

Science, Technology, Education and Health News from China

Number 103 – January 2013

Please note that the previous newsletters can be downloaded from the website of the Embassy of Switzerland in China: www.eda.admin.ch/beijing¹. To subscribe/unsubscribe or send us your comments, please send an email with the corresponding subject to chenchen.liu@eda.admin.ch.

Introduction

This month's newsletter features Chinese Academy of Sciences' decision to open research centers abroad. In science, Chinese top officials presented awards to top scientists and research teams; members of the Chinese Academy of Sciences voted for top 10 scientific breakthroughs in 2012; Chinese government issued guidelines to promote biotech industry; nuclear projects in China have been picked up 1 year after the Fukushima disaster. In education, the Ministry of Education issued guideline to guarantee equality in education; graduation season sees increasing reluctance of Chinese university graduates for factory jobs even if the white collar job market is dim. In health, the world looks at China as it is covered in severe smog.

The Science, Technology and Education Section of the Embassy of the Switzerland in China wishes you a prosperous 2013, the year of snake!

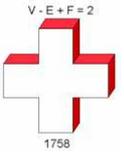
Contents

Story of the Month	2
News.....	3
1. Wrapped in Smog: Something in the Air?.....	3
2. Chinese Graduates Say No to Factory Jobs	4
3. China Back on the Front Burner	5
4. China Science and Technology Award 2012.....	5
5. China Unveils Top 10 Science and Technology News Event of 2012.....	6
6. China Issues New Guidelines to Promote Equality in Education	7
7. China to Boost Biotech Industry.....	8
Events (February 15 th – March 15 th 2013).....	8

Contact

Nektarios PALASKAS
Science and Technology Counsellor
Head of Science, Technology and Education Section
Embassy of Switzerland in the People's Republic of China
Tel: +86 10 8532 8849
Email: nektarios.palaskas@eda.admin.ch
www.eda.admin.ch/beijing

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



Story of the Month

Chinese Academy of Sciences to Extend Arms Abroad

In January 2013, the Chinese Academy of Sciences (CAS), China's flagship state-owned research institute announced during its annual conference that the institute will establish their first overseas institute in developing countries. The overseas institute will be part of the CAS "science and education cooperation with developing countries" strategy, according to Dr. BAI Chunli, president of CAS. The location of the first institute is still in the process of finalization, but a science and technology center in Kenya and a joint astronomy center with Chile are mentioned as two biggest possibilities and both are in the pipeline.

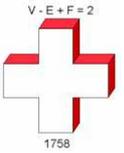
Since the beginning of 2012, Chinese State Council has underlined in the innovation promotion guideline the necessity for companies and research institutes to extend their R&D facilities internationally. Companies like Huawei are already moving towards this direction, and CAS becomes the first Chinese state-owned research institutes to make such move.

The decision to have the first establishment in developing countries is most likely a political choice. The CAS is mandated by the State Council as a frontier player in China's "science and technology aid diplomacy" with developing countries, which explains why the two projects in the pipeline are for both scientific and educational use. The fact that Dr. BAI Chunli CAS has just started his term as the president of the Academy of Sciences for the Developing World (TWAS) might have also played a role in the decision-making process. The spokesperson of CAS pledged in a press conference during the CAS annual conference to "seize the opportunity of TWAS presidency and strengthen cooperation with developing countries."

But the strategy of CAS to reach out internationally is quite a reasonable move. Managing one university and nearly a hundred research institutes, the academy is for sure one of the largest research institute — if not the largest — in the world. As domestic network of CAS institutes have been mapped out, CAS has announced its next stage strategy "CAS Innovation 2020," aiming at transforming itself into a more efficient and international research institute with innovative, interdisciplinary and cutting-edge research activities. By fostering an innovation-friendly research environment and offering appealing incentive package to both established researchers and talented young scientists, CAS strives to become a "global center of excellence in science, education and innovation" and is now making an effort to be recognized internationally as an attractive place to do research. But for CAS (as well as many for other innovation players in China), motivating people to overcome language, cultural and sometimes environment barrier and come to China for a research career is still quite a challenge.

To reverse the situation, an overseas establishment — as small as a representation office — will be a good hub to reach out and to raise awareness. It will also become a more reasonable meeting place for CAS researchers and their international partners during joint research.

CAS is ready to take its international cooperation activities onto the next level, and the expansion of CAS will for sure not be limited in Kenya and/or Chile.



