth from 14.6% in 2000 to 16.4% in 2001, and further to 23.5% in 2002. Public research institutes with an independent accounting system and universities constitute the major contingent implementing R&D activities. In 2002, public research institutes with an independent accounting system recorded an R&D expenditure of RMB 35.13 billion, or a 21.8% growth, as compared with the preceding year. In the same year, universities had attained a 27.5% increase at RMB 13.05 billion. In the first two years of the 10th five-year period, the two sectors had registered a respective annual R&D expenditure growth of 16.6% and 30.4%, or 4.6% and 17.7% respectively higher than the annual average of the 9th five-year period.

Table 1. R&D expenditure Growth by Sector (%)

	Annual average for the 9 th five-year period	2001	2002
National total	10.7	16.4	23.5
R&D Institutes	12.0	11.7	21.8
Universities	12.7	33.4	27.5
Large& medium industrial businesses	20.1	25.1	26.7

Table 2. R&D Expenditure Weight by Sector (%)

	1999	2000	2001	2002
National total	100.0	100.0	100.0	100.0
R&D institutes	33.4	28.8	27.7	27.3
Universities	8.1	8.6	9.8	10.1
Industries	55.4	60.0	60.4	61.2
Others	3.1	2.6	2.1	1.4

Recent years have witnessed an increasing government weight in R&D expenditures, notably as the result of similar input in knowledge based innovation projects, basic study and applied study. In 2002, government invested as much as RMB 7.38 billion in basic study, with a 32.7% increase, as compared with the preceding year. This makes the government weight 5.7% in the total basic study R&D

expenditures, or 0.4% up , as compared with the 0.1% growth of the previous year. Meanwhile, government input in applied study accounted for RMB 24.67 billion, with a 33.4% increase , as compared with the year before. The development has raised the government portion in the total R&D expenditures to 19.2%, or 1.5% up , as compared with the previous year. The Chinese government has also increased its input in experiment activities by 20.6% at RMB 96.72 billion, though declined by 1.8% at 75.1% for its share in the total R&D expenditures.

Table 3. R&D Expenditures by activity type (%)

	1999	2000	2001	2002
National total	100.0	100.0	100.0	100.0
Basic study	4.5	5.2	5.3	5.7
Applied study	21.2	17.0	17.7	19.2
Experiments	74.3	77.8	76.9	75.1

Seven major sectors' R&D expenditure intensity (a ratio between R&D expenditures and sale revenues) exceeded 1%. They are: electronics and communication equipment manufacturing at 1.6%, medical equipment 1.5%, special equipment, transport equipment, instruments and office machines all at 1.1%, and both electric machinery and common machinery at 1%.

Reform measures to enhance institutes' and universities' research capacity in serving the economic development and other public goals.

China continues to deepen the reform aiming at enhancing institutes' innovation capacity. R&D institutes have basically completed their industrial conversion, with notable progresses achieved in the reform of public good institutes on a categorized basis. As of the end of 2002, the R&D institutes that have been converted or are in the process of conversion accounted for 1,185 in total, with a 43-unit increase , as compared with the preceding year. Of them, 313 were previously attached to the central government, and 872 to the local government. The conversion status of R&D institutes is given in the following Table.

Table 4. Industrial Conversion of R&D Institutes (2002)

TYPE OF CONVERSION	NUMBER CONVERTED		
	Total	Central	Local
Became industrial businesses (groups)	356	160	196
Became large S&T businesses attached to the central or local government	42	36	6
Became industrial technical innovation diffusion centres	23	5	18
Became S&T industrial businesses	703	93	610
Became industrial businesses as the result of the parent organization's industrial conversion	27	10	17
Became intermediary agencies	17	2	15
Became part of universities	12	5	7
Became non-independent S&T activity units attached to other departments	2		2
Became other forms of existence	3	2	1

As of the end of 2002, of the 1,185 R&D institutes supposed to be converted, 946 have completed their conversion. Of them, 273 were originally attached to the central government and 673 to the local government. Of the institutes who have completed the conversion, 340 are merged with industrial enterprises, 37 became large S&T businesses directly attached to the central or provincial government, 16

are converted into industrial technical innovation promotion centers, 511 became S&T businesses, 26 automatically became industrial businesses as the result of the similar conversion of their parent organizations, 8 became intermediary agencies, 7 were made part of universities, and 1 was turned into a non-independent S&T activity unit under other department.

