# Science, Technology and Education News from China

# Number 81 – March 2011

*Please note that the previous newsletters can be downloaded from the website of the Embassy of Switzerland in China:* www.eda.admin.ch/beijing[1]. *To subscribe/unsubscribe or send us your comments, please send an email with the corresponding subject to* chenchen.liu@eda.admin.ch.

## Introduction

With the "two sessions" concluded, this month's newsletter starts with a quick overview of China's science and education outlook set in the 12th Five-Year-Plan. Also in this month, scientists in China are hoping for funding reform; China decides to suspend nuclear plant approvals following the nuclear crisis in Japan, IPR protection is to be strengthened to support innovation. In education, more technicians are needed in light of economic restructuring. Ministry of Education releases the updated number of foreign students in China for 2010. In health, Chinese scientists developed therapeutic apparatus for Parkinson's disease.

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[1] Please click on the blue texts to activate the hyperlinks to either email addresses or related websites.

# Policies

## Science and Education Outlook in China's 12th Five-Year-Plan

At the occasion of the National People's Congress, China's 12th Five-Year-Plan was finally adopted and released. Based on *CPC Proposal on the 12th Five-Year-Plan* which was released on October 2010, the Plan sets the final tone for China's development in 2011-2015.

In science and technology, the overall goal set for 2015 is to spend **2.2%** of GDP in R&D activities (2010: 1.75%) and maintains 0.45% annual growth in spending. Number of invention patent per 10,000 people is to reach **3.3** (2010: 1.7) at an annual growth of 1.6%.

Globally, China plans to take the lead in R&D in **material science, life science, space science, earth science and nano-technology**. In domestic context, modern agriculture, machinery, environmental protection, energy, information technology, new material, public security and public health are the priority fields. "Integration and efficient allocation of science resources" is again emphasized, implying the **continuation of top-down approach** in science.

Industry is expected to be at the center of China's innovation capacity pool. Large enterprises are encouraged to "increase spending on R&D." The government will also facilitate public-private partnership by creating "**innovation strategic alliance**" joint by multiple enterprises, universities and research institutes. High-tech parks and state-level "model innovation cities" will become the driving force of innovation in the next 5 years, and **Zhongguancun** – Beijing's high tech zone – is listed as a top priority with the goal of becoming "**an international science and innovation center with global influence.**"

Policies and reforms supporting the development of science and technology will also be in place. China plans to strengthen fiscal and financial policies that support high-tech industry, including **updating research funding management**, **venture capital investment systems**, policies supporting **commercialization of technologies** and **commitment to further increase spending** on R&D, especially in basic research sector. China will also continue its efforts to strengthen **IPR** creation, use, protection and management. Additional effort will be made to promote the **adoption of standards** with independent IPR created by China.

In education, after postponing the commitment for years, government spending on education is finally set to reach **4%** of GDP by **2012**. (2010: around 3.1%) The priority in education for the next five years is **equality at all levels of education**. Resources will be allocated primarily to rural and remote areas to help them catch up. Higher education institutions are required to reserve more admission slots for students from Western China. Universities are also encouraged to enter into "East-West" university partnership in order to help local universities develop and become more attractive for students.

Reform on education will continue in the next five years in accordance with the *Medium and Long Term Education Development Plan*. College entrance examination and student admission system will change, to a more diversified approach to offer fairer chances for candidates of higher education. Admission will not only be based on the scores on the college entrance examination. Private schools will receive more support, and equal rights between private schools and public schools will be protected by law.

Major international cooperation plans in education sector include implementation of "Study in China" Project where China plans to have 500,000 students studying in China by 2020; supporting Chinese universities to open overseas branch; continuation with Confucius Institutes. Another priority will be to encourage the establishment of sino-foreign "joint venture" universities and research institutes.

## News

### 1. China Hints at Science-Funding Reform

(Nature, 21-03-2011)

In his annual report to China's top legislature at the National People's Congress in Beijing, Premier Wen Jiabao highlighted the need for **government science funding to be allotted and spent more efficiently** — raising the hopes of Chinese researchers that the funding system will soon be overhauled.

Currently, a Chinese researcher's funding is based on the number of papers they have listed in Thomson Reuters' Science Citation Index and the impact factors of the journals in which they are published, rather than on an evaluation of the work's scientific importance.

"The current evaluation system has made young scientists lose their pursuit of scientific significance," says Ma Zhiming, a mathematician at the Academy of Mathematics and Systems Science in the Chinese Academy of Sciences, Beijing. Ma was also a delegate at the annual meeting of the country's top advisory body, the Chinese People's Political Consultative Conference, held in parallel with the National People's Congress.

[…]

The people's congress also saw the release of the country's 2011 budget, which provided a double-digit percentage increase for science, in contrast to the cuts seen in the United States and United Kingdom. The central government plans to spend **194.4 billion Yuan (US$29.6 billion) on** science and technology in 2011, a **12.5% rise** on the previous year.

This 12.5% rise is, unusually, only slightly higher than the overall budget growth for 2011, which is 11.9%. In previous years, the growth of science and technology spending was often much faster than the overall budget increase, and money spent on science also rose more quickly than in other fields.

But this year, the situation has changed. In 2011, the central Chinese government spending on subsidized housing, medical reform and education are all much higher than on science. "The debts owed to the public welfare are too much, and that's why their expenditure is increasing more quickly than in science," says Mu.

In late 2008 and 2009, China launched 16 big science and technology schemes, ranging from seeding of genetically modified crops to innovative drug development. The schemes will spend 640 billion Yuan (US$97.5 billion) by 2020, and the first batches of their funding under the previous five-year plan were allocated in 2009. The launch of these schemes helped the science budget rise by more than 20% in 2008 and 2009.

In his report, Wen pledged that by the end of the 12th five-year plan in 2015, China's total research and development expenditure would reach 2.2% of gross domestic product, up from 1.75% in 2010.

(http://www.nature.com/news/2011/110321/full/news.2011.173.html)

### 2. Beijing Suspends Nuclear Plant Approvals

(South China Morning Post, 17-03-2011)

China suspended approvals for new nuclear power plants on March 16 and ordered comprehensive checks of existing facilities to close safety loopholes amid growing concern stoked by Japan's unfolding crisis.

In a surprise move, the State Council also announced that it would review and adjust its ambitious plan to expand the nuclear power sector by 2020, which Beijing hopes will help reduce the country's reliance on coal and cut emissions of greenhouse gases.

As Japan's nuclear crisis worsened in the wake of massive earthquake and tsunami, senior mainland energy officials had insisted that Beijing would stick to its nuclear expansion plan.

Interestingly, State Council statement on 16th did not mention Beijing's ambition to boost its nuclear power sector in the next five years, with at least 34 new plants planned and approved by the central government and 25 being built.

Beijing plans to build nuclear plants with a total installed capacity of 40,000 megawatts by 2015 as part of its plan to significantly increase the share of non-fossil fuels in its energy mix.

Any slowdown in China's rapid nuclear expansion would be a radical departure from longstanding policy, but even a temporary suspension shows the authorities are sensitive to public fears about the threat of nuclear accidents.

Analysts hailed the decisions made at a meeting chaired by Premier Wen Jiabao yesterday as "timely" and "necessary" after a string of Western countries also announced plans to review or even freeze their nuclear development due to growing public fears over nuclear safety.

[…]

According to the new rule, nuclear power facilities would not be allowed within five kilometres of any township of 10,000 people or within 10 kilometres of towns of 100,000 people, nor would they be allowed to be built in quake-prone areas.

(http://topics.scmp.com/news/china-news-watch/article/Beijing-suspends-nuclear-plant-approvals)

## 3. China Develops Therapeutic Apparatus for Parkinson's Disease

(Xinhua, 02-03-2011)

A therapeutic apparatus to treat Parkinson's disease has been developed in northeast China's Heilongjiang Province, according to the provincial science and technology department.

It is a worldwide breakthrough in treating the disease with transcranial magnetic stimulation, concluded an expert panel with the Heilongjiang Provincial Department of Science and Technology.

The team said it came to the conclusion after evaluating technical documents and clinical test results on February 28.

This is the first time that transcranial magnetic stimulation has been adopted to treat Parkinson's disease, said Sun Zuodong, chairman of Aobo Medicine Apparatus Co., Ltd. (AMA), the developer based in the provincial capital Harbin.

Transcranial magnetic stimulation is a noninvasive method which causes depolarization in the brains' neurons so as to restore the functions of brain nerves.

The apparatus consists of three parts, namely brain wave stimulator, field effect cap and multiplier, said Sun.

Clinical tests over more than 100 patients showed that the apparatus had a 70 percent success rate in reducing the disease's symptoms, according to Wang Aili, planning manager of AMA.

The new equipment will help generation of dopamine, the reduction of which within the brain caused the disease, said Wang Weixiang, a consulting doctor with the Heilongjiang Provincial Rehabilitation Hospital.

Parkinson's disease is a disorder of the neural system, which leads to limb tremors and difficulty in walking and other movements. China has 2 million patients suffering from Parkinson's disease, mostly people over the age of 50, and the number is increasing by 100,000 annually, said Dr. Wang.

(http://news.xinhuanet.com/english2010/health/2011-03/02/c_13757131.htm)

## 4. Improved IPR Protection to Support Innovation

(China Daily, 14-03-2011)

China will strengthen its protection of intellectual property rights (IPRs), in a bid to improve the nation's capacity for innovation, said senior figures from six ministries and administrations.

Officials from the six bodies, which include the Ministry of Commerce, the State Intellectual Property Office and the State Administration for Industry and Commerce, jointly pledged at a news conference on the sidelines of the National People's Congress on March 13 to strengthen efforts to combat IPR infringements and to make IPR protection a "long-term" national task.

In June 2008, the State Council launched the Outline of the National Intellectual Property Strategy, which aims to help the nation transform its economic development mode and improve its international competitiveness.

According the Vice commissioner of the State Intellectual Property Office, China is “strongly committed to strengthening effort on IPR protection to achieve its target of building itself into an innovation-oriented nation.”

China pointed out in the 12th Five-Year Plan (2011-2015) that it will accelerate transformation of its economic development mode and sharpen industrial competitiveness, speeding up the process of building itself into an innovation-driven nation.

In October 2010, the State Council launched a six-month campaign to reduce the number of pirated goods and strengthen protection of patents, trademarks and copyrights of a wide range of goods made both at home and abroad.

The ministry is evaluating the effectiveness of the campaign and studying the possibility of "prolonging" some of its measures against product counterfeiting, which, with cooperation from other ministries, will make IPR protection a "long-term mechanism".

During the campaign, Chinese officials investigated 45,296 cases of IPR violations, of which 6,379 cases involved foreign brands and patents, including Louis Vuitton and Nike, the State Administration for Industry and Commerce said.

(http://news.xinhuanet.com/english2010/china/2011-03/14/c_13776819.htm)

## 5. China to Train More Technicians to Support Growth, Employment

(Xinhua, 16-03-2011)

China will train another 3.5 million technicians and one million senior technicians during the next ten years as highly-skilled workers are urgently needed to drive growth, and boost employment.

The country will build 1,200 centers for the training of skilled technicians over the next ten years, of which 400 are to be built by 2015, said Wang Xiaochu, Vice Minister of Human Resources and Social Security.

China plans to accelerate the construction of technician-training bases to meet the need for regional economic development, industrial development plans and emerging industries of strategic importance, according to Wang.

The training bases will be built with support from large-scale enterprises, major vocational schools, and training institutions.

Wang said the number of technicians and senior technicians was expected to reach 10 million by 2020, which is key for improving China's competitiveness.

Government data showed that nearly one tenth of the 6.3 million college graduates failed to find jobs last year, while students from some secondary universities face even greater difficulties in finding employment.

In contrast, workers who have been through vocational training tend to find jobs more easily due to the shortage of senior technicians in China's manufacturing industry, which is estimated at 4 million.

[…]

(http://news.xinhuanet.com/english2010/china/2011-03/16/c_13782377.htm)

## 6. Number of Foreign Students in China Rise in 2010

(*Ministry of Education*, 04-03-2011)

The number of foreign students in China has risen dramatically, hitting a record high of more than 260,000 in 2010, according to statistics released by the Ministry of Education (MOE) on March 3.

In 2010, a total of 265,090 foreign students from 194 countries came that year to study in China's 620 universities, research institutes and educational institutions, the ministry said. The number had been 240,000 the year before.

The ministry said it plans to use cooperative educational programs to draw 500,000 foreign students to China by 2020.

The central government provided 800 million Yuan ($121.7 million) in scholarships to such students in 2010 and local governments offered about 110 million Yuan in scholarships, according to Zhang Xiuqin, director of the department of international cooperation and exchange under the MOE.

The government scholarship benefited a total of 22,390 international students last year. That was 22.7 percent more than had been helped in 2009.

Although the majority of the foreign students enrolled in Chinese schools last year came from Asian countries, the number of students from Western countries increased, official statistics show. Overall, South Korea sent the largest group, followed by the United States, Japan, Thailand, Vietnam, Russia, Indonesia, India, Kazakhstan and Pakistan.

By the end of 2009, 282 Confucius Institutes and 272 Confucius Classrooms had been established in 88 countries and regions. They were teaching roughly 260,000 students in 2009 - 130,000 more than in 2008 - about China's culture and language, according to the institutes' headquarters.

The figures from the MOE also show that an increasing number of Chinese are choosing to study abroad. The number reached 284,700 in 2010, while the number of Chinese returning from schools overseas was 134,800 for the same year.

## 7. New SSSTC Call for Proposals

(SwissnexChina, 24-01-2011)

The **Sino Swiss Science and Technology Cooperation Program SSSTC** is launching its 7th call for proposal, for joint research projects in the area of **Renewable Energy and Cleantech, Material Science and Nano Technology**, in collaboration with the Chinese Academy of Science which is allocating equivalent funding to its researchers and partners of Swiss Scientists.

Faculties and researchers at Chinese universities can also join the program by looking for financial support from Chinese central and local government.

Details of the call can be found at the swissnex website: http://www.swissnexchina.org/ as well as at SSSTC portal at ETH Zurich:http://www.global.ethz.ch/stc/china

## Events (March 2011– April 2011)

### April 2011

**2nd St.Gallen Symposium in Beijing**
Date: April 8th
Place: Beijing
Contact: Embassy of Switzerland in China

**1st International Conference on Clean Energy**
Date: April 10th
Place: Dalian, Shandong
Contact: Dalian Inst. Of Chemical Physics, CAS

**The 4th Shanghai International Aerospace Technology and Equipment Exhibition**
Date: April 11th
Place: Shanghai
Contact: Shanghai Association for Science and Technology

**China Nuclear Power Development Summit 2011**
Date: April 13th to 15th
Place: Chengdu
Contact:
http://www.chinanuclearpower.com

**The 4th International Conference on Computational Science and Optimization**
Date: April 15th
Place: Kunming, Yunnan
Contact: Academy of Mathematics and Systems Sciences, CAS

**The 4th International Workshop on Process Tomography**
Date: April 18th
Place: Chengdu, Sichuan
Contact: Institute of Mechanics, CAS

**Einstein Exhibition Opening HongKong**
Date: April 18th
Place: Hong Kong
Contact: www.swissnexchina.org

**2011 LOICZ Open Science Conference**
Date: April 19th
Place: Yantai, Shandong
Contact: Yantai Institute of Coastal Zone Research, CAS

**The 18th China International Industry Fair**
Date: April 20th
Place: Chongqing
Contact: Chinese Mechanical Engineering Society

**The International Symposium on Nano & Molecular Scale Devices (2011)**
Date: April 25th
Place: Beijing
Contact: National Center for Nano Technology, CAS

**2011 International Seminar of Earth Observation Satellite Committee Microwave Remote Sensor Calibration and Authenticity Inspection**
Date: April 27
Place: Beijing
Contact: Center for Space Science and Applied Research, CAS

**Third Meeting of the Asian Nuclear Physics Association**
Date: April 29th
Place: Lanzhou, Gansu
Contact: Institute of Modern Physics, CAS

**CIUTI Forum Beijing**
Date: May 21st-22nd
Place: Beijing
Contact:http://www.ciuti.org/

### May 2011

**1st Swissnext China Lecture**
Date: May 6th
Place: Shanghai
Contact: Swissnex China

**International Smart Grid Congress Asia 2011**
Date: May 10th to 13th
Place: Beijing
Contact: http://isgcc.org

**International Conference on Model Animals**
Date: May 11th
Place: Beijing

Contact: Institute of Genetics and Developmental, CAS

**Asian Congress on Biotechnology 2011**
Date: May 11th to 15th
Place: Shanghai
Contact: Asian Federation of Biotechnology

**1st Art Science Society Lectures 2011**
Date: May 11th
Place: shanghai
Contact: Swissnex China

**China Glass 2011**
Date: May 11th
Place: Shanghai
Contact: Chinese Ceramic Society, CAST

**The 2nd Beijing International Modern Agricultural Exhibition**
Date: May 11th
Place: Beijing
Contact: Beijing International Science and Technology Center

**Exhibition: From Pyramids to Spacecrafts**
Date: May 15th to 22nd
Place: Shanghai
Contact: Swissnex China

**6th International bHLH Symposium on Development and Disease**
Date: May 15th
Place: Shanghai
Contact: Shanghai Institute for Biological Sciences, CAS

**The 4th Asia Pain Symposium**
Date: May 16th
Place: Shanghai
Contact: Shanghai Institute for Biological Sciences, CAS

**YOTC Scientific Symposium**
Date: May 16th
Place: Beijing
Contact: Institute of Atmospheric Physics, CAS

**2011 International Conference on Groundwater Pollution and Water System Security**
Date: May 23rd
Place: Beijing
Contact: Graduate University of Chinese Academy of Sciences, CAS

**4th Workshop on Sino-French Joint Laboratory for Sustainable Energy**
Date: March 23rd
Place: Guangzhou
Contact: Guangzhou Institute of Energy Conversion, CAS

**2010 (Guangzhou) Exhibition & Conference on Instrumental Analysis and Biotechnology**
Date: May 24th
Place: Guangzhou
Contact: Guangdong Foreign Science and Technology Exchange Center

**2011 China International Machinery & Electronics Expo**
Date: May 26th
Place: Ningbo
Contact: China Machinery Industrial Federation

**7th International Symposium on Bioformatics Research and Applications**
Date: May 27th to 29th
Place: Changsha
Contact: http://www.cs.gsu.edu/isbra/

**8th International Conference on Neural Network**
Date: May 29th
Place: Guilin
Contact: Institute of Automation, CAS