News

1. **Wrapped in Smog: Something in the Air?**

(Economist, 13-01-2013)

The city of Beijing got worldwide attention in January as its readings for air pollution soared to unconscionably high levels, even for the usually smog-smothered residents of the Chinese capital. China's crisis in air quality is indeed a national one. In January, dozens of other cities, from Shandong province in the east to Guizhou in the southwest, recorded pollution spikes. Experts attribute this to an exceptionally cold winter that has caused more burning of coal and other fuels than usual, to temperature inversions over some places, and to unfortunate wind patterns in others.

Even in the absence of such spikes, air quality in much of China routinely fails to meet basic standards laid down by the World Health Organization (WHO). The smallest and most dangerous particles are called PM2.5 because they measure 2.5 microns or less in diameter, fine enough to enter deep into the lungs and into the bloodstream. The WHO deems 25 micrograms of such matter per cubic metre of air to be an achievable and acceptable level. In Beijing, readings hit nearly 1,000 micrograms.

The health impact is vast. Tens of thousands of Chinese are reckoned to die each year because of foul air. For instance, in the past three decades, coinciding with a mad dash towards growth and industrialization, China has seen a more than fivefold jump in mortality rates for lung cancer. The economic impact is large, too. Tourists kept away. Beijing ordered production to be halted at polluting enterprises and on construction sites. Flights were cancelled and travel in government cars was banned.

Now officials must contend with the political impact of bad air. China's government has long staked its legitimacy on being able to generate improved standards of living, and people have grown used to complaining about things they do not like. Adding chronically poisoned air to the mix could prove volatile, some think.

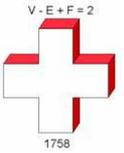
The authorities deserve credit for some initiatives, such as improved standards for vehicle and factory emissions, converting urban-heating systems from coal to gas, and investing in sources of renewable energy. Improving air quality is a long-term project. Western cities took decades to clean their air.

However, authorities must also shoulder blame for not taking the problem seriously enough. For years they persisted in underreporting levels of pollution. The American embassy in Beijing has long irritated the government by monitoring pollution and publishing the results hourly. In 2012 China asked the Americans to desist, but was rebuffed. Among ordinary Chinese, the service is extremely popular.

Despite the methodological shortcomings of this single-point monitor, the independent readings have led the authorities to release more detailed data. In 2012 the Beijing municipal government began reporting PM2.5 data for the first time. And from the start of this year, the country's environment ministry announced, 74 cities around the country were to begin monitoring and reporting on all sorts of pollutants, including PM2.5, sulphur dioxide, carbon monoxide and ozone.

These moves, combined with the state media's criticism of this month's pollution, suggest that the authorities have to abandon the idea of downplaying the problem. Newspapers and broadcasters, some of them usually cautious, have reported prominently just how severe and intolerable the pollution is.

<http://www.economist.com/news/china/21569743-measures-air-pollution-go-scale-public-impatience-rises-something-air>



2. Chinese Graduates Say No to Factory Jobs

(NY Times, 24-01-2013)

Guangzhou, the city of 15 million on the Pearl River is the hub of a manufacturing region where factories make everything from T-shirts and shoes to auto parts, tablet computers and solar panels. Many factories are desperate for workers, despite offering double-digit annual pay increases and improved benefits.

Wang Zengsong is desperate for a steady job. He has been unemployed for most of the three years since he graduated from a community college here after growing up on a rice farm. But he will not consider applying for a full-time factory job because Mr. Wang, as a college graduate, thinks that is beneath him. Instead, he searches every day for an office job, which would initially pay as little as a third of factory wages.

Millions of recent college graduates in China share the decision made by Mr. Wang. A result is an anomaly: Jobs go begging in factories while many educated young workers are unemployed or underemployed. A national survey of urban residents, released this winter by a Chinese university, showed that among people in their early 20s, those with a college degree were four times as likely to be unemployed as those with only an elementary school education.

It is a problem that Chinese officials are acutely aware of. "There is a structural mismatch — on the one hand, the factories cannot find skilled labor, and, on the other hand, the universities produce students who do not want the jobs available," said Ye Zhihong, a deputy secretary general of China's Education Ministry.

China's swift expansion in education over the last decade, including a quadrupling of the number of college graduates each year, has created millions of engineers and scientists. But China is also churning out millions of graduates with few marketable skills, coupled with a conviction that they are entitled to office jobs with respectable salaries. Part of the problem seems to be a proliferation of fairly narrow majors. At the same time, business and economics majors are rapidly gaining favor on Chinese campuses at the expense of majors like engineering, contributing to the glut of graduates with little interest in soiling their hands on factory floors.