Table 5 Converted R&D Institutes (2002)

	CONVERTED		
	Number	Central	Local
Total	946	273	673
Became industrial businesses (groups)	340	160	180
Became large S&T businesses attached to the central or local government	37	33	4
Became industrial technical innovation diffusion centers	16	5	11
Became S&T industrial businesses	511	63	448
Became industrial businesses as the result of the parent organization's industrial conversion	26	9	17
Became intermediary agencies	8		8
Became a part of universities	7	3	4
Became non-independent S&T activity unit attached to other departments	1		1

The categorized reform of public good institutes has achieved substantive progresses. As of the end of 2002, 176 public institutes have been reformed. Of them, 81 are subordinated to the central government and 97 to the local government. The reform converts 61 of them into non-profit public institutes, 32 S&T businesses, 13 intermediary agencies, 16 part of universities, 4 non-independent S&T activity units attached to other departments, and 52 other forms of existence.

Table 6. Categorized Reform of Public Good Institutes (2002)

	Institutes		
	Number	Central	Local
Total	178	81	97
Became S&T industrial businesses	32	4	28
Became intermediary agencies	13	7	6
Became a part of universities	16	6	10
Became non-profit public institutes	61	32	29
Became non-independent S&T activity units attached to other departments	4	0	4
Became other forms of existence	52	32	20

Of 178 public good institutes subject to reform, 77 have completed such reform. Of them , 21 are originally attached the central government and 56 to the local government. Of the transformed institutes, 25 have become S&T businesses, 13 intermediary agencies, 16 part of universities, 4 non-independent S&T activity units attached to other departments, and 19 other forms of existence.

Table 7. Reformed Public Good Institutes (2002)

	Institutes		
	Number	Central	Local

Total	77	21	56
Became S&T businesses	25	5	20
Became intermediary agencies	13	7	6
Became a part of universities	16	6	10
Became non-independent S&T activity units attached to other departments	4	0	4
Became other forms of existence	19	3	16

The continuously deepened reform and industrial conversion has produced the following results:

- 1) *Industrialization process has seen notable progresses.* In the past four reform years, the 308 converted institutes have attained remarkable progresses in industrialization. In 2002, these institutes produced an RMB 34.27 billion revenue, or 1.9 times that of 1999. At the same time, they created a product sale revenue worth RMB 21.04 billion, or 3.1 times that of 1999. The foreign exchange earned from export by these institutes makes 1.5 times that of 1999. The institutes, whose total revenues exceeded RMB 100 million, were 41 in number in 1999. In 2002, the same indicator went up to 70 in number, with 4 of them claiming a respective revenue exceeding RMB 1 billion. In 1999, there were 15 institutes with a respective annual product sale revenue exceeding RMB 100 million. In 2002, the number of the institutes entering the category climbed up to 45 in number, with 9 of them having a respective revenue over RMB 500 million.
- 2) *Further enhanced technical innovation capacity.* The institutional reform has spurred the coordinated development of both research and economic activities, with further enhanced technical innovation capacity. In 2002, the 308 reformed institutes registered an S&T expenditure of RMB 10.85 billion, or an increase of 9.6%, as compared with 1999. Meanwhile, the topic based research expenditure went up by 49% at RMB 3.49 billion, as compared with 1999. Of the topic research budget, RMB 1.36 billion sourced from government, RMB 1.22 billion from industries, and RMB 770 million from other channels, achieved a respective growth of 29%, 18% and 306%, as compared with 1999. Market oriented topic expenditure has seen a further rise. The proportion of industrial assignments and self-chosen topics has climbed up from 52% in 1999 to 57% in 2002 at a 5 percentage margin. Increasing attention to innovative research projects has led to steadily enhanced innovation capacity. In 2002, R&D topic expenditure amounted to RMB 2.13 billion, with a 104% increase as compared with 1999, and a 61% share in the total topic expenditures, or 16% up against 1999. Meanwhile, these institutes' finding conversion capacity has been further enhanced. In 2002, their revenues from technology transfer, service, contracts and consultation came up to RMB 5.75 billion, or 1.5 times that of 1999. Patent applications and patent grants also see a fast growth. In 2002, these institutes filed 1,298 patent applications and obtained 661 grants, or 1.7 and 1.2 respectively times that of 1999. The 308 reformed institutes in the year spent RMB 700 million internal expenditure on new products development, RMB 101 million on new product pre-phase study and pilot production, and RMB 171 million on new products promotion. They, in return, harvested a new product sale revenue of RMB 980 million and profits RMB 160 million.
- 3) *Enhanced technology diffusion capacity.* The converted institutes, who have married the market, forge a closer tie with industries, which makes the goal providing support for industrial technical advancement more definitive. In 2002, industries paid RMB 3.47 billion to 308 industrially converted institutes for outsourced assignments, with an increase of 73.5% as compared with 1999, and a more than 45% growth, as compared with other technology service revenues. This clearly shows that these institutes' technology diffusion capacity has greatly been enhanced, and industries have become the largest buyer of their technology. In 2002, the 308 institutes made an

