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SPECIAL ISSUES

Government Launches S&T Infrastructure Survey



A meeting, co-sponsored by Ministry of Science and Technology and Ministry of Finance, was held on March 28, 2008 to kick off a national survey on S&T infrastructures. LIU Yanhua, Chinese Vice-Minister of Science and Technology made an important speech at the meeting. S&T resource survey is an important part of the national S&T infrastructures capacity building that was launched in 2003. Thanks to the support, participation, and close cooperation of government agencies involved, the capacity building campaign has achieved laudable accomplishments, with an enhanced role played in establishing a national innovation system. Both the government at the central and local levels have rendered their contributions to establishing a platform that makes sharing of both domestic and international S&T resources possible. To speed up the capacity building efforts, facilitate an optimized distribution and comprehensive utilization of S&T resources, and raise innovation capacity, both Ministry of Science and Technology and Ministry of Finance have decided to launch the survey, under the mandate of Law of S&T Advancement. A circular on nationwide S&T resource survey

was released on March 15, 2008. Under the working principle of "overall deployment, phased implementation, experiment before diffusions, and long term development", the survey will be first conducted in 2008 among research institutes at the national level and universities, focusing on experiment centers, large scientific instruments, and germplasm resources.

### S&T Insurance Forum



A forum on S&T insurance was held on March 27, 2008. Both LIU Yanhua, Chinese Vice-Minister of Science and Technology, and YUAN Li, assistant to Chairman of China Insurance Regulatory Committee (CIRC) spoke at the meeting. Some 80 participants from Ministry of Science and Technology, China Insurance Regulatory Committee, local S&T and insurance authorities involved in trial operation, and research institutes attended the meeting.

The S&T insurance initiative has since its launch witnessed an innovative development, with the support of both Ministry of Science and Technology and China Insurance Regulatory Committee. High-tech enterprises have been offered with insurance policies, which augmented their proprietary innovation capacity. In 2007, China has secured S&T insurance premiums worth RMB 1.587 billion, and a venture insurance over RMB 68.5 billion. Some 1100 high-tech enterprises have become the beneficiaries of S&T insurance. Of the six cities where S&T insurance has become an option on a trial basis, including Beijing, Chongqing, Shenzhen, Wuhan, and Suzhou, five have rolled out the policies on S&T insurance financing, with detailed rules on conditions, modes, and proportion for a subsidy.

In the future trial operations, efforts will be made to 1) open S&T insurance in the second group of cities; 2) further improve the development mode featured with stimulating S&T insurance using policy leverage; 3) strengthen communications and coordination among different government agencies, reflecting changes in both S&T insurance marketplace and operation; 4) integrate the resources of government, industry, and research institutes, establish a product development platform, and improve product lines of S&T insurance; and 5) raise the management level of insurance firms, improve service quality, and provide a better risk management service for high-tech enterprises.

### China's Top High Tech Market Share

According to a briefing released on April 6, 2008 by the State Development and Reform Commission, China's high tech industry has realized an added value worth RMB 1.9 trillion in 2007, or 7.8% as a proportion of GDP. In the meantime, high-tech products have created an export volume reaching USD 347.8 billion, which makes China second place in the world in terms of high tech manufacture scale, and first in the context of high tech product market share in the world.

During the period of 2000-2007, China's high tech export has secured an annual growth of 38%. China's high tech products have landed an international market share approaching 20%, with the output of computers, mobile phones, antibiotics, and vaccines ranking first place in the world. China is becoming a major production base for high-tech products in the world, heading towards a major power of both high tech R&D and manufacturing. As of last year, China's high tech export has taken some 30% of the nation's total export. Networking and digital content industries have enjoyed a booming development, with more applications and diffusions of information technology and biotechnology. Meanwhile, traditional industries have been upgraded to meet the changed social needs.