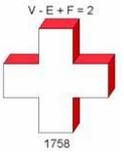
China has a millenniums-old Confucian tradition in which educated people do not engage in manual labor. But its economy still largely produces blue-collar jobs. Manufacturing, mining and construction represent 47 percent of China's economic output, twice their share in the United States, and the service sector is far less developed.

The glut of college graduates is eroding wages even for those with more marketable majors, like computer science. In 2000, the prevailing wage at top companies for fresh graduates with computer science degrees was about \$725 a month in Shenzhen, roughly 10 times the wage then of a blue-collar worker who had not finished high school. But today, new computer science graduates are so plentiful that their pay in Shenzhen has fallen to just \$550 a month, less than double the wage of a blue-collar worker. And that is without adjusting for inflation over the last decade.

As hundreds of thousands of factories have opened across the country over the last decade, they have struggled to find workers who can operate their complicated equipment, much less fix it. Yet the number of those receiving vocational training has stagnated to the point that they are now outnumbered roughly two to one by students pursuing more academic courses of study.

"We have jobs and positions for which skilled workers cannot be found, and on the other hand, we have talented people who cannot find jobs; technical and vocational education and training is the answer," said Lu Xin, the vice minister of education, at a conference in June 2012.

http://www.nytimes.com/2013/01/25/business/as-graduates-rise-in-china-office-jobs-fail-to-keep-up.html?pagewanted=4&ref=china&_r=0



3. China Back on the Front Burner

(Economist, 19-01-2013)

Earlier in January work began at a big construction site in Shandong province, southeast of Beijing. In a country overflowing with infrastructure projects, that seems unremarkable. Except the workers are restarting the construction of a nuclear plant using a radical new design developed by Beijing's Tsinghua University. This showcase of "indigenous innovation" is the clearest signal yet that China's nuclear power is about to take off again.

Before 2011 China's leaders were dead keen on it, hoping to raise nuclear's share of the country's electricity mix from less than 2%. They saw it as central to energy and climate strategy, and a future export platform. Official plans called for expanding from just 10 gigawatts of capacity in 2010 to as much as 200 gigawatts by 2030.

Then came Japan's Fukushima disaster. China prudently put a halt to nuclear licensing and construction, including at Shandong, pending a full safety review. As this process stretched on and on, critics of nuclear power dared hope. Perhaps the leadership, unwilling to risk a nasty accident, would end the programme? Some greens dreamed that subsidies would be redirected to solar and wind technologies.

Nowhere is the nuclear dilemma as tricky as in China. Nuclear plants are costly to build and difficult to run safely. But they also promise reliable power with no air pollution or greenhouse gases. That is tantalizing in a country addicted to coal: even with its ambitious plans, less than a tenth of China's generating capacity would come from nuclear power.

In the end, China's leadership went for nuclear. In October 2012 the State Council gave long-awaited approval for projects to proceed. That means more are now under way in China than in any country. The sheer number raises worries about safety. After all, Chinese remember all too well a horrific crash in 2011 on their high-speed railway. To blame was too much zeal for indigenous, too much corruption, and too little attention paid to safety. A mad dash to nuclear power could repeat those mistakes.

In fairness, it seems officials took the safety review seriously. The restarted nuclear programme will unfurl more slowly than had originally been planned, with a less ambitious target (only 130-140 gigawatts of installed capacity now seem likely by 2030). The officials have cancelled projects located in inland regions prone to earthquakes and short of water, and are increasing training for operators and funding for regulators.

What is more, officials are insisting that newly licensed plants adhere to higher "generation three" standards. Many current plants are of an older design that requires electric pumps for cooling; notoriously, these failed at Fukushima after the tsunami. Newer plants, for example those made by America's Westinghouse and France's Areva, have "passive" safety features, such as gravity-driven cooling, that should work even during power cuts.

(<http://www.economist.com/news/china/21569774-china-wants-more-nuclear-plants-anyone-else-will-it-build-them-safely-back-front>)

4. China Science and Technology Award 2012

(Xinhua, 18-01-2013)

Explosion mechanics expert Mr. Zheng Zhemin and radar engineer Mr. Wang Xiaomo won China's top science award on 18th January at a high-profile annual ceremony held to honor distinguished scientists and research achievements in China.