RMB 1.25 billion revenue from technology transfer, of which 91.7% was paid by industrial buyers, or 13% up as compared with 1999 proportion.

Major policies and government projects promoting institutes' and universities' international cooperation.

China has created for the first time, in its 10th five-year S&T plan, a new program named "International S&T Cooperation Program for Priority Projects" (hereinafter referred to as the International S&T Cooperation Program). Surrounding the national strategic S&T development goals, the International S&T Cooperation Program supports and organizes international S&T cooperation projects having strategic importance to enhancing the nation's S&T innovation capacity, spurring high tech industrialization process and accelerating S&T cooperation. Working on international scientific cutting edges, the Program also strives to make China's S&T innovation activities in line with international norms, enhancing China's S&T innovation capacity and improving its comprehensive national strength. To greatly raise Chinese scientists' research level, the Program encourages research institutes and universities to be an active part of international S&T activities, including basic research, high tech development, large science and major international programs. The new Program gives priority support to the institutes and universities having a solid research capacity and strong international cooperation endeavor, and make them national bases for international S&T cooperation.

3. Government Support for Private Businesses' R&D and Innovations

Changes in approaches supporting private businesses' R&D and innovations

To promote industrial technology advancement and high tech industrial development, the Chinese government has in recent years published series of incentive taxation policies. They are mainly:

- Encouraging the increase of industrial R&D input. One of the most important policies for this purpose stipulates that an industrial business, whose expenditures on developing new products, technologies and techniques attained a 10% real growth or above, is entitled to enjoy a direct reduction of tax dues by 50% of its actually accrued expenditures, after the deduction of the costs from expenditures according to relevant provisions. The Chinese government has furthermore introduced series of tax holidays for converted institutes. These preferential policies allow them to exempt from paying business tax on the revenues derived from technology transfer and development, and on the revenues from technical consultation, service and training, if their net annual revenue comes under RMB 300,000. These institutes are also allowed to exempt from business revenue taxes for an undefined period of time. These measures forcefully stimulate the institutes' innovation enthusiasm.
- Supporting software and IC business with tax holidays, including favorable treatment for added value tax, income tax and production equipment depreciation.
- Introducing other policies to encourage industrial technical advancement and high tech industrial development. These policies cover numerous aspects, including import of foreign made advanced technologies and equipment, technical transformation and pre-tax salary payment. These efforts have played applaudable roles in promoting industrial technical advancement and development.

Enhancement of direct public support for industrial R&D and innovation activities.

The National S&T Plan makes the industrial involvement in R&D and industrialization an important condition for establishing a priority project having lots of industrialization and engineering content. It is

clearly stipulated that industries shall be a main player in these projects. As of 2003, the Small and Medium S&T Business Innovation Fund has arranged nearly RMB 3.05 billion to support 4,195 projects implemented by small and medium S&T businesses. The Fund, at the same time, mobilized RMB 30 billion from local government, banking institutes and enterprises, and achieved good social and economic benefits.

Supporting venture capital and other private capital to play an active part.