Under the stimulus of overall fast high tech development, the west region has picked up speed to catch up with their neighbors in both east and middle parts of the country. For example, Shaanxi, Sichuan, and Chongqing have heavily worked on emerging industries, including aeronautics and space, electronics and information, and biotechnology. As a result, the west region created a high tech value worth RMB 247.4 billion in 2007, or three times that of 2000.

### A Raised Contribution to Water Resources

CHEN Lei, Chinese Minister of Water Resources, said at a national S&T meeting for water resources held recently that in the future 5 years, S&T shall raise its contribution to water resources from the current 40% to 45%, and further to 60% or more in 2020.

The state treasury has invested more than RMB 2 billion to finance water resources related S&T activities, since the 10th Five-year period (2001-2005). Under the 11th Five-year plan (2006-2010), Ministry of Water Resources has secured 14 S&T projects with a budget exceeding RMB 400 million. China has witnessed a noticeably raised S&T content in its water resources capacity building and management, with a range of advanced technologies applied in disaster prevention and preparedness, flood and droughts warning and prediction, and data collection. Chinese scientists have studied the issues concerning major river controls, including water diversion and sand sediment control in the Yellow River and small tributaries, which eased the imbalance between water and sand sediment. In the area of rural water resources, scientists have optimized the distribution of water resources in irrigation regions through transforming traditional

the distribution of water resources in irrigation regions, through transforming traditional irrigation techniques and facilities, and accelerated the modernization process of water resources in the rural areas by diffusing new technologies and products.

CHEN added that China would establish an internationally advanced R&D system for water resources studies at the national, regional, and local levels, featured with enhanced professionalism, rational disciplinary structures, and capable personnel. This will further lead to the establishment of a water resource related S&T diffusion and service system that is open, market oriented, and diversified. Efforts will also be made to establish a national lab for water resources, and 10 key labs and 15 engineering research centers at the ministerial level.

### China's First Geological Survey Plan

China's first geological survey plan was released on April 2, 2008 by Ministry of Land and Resources. The plan is made up of 12 parts, including status quo and situation, guiding principles and objectives, overall deployment, energy minerals prospecting, non-energy minerals prospecting, geological activities of mines, basic geological survey, geological disasters and geological environment survey, geological data development and utilization, S&T innovation and expansion of geological activities, and implementation. The plan has also defined missions for seven major areas, including energy and non-energy minerals prospecting, geological activities of mines, basic geological survey, geological disasters and geological environment survey, geological data development and utilization, and S&T innovation and expansion of geological activities.

The plan has set up five near-term goals throughout 2010 as follows: 1) more breakthroughs in mineral resources survey in 2010, with a greatly raised domestic supply of mineral resources; 2) a noticeably lifted level of basic geological survey, completing 25% the national land survey at a scale of 1:50,000; 3) major progresses for marine geological survey, completing the survey of 50% of the waters under China's jurisdiction at a scale of 1:1 million; 4) a noticeably enhanced capacity of geological disasters and geological environment survey, and a remarkably raised level of disaster prevention and preparedness and geological environment protection; and 5) a fully enhanced innovation capacity, with a greatly lifted support and service capability, and a national geological data center.

## INTERNATIONAL COOPERATION

### First China-US Environment Cooperation Workshop



Under the joint initiative of Chinese Ministry of Science and Technology and US

Under the joint initiative of Chinese Ministry of Science and Technology and US Environmental Protection Agency, a China-US environment cooperation workshop was held from April 1 to 3, 2008 in Beijing. In addition to lectures on environment related S&T policies and research activities in both China and the US, participants discussed issues in three major areas, including safe drinking water, novel technologies and environment technologies, and green communities. LIU Yanhua, Chinese Vice-Minister of Science and Technology, and George M. Gray, Assistant Administrator for the U.S. Environmental Protection Agency, delivered their respective speech at the opening ceremony.