They were honored for their remarkable contributions to scientific and technological innovation, according to a government statement. 5 million yuan (803,792 U.S. dollars) were granted as a special bonus to each of the two top scientists.

The Chinese government has given the annual award to distinguished scientists for 13 consecutive years, and 22 top scientists, including Zheng and Wang, have won the award so far. The award is aimed at boosting innovation-powered development.



Mr. Zheng, 88, is a member of both the Chinese Academy of Sciences and the Chinese Academy of Engineering (CAE). He has devoted his career to research in the areas of elastic mechanics, explosive processing and underground nuclear detonations. Mr. Zheng is a pioneer and founder of the scientific discipline of explosion mechanics in China. The achievements of his studies were used in the manufacturing of components of the country's first rockets, contributing much to the development of rocket and satellite technologies. In the early years of his studies, Mr. Zheng was a student of China's late "father of mechanics," Mr. Qian Weichang, and later, a student of the "father of space technology," Mr. Qian Xuesen.

Mr. Wang, 74, is a CAE member who has engaged in radar-related research and design for the past 30 years. He is regarded as the "father" of airborne warning and control system (AWACS) in China. His success in leading China's independent AWACS research has contributed to advances in the construction of the country's air defense network. The AWACS project won the State Special Award for Scientific and Technological Progress in 2010, and China-made AWACS aircraft are also exported abroad.

The Chinese Science and Technology Awards were also given to a number of other scientists, as well as scientific research programs, at the ceremony.

Chemist Richard N. Zare from the United States, as well as another four foreign experts from the U.S., Canada, Denmark and Japan, respectively, received the International Cooperation Award in Science and Technology. The Chang'e-2, a Chinese lunar orbiter, and another two projects were honored with the State Special Award for Scientific and Technological Progress. Another 41 projects received second-level prizes in the State Natural Sciences Award competition. No first-level prizes were awarded, marking the ninth time in the last 13 years that the first-level prize was not awarded. Three projects earned first-level prizes in the State Technology Invention Award competition, while 74 others received second-level prizes.

Young and middle-aged scientists, as well as those returning from overseas, are becoming the mainstay of Chinese innovation in science and technology. The participants in the awarded projects averaged 47 years old, with 44.2 percent of them aged 45 or under, and 56.1 percent of the projects' chief scientists are scholars who have returned from overseas, official figures show.

http://news.xinhuanet.com/english/china/2013-01/18/c_132112663.htm

5. **China Unveils Top 10 Science and Technology News Event of 2012**

(Xinhua, 20-01-2013)

Chinese Academy of Sciences (CAS) and Chinese Academy of Engineering (CAE), or the country's elite think-tank duo, unveiled on Saturday top 10 news events of domestic science and technology progress for the year 2012.

Selected via a vote by academicians from both organizations, the 10 news events are as follows in accordance with the number of votes received:

- Three Chinese astronauts on June 24 successfully completed a manual docking between the Shenzhou-9 spacecraft and the orbiting Tiangong-1 lab module, the first such attempt in China's history of space exploration.
- China's manned submersible, the Jiaolong, set a new national dive record after reaching more than 7,000 meters below sea level during its dive tests in the Pacific Ocean in June.
- The world's first high-speed railway in areas with extremely low temperatures, the Harbin-Dalian rail, which runs through three provinces in northeast China, started operation on December 1.
- China on February 6 published a set of full coverage of moon map and moon images with a resolution of seven meters captured by the country's second moon orbiter, the Chang'e-2.



- The Chinese Sunway BlueLight supercomputer, which was built with domestically produced microprocessors and is capable of performing around one-thousand-trillion calculations per second, on September 11 passed the examination of the experts panel organized by the Ministry of Science and Technology.
- China on July 29 successfully conducted tests on its new 120-tonne-thrust liquid oxygen and kerosene engine for its new generation carrier rocket, the Long March-5.
- Research led by Chinese professor Jian-Wei Pan on the experimental demonstration of topological error correction with an eight-photon cluster state marked a breakthrough in quantum information processing research. It was published by the Nature journal in February.
- Chinese and foreign physicists during the Daya Bay Reactor Neutrino Experiment have confirmed and measured a third type of neutrino oscillation. That was announced on March 8.
- The Ministry of Science and Technology announced on January 11 that the country has approved a hepatitis E vaccine developed by researchers from Xiamen University and Xiamen Innovax Biotech Co. Ltd. in east China's Fujian Province.
- China on October 28 unveiled Asia's biggest radio telescope in Shanghai, which is used to track and collect data from satellites and space probes.

<http://www.globaltimes.cn/content/756859.shtml>

6. China Issues New Guidelines to Promote Equality in Education

(Xinhua, 16-01-2013)

The Chinese government issued a new guideline on January 13th to improve school management and promote equality and academic independence.

The document published by the Ministry of Education asks schools to remove enrollment and education policies that discriminate against students and adopt effective measures to promote mutual respect between students and teachers, school administration and faculty as well as genders and different ethnic groups. It also vows to provide equal education opportunities for disabled children.

School administrations should show full respect for, and protect the legal rights of, students and teachers, including their rights to be informed and to have their opinions heard through improved transparency in school affairs and the establishment of smooth communication channels, said the document.

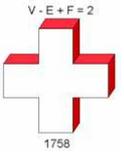
The guideline also asks schools to protect the academic freedom of students and teachers within legal boundaries. Schools should adopt a fair system for evaluating academic performance and effective measures to curb malpractice and dishonesty. They should pay more attention to education and research and prevent bureaucracy from affecting academic work.

The government will shift its focus from detailed daily management to supervision and policy making, according to the document. The new guideline also asks all primary and middle schools to set up parent committees, aiming to not only improve communication but also allow parents to supervise schools.

The guideline aims to sharpen the management of primary and middle schools and universities, according to a press release from the ministry.

It will help push school administrations to regulate decision-making procedures, establish a risk control system and include students, teachers and parents in the administration and supervision of school affairs, the statement said.

http://news.xinhuanet.com/english/culture/2013-01/16/c_132107428.htm



7. China to Boost Biotech Industry

(Xinhua, 16-01-2013)

The Chinese government will give a boost to the biotechnology industry in order to tackle problems related to population growth, food safety, energy conservation and environmental protection, the State Council said.

The government aims to double the share of GDP that the sector's value-added output accounts for by 2015 from the 2010 level, according to a biotech industry development plan unveiled by the State Council, or China's cabinet. The sector will see its output surge at an average annual rate of more than 20 percent from 2013 to 2015, according to the plan.

The government also plans to improve the sector's innovation and technological prowess to make it a pillar industry by 2020. New medicines, crops, biofuels and environmental technology are needed to protect the health of an aging population, ensure food safety and save energy.

According to the plan, the government is targeting an annual production value of 150 billion yuan (23.8 billion U.S. dollars) by 2015 for the biofuel sector. The sector's overall output has risen at an annual average of more than 20 percent since 2006, reaching 2 trillion yuan in 2011.

Biotechnology industry is one of seven emerging industries that the government is aiming to promote over the next few years in order to turn domestic consumption and technological innovation into driving forces for the economy. The other sectors include advanced materials, alternative energy, new-generation information technology, high-end equipment manufacturing, new-energy cars, energy conservation and environmental protection.

The government has set a goal of ensuring that the sectors' combined value-added output will account for 8 percent of the GDP by 2015.

(http://usa.chinadaily.com.cn/china/2013-01/06/content_16089275.htm)

Events (February 15th – March 15th 2013)

S&T, Education and Health-related Events in China

The Transgenic Technology Conference 2013

Date: February 25th

Place: Guangzhou

Contact:

<http://www.transtechsociety.org/tt2013/>

Dental South China Expo 2013

Date: February 27th

Place: Guangzhou

Contact: Guangdong Dept. of S&T

WaterChina-Guangzhou 2013

Date: March 4th to 6th

Place: Guangzhou

Contact: <http://www.waterchina-gz.com/>

ConstrucTech 2013

Date: March 7th to 9th

Place: Beijing

Contact: <http://www.constructech.cn/>

China International Education Exhibition Tour 2013

Date: March 9th to 10th

Place: Beijing

Contact: <http://www.cieet.com/sc/index.asp>

China International Education Exhibition Tour 2013

Date: March 14th

Place: Xi'an

Contact: <http://www.cieet.com/sc/index.asp>



Swiss-related S&T, Education and Health Events and Announcements

Swiss federal government scholarships application in process

Date: until end of March
Contact: China Scholarship Council
<http://www.csc.edu.cn/require/>

Innovative Manufacturing in China with Professor Ed Steinfeld

Date: March 7th
Contact: Swissnex China

Swiss booth at APAIE Conference and Exhibition 2013

Date: March 11th to 14th
Place: Hong Kong
Contact:
<http://www.apaie.org/conference/2