Since the issuance of “The Comments on Establishing Venture Capital Investment Mechanism”, venture capital has gradually boosted its healthy development in China, playing an important role in the national economic development. To spur the further development of venture capital institutions, China continuously creates policy friendly environment for their development. To encourage foreign investors to flow their venture capital in China, and to establish a well functioned venture capital mechanism, the Chinese Ministry of Science and Technology, in collaboration with the former Ministry of Foreign Trade and Economic Cooperation, State Administration for Industry and Commerce, State Bureau of Taxation, State Administration for Foreign Exchange, on January 2003 published “The Regulations on the Management of Foreign Investment in Venture Capital Businesses”. The Regulations provides more definitive policies for the establishment of foreign invested venture capital firms and associated operation. A steering panel is established under the Department of Venture Capital, with the terms of reference to work out proposals for formulating venture capital management by-laws, incentive taxation policies, and organizing a national association for venture capital.

To marry the efforts of both S&T and banking communities, the Ministry of Science and Technology (MOST) has inked cooperation agreements with the National Development Bank and Huaxia Bank. Under the agreement, MOST will take advantage of its strength in organizing, resources, policy making and coordination to support the industrialization of major S&T projects, small and medium S&T businesses and venture capital, while the National Development Bank will provide RMB 15 billion worth loans to support high tech industries within 3 years. MOST also successfully coordinated, as a sponsor, the issuance of RMB 800 million industrial bonds for 12 high tech parks. As an innovation in tying S&T and banking together, the development promotes the further improvement of fund raising environment.

Capacity building and protection of intellectual property

As it has insufficient mechanism and experiences in dealing with IP issues encountered by research institutes and high tech businesses, China has launched a campaign to stage IP demonstrations, including S&T findings’ IP management and associated work procedures, technology confidentiality, IP protection in technical cooperation activities. These initiatives provide guidance for the scientific and systematic management of intellectual properties.

4. Strengthening Cooperation and Association among Innovation Institutions

Major approaches to promote the cooperation among private businesses

To promote innovation system construction at the national level and S&T innovation capacity building at the local level, and to further strengthen local S&T activities, China in 2003 launched an experiment for establishing the regional innovation system. The experiment selected a number of areas, including the Yangtze River Delta, the Pan Pearl River Delta, the Jiangxi Jingdezhen Township, and the Urban Areas of Shandong Peninsular, to be the target sites. In addition, an experiment to establish the regional innovation system for old industrial bases in northeast China will soon be kicked off. On November 2, 2003, the authorities of Shanghai, Jiangsu and Zhejiang jointly signed an agreement to

establish a regional innovation system in the delta area. Another development shows that Hong Kong and Macao and 9 inland provinces including Guangdong in December 2003 jointly signed an agreement to establish a Pan Pearl River Regional Innovation System. MOST, based on these experiments, provides guidance in promoting local authorities to work out their work plans for constructing the regional innovation system, and in establishing corresponding systems and policy framework for an effective operation. MOST will, through these experiments, continue to support joint actions to establish interregional innovation systems. MOST is now working on system and policy issues concerning the national S&T innovation system.

Major policies and measures promoting the linkage between industries and scientific research.

To further deepen the coalition between industries, universities and research institutes, and to promote the combination of both universities' and industries' S&T resources, and the transfer of advanced proven technologies to industries, a number of technology transfer entities, created by the universities possessing strong S&T expertise and rich S&T findings, have been selected to be national technology transfer centers. These centers play a positive role in accelerating technology innovation system construction with industries as the core, in optimizing industrial structures and in upgrading production techniques. As an infrastructure to organize and consolidate universities' S&T resources, a national technology transfer center has the following terms of reference: developing and diffusing common technologies, promoting and improving the construction of industrial technology center, promoting the conversion of universities' research findings and technology transfer, strengthening international technical innovation cooperation, and providing comprehensive service for industries. Campus S&T parks, formally launched in 2000 at a junction of S&T, education and economy reforms, have also achieved notable progresses under the support of authorities at different levels. They are becoming bases for converting universities' S&T findings, high tech industrial incubators, and a new growth point of the economic development.

To increase China's intellectual properties, accelerate S&T finding conversion, and protect the legitimate rights of state, units and individuals, MOST and the Ministry of Finance on March 5, 2002 jointly published "The Regulations on the Management of National S&T Programs' and Projects' Intellectual Properties". It is clearly stipulated in the Regulations that the state entitles implementing institutions the right to the findings resulted from research projects, and to the associated intellectual properties, except for those involving national security, national interests and major public interests. The implementing institutions can decide, on its own, to implement, license and transfer it, or make it an equity investment, and obtain corresponding benefits. Meanwhile, the state may, under special circumstances, retain the right to freely using, developing and exploiting it, or making profit from it.

5. S&T Human Resources

Higher education and science popularity

Higher education sustains a fast growth. In 2002, China's higher education reached a scale of 16 million students with a gross enrollment of 15%. In the same year, common universities admitted 3.205 million new students, and adult higher education system 2.2232 million students, with a respective increase of 522,200 and 263,900 students and a respective growth of 19.46% and 13.47%, as compared with the preceding year. Common and adult universities' on-campus students population, including 3-year and 4-year curriculums, registered 14.6252 million in number. Of them, 9.0336 million study at common universities and 5.5916 million at adult universities, with a respective increase of 1.6298 million and 1.0318 million and a corresponding growth of 25.63% and 22.63%, as compared with the preceding year. Post-graduate population also saw a rapid rise. In 2002, universities and research institutes admitted 202,600 post graduate students, or 37,400 more with a 22.65% growth, as compared with the year before. The on-campus post graduate population amounted to 501,000, with a 27.41% growth for 107,800

students.

Readjustment of learning courses has been made in the so-called trans-century quality education project, an initiative aiming at promoting full fledged quality education and raising Chinese people's overall quality and innovation capacity. In 1999, the Chinese State Council, in circulating "the Action Plan for Rejuvenating Education in the 21st Century", explicitly proposed to reform the existing curriculum and evaluation system, and to introduce the new century basic education courses and teaching materials in a timeframe of a decade. In 2001, in "The Decisions on Basic Education Reform and Development" issued by the State Council, it is proposed that a basic education curriculum system, in line with the demand of quality education, shall be established as soon as possible. A new mechanism has been created to manage the new curriculums. Each discipline has, on an average, produced 6 to 7 new experimental curriculums. The "University Teaching Quality and Teaching Reform Project" (hereinafter referred to as the quality project), a major component of the Action Plan for Rejuvenating Education for 2003-2007 under drafting by the Ministry of Education, plans to create 1,500 refined national curriculums in five years (2003-2007). It is proposed, through modern technical means such as internet, to present these refined curriculums free of charge on-line, so as to share the teaching resources and improving the quality of higher education and training. China has launched a campus innovation project to enhance universities' innovation, especially original innovation capacity. Meanwhile, the construction of key labs attached to universities has got strengthened. A number of research centers, involving new disciplines and interdisciplinary studies, have been created in the course of system innovation and S&T resources consolidation. The so-called "university key lab visiting scholar system" is still on the run. Authorities concerned are striving to strengthen campus research activities, develop a high caliber innovation contingent and win more national S&T projects.

Popular science has seen some new progresses in policy making. MOST, the Ministry of Finance, the State Bureau of Taxation, the Customs General Administration, and State Press and Publication Administration jointly published a taxation policy notification to encourage the development of popular science activities. The documentation becomes, since the founding of the People's Republic of China, the first tax holiday policy dedicated to S&T diffusion activities. The development also marks a major progress of the year in popular science policies. At the same time, a supporting policy, entitled "the Methods on Implementing Preferential Taxation Policy for Popular Science Activities", is issued, which creates an important ground for the implementation. In addition, MOST, in collaboration with the government agencies involving public relation, civilization, culture, radio and TV broadcasting, press and publication and S&T association, released "The Notification on Further Strengthening Public Awareness of Popular Science". Joining the Chinese Association for Science, the State Development and Reform Commission, the Ministry of Finance and the Ministry of Construction, MOST also issued "The Comments on Strengthening Infrastructure Constructions for Popular Science Activities". Other popular science related policies to be released in the near future by MOST in collaboration with other government agencies include "The Popular Science Action Plan for Land Resources- 2004-2010" by MOST and the Ministry of Land and Resources; "The Popular Science Public Awareness Plan for Nationwide Earthquake Prevention and Disasters Alleviation, 2003-2006" by MOST and the State Seismological Bureau; "The Comments on Strengthening Popular Science Activities Concerning Population and Family Planning" by MOST and National Committee for Population and Family Planning; and "The Comments on Strengthening Popular Science Activities Concerning Health" by MOST and the Ministry of Health.

Policies and measures addressing insufficient scientists and engineers supply in certain special fields

MOST works very hard to promote innovative construction of its S&T contingent. It sets up a strategic goal for S&T personnel development, namely "form up an S&T personnel contingent, in one or two decades' efforts, with an impressive scale, ration structures, and an innovation capacity matching with the intermediate level of major advanced countries in the world". MOST materializes the goal into five aspects calling for actions: promoting innovative S&T personnel system, strengthening S&T personnel

training, advocating innovation culture, further opening to the outside world, and strengthening guidance and coordination in S&T personnel capacity building. These efforts will lead to a new mechanism and policy system for S&T personnel management, producing an S&T personnel contingent capable for technical innovation and industrialization, greatly improving the quality of S&T management, and providing sufficient supply of quality S&T personnel for the full fledged construction of a well-to-do society.

As one of three major S&T development strategies in the new era, S&T personnel strategy represents the development concept of “people is everything”. Under the concept, MOST, believing that human resources makes the primary resources, makes the discovery, training, absorption and utilization of talented people the primary task before every other links in S&T innovation activities. MOST also asks, in line with the rules of S&T development and S&T personnel cultivation, to improve policy environment and create better working and living conditions for S&T personnel. MOST plans to, through the implementation of S&T personnel strategy, create a sound social atmosphere of “respecting knowledge, respecting talents, respecting labor and respecting creation”. At the same time, it strives to develop an S&T personnel management mechanism and policy system in line with the rules of market economy, S&T development and talents cultivation. MOST also advocates producing a group of academic leaders and high caliber research teams with strong original innovation capacity, and capable for cutting edge competitions in the world. MOST’s other initiatives for S&T personnel strategies include producing one million engineering and technical talents, scientist entrepreneurs and S&T intermediary service contingents, improving the technical innovation and industrialization capacity, raising S&T management personnel’s quality, and realizing a scientific, standardized and efficient S&T management.

Policies and measures involving international immigrants and technical personnel

To encourage and absorb overseas Chinese graduates to contribute to homeland development, Chinese human resources authorities have intensified efforts in the following three aspects:

First, the Chinese Ministry of Personnel issued policy comments on encouraging high caliber overseas Chinese graduates to return to homeland serving in diversified forms. The Ministry will further work out detailed measures to address logistical problems that returned overseas Chinese graduates might encounter, and create an agreeable policy environment for their return.

The second major measure finds expression in creating venture platforms. While improving and accelerating the construction of industrial parks for overseas Chinese graduates, the Ministry of Personnel has, joining local authorities, provided guidance and support for the development of such parks. These efforts enrich and expand the parks’ service functions, further improving venture environment, and creating a vast space for more business development.

The last but not the least is communication improvement. Chinese authorities have expanded communication channels between inland and overseas Chinese graduates, in an effort to strengthen the cooperation among different regions, government agencies and overseas Chinese graduates groups. Meanwhile, the construction of online information platform and database of overseas Chinese graduates has been accelerated. Overseas Chinese graduates enjoy, through widened communication channels, services in different forms and at different levels in rendering their contributions to homeland development.

As shown by statistics, since the adoption of reform and opening policy, China has registered an overseas Chinese student population of more than 460,000, with 150,000 of them having returned home. At present, there are in the country more than 60 industrial parks dedicated to overseas Chinese graduates. These parks have housed nearly 4,000 businesses created by more than 10,000 returned overseas Chinese graduates.

6. Policies and Regulations for Promoting Service Innovations

In 2002, the Chinese State Council circulated among government agencies a document named “The Comments on the Policies and Measures to Accelerate the Development of Service Industry during the 10th Five-Year Period”. Since 1992 where a document entitled “The Decisions on Accelerating the Development of Tertiary Industry” was jointly issued by the Central Committee of CCP and the State Council, the said document makes another important initiative in promoting the development of service industry. The Comments points out that though mainly working under a market system, efforts shall be intensified, through policy guidance and enhancing input, to raise the nation’s service industry to a new stage. The Comments also proposed the policies and measures involving 12 aspects of service industry, including optimizing service industrial structures, further expanding employment scale, accelerating industrial restructuring, widening market entry threshold, encouraging extensive involvement of non-state economy in the development of service industry, accelerating management system reform in the fields of railway, civil aviation, communication and public utilities, loosening qualification control for entering the markets of foreign trade, education, culture and intermediary service, promoting the industrialization of some areas of service industry, and enhancing input in service industry through diversified channels.

On preferential taxation policies, the Chinese government has issued series of policy documents, including “The Notification of Circulating the Issues on Encouraging the Development of Software and IC Industries”, and “The Notification on Taxation Issues for Encouraging the Development of Software and IC Industries”. These policies have, through tax reduction and exemption, stimulated the development of software and IC industries. Meanwhile, Chinese authorities has intensified efforts to study the necessity and feasibility in staging taxation leverage policies to encourage the development of innovative service industry, in particular S&T industrial incubators, productivity promotion centers, technology market and S&T evaluation institutions. Some relevant policies will be soon made public so as to enhance innovation service capacity of major S&T intermediary firms.

7. Policy Evaluations

Changes in evaluating policies, procedures and systems

MOST has prepared the drafts of “The Interim Management Methods for S&T Evaluations” and “Standards for S&T Evaluations”. It also, in collaboration with other authorities concerned, released “The Methods for Evaluating and Reviewing Research Topics under National S&T Programs”. These efforts have pioneered the systemization and standardization process of China’s S&T evaluation activities.

Providing technical support and public service to meet the capacity building needs of national S&T evaluation activities. Massive work has been carried out, including preparing S&T evaluation training materials and manuals, new products evaluation, plan evaluation, budget evaluation, institutional evaluation, project evaluation, and organizing related training activities. In addition, efforts have been made in providing technical documents for standardized S&T evaluations, and in organizing exchanges among domestic S&T evaluation agencies. These developments has led to the formation of a basic S&T evaluation network in the country.

S&T evaluation techniques have been applied in program management and results evaluation. S&T evaluation has not only become a part of national S&T programs and major S&T projects, but has also become a part of management decision making process.

To evaluate different elements in innovation policies, MOST in 2003 published a notification on introducing S&T evaluation methods, making detailed provisions available for evaluating R&D personnel, R&D institutes, and S&T programs and projects.

Professionalism and standardization dominates S&T evaluation concepts and methods. Under the precondition of separating evaluation from decision making, the evaluation institution, taking advantage of its third-party position and using standard evaluation procedures and techniques to collect information from different channels and angles, produces objective, fair and scientific evaluation conclusions, without lopsidedness caused by personal limitation and prejudices. The evaluation institution, in the capacity of the third-party and involving in the management link, turns a point-to-point management system into a closed triangle balancing system, safeguarding the rationality, efficiency and security of governmental S&T input.

Evaluation results on the latest R&D and Innovation policies

To have a sound knowledge of the implementation status of “The Decisions on Strengthening Technical Innovations, Developing High Tech, and Realizing Industrialization”, a document jointly issued by the Central Committee of CCP and the State Council, a nationwide survey on S&T innovation and industrialization policies and associated implementation was launched April-November, 2002. The survey collects all relevant policies, measures and status reports released by local or central authorities in last three years. The study and analysis of these documents has produced “The Report on China’s S&T Innovation and Industrialization Policies and Associated Implementation”. The Report shows that since the issuance of “The Decisions on Strengthening Technical Innovations, Developing High Tech, and Realizing Industrialization” by the Central Committee of CCP and the State Council, government agencies under the State Council and local authorities have paid great attention to the implementation activities. Major government agencies responsible for S&T activities, and most provinces, autonomous regions and cosmopolitan cities have worked out respective policies and concrete measures (492 documents in all as shown by incomplete statistics) for implementing the Decisions, strengthening technical innovations, and promoting the conversion of S&T findings. Industries, research institutes and universities have been mobilized to act upon the Decisions. A social aura of respecting and encouraging technical innovation and developing high tech industries has been formed. The evaluation results conclude that the implementation of these policies has played a guiding and promotion role in spurring S&T system reform, enhancing industrial innovation capacity, making industries a main force of technical innovations, and in stimulating high tech industrialization.