The workshop was scheduled with a range of activities, including lectures, group discussions, and visits to key labs. Scientists from some 10 Chinese universities and research institutes, including Chinese Academy of Sciences, Tsinghua University, Harbin Engineering University, and Huazhong University of Science and Technology, and from the research institutes affiliated to the US Environmental Protection Agency and a number of renowned US universities attended the workshop. They discussed fields for collaborations, possible cooperation projects, and detailed mode of cooperation. Participants visited on April 3, 2008 an ecological environment research center under the Chinese Academy of Sciences, and key labs at Tsinghua University.

## RESEARCH AND DEVELOPMENT

### Brain Controls Sight

A research team, led by WANG Shurong, a research fellow at Institute of Biophysics under Chinese Academy of Sciences, has discovered a corollary discharge circuits for saccadic modulation of the pigeon visual system. Researchers have recorded more than 300 neurons in pigeon's five brain areas, which led them to believe that a saccadic eye movement causes a variety of transient perceptual sequelae that might be the results of corollary discharge. Saccade-related omnipause neurons in the brainstem raphe complex inhibited the nBOR and excited the nLM, whereas inactivation of raphe neurons eliminated saccadic responses in both optokinetic and thalamic neurons. It seems that saccadic responses in telencephalic neurons are generated by corollary discharge signals from brainstem neurons that are transmitted through optokinetic and thalamic neurons. These signals might have important roles in visual perception. Experts believe that the discovery is of a universal importance, as pigeon has a visual system similar to that of humans and other mammals. The discovery could be an explanation to why one always has a clear and steady view of external world, even with a quick movement of eyes. The finding was published on April 6, 2008 in the online issue of *Nature Neuroscience*.

## NEWS BRIEFS

### A Review of China's Immunology

*Nature Immunology* published on April 1, 2008 a review as its cover story under the title of "Immunology in China: the past, present, and future", written by CAO Xuetao, an academician of the Chinese Academy of Sciences, and director of Institute of Immunology affiliated to the Second Military Medical University. The article introduces China's immunological studies and their future trends, with brief descriptions of the work done by some ten major domestic labs. It also discusses other related issues, including financing system, capacity building of research institutes, and management system in the area.

### Bird Flu Vaccine for Humans

Chinese State Food and Drug Administration granted on April 2, 2008 Beijing Kexing Bioproducts the permit to produce influenza vaccines for pandemics. The event makes China another country possessing the both technology and capacity to produce bird flu vaccines for humans, after the United States.

According to a briefing, the vaccine is designed to fence off H5N1 pandemics, enjoying a possibly changed formula to deal with mutated viruses. Up to date, more than 500 volunteers have been injected with the vaccine, which confirmed both the safety and effect of the vaccine. The pandemic vaccine will not be made available on the market, but rather be stored for emergency under the guidance of government.

### China's First Proton Transfer Reaction Mass Spectrometry

China's first Proton Transfer Reaction Mass Spectrometry, developed by CAS Anhui Institute of Optics and Fine Mechanics, has passed a validation check. Experts panel who reviewed the instrument agree that this is the first Proton Transfer Reaction Mass Spectrometry developed by a domestic institute, with its major technical indicators reaching or being better than the requirements defined by the contract, and a test precision reaching the ppt level. While producing an emission that is much lower than the limit imposed by the state on atmospheric pollution, the instrument has been proved innovative in ion source design and isomer differentiation. The instrument can be useful for numerous applications, including online real-time trace gases test, and lung cancer diagnosing.

### Molecular Cattle Breeding

Thanks to its 10-year tireless efforts, a study team, headed by Prof. CHEN Hong of Northwest Agriculture and Forestry University, has landed a major breakthrough in studying the economic properties of major cattle species in the country, using molecular biological means. Researchers studied the molecular genetic basis of China's major beef cattle in a systematic manner, and harvested a range of molecular markers relating to yellow cattle and cow, which unveiled the molecular genetic properties of yellow cattle, cow, buffalo, and yak, and enriched the DNA database of China's major cattle species. The efforts have produced important molecular data on the economic properties of beef and cow cattle, and made scientific evidences available for fast breeding of beef and cow cattle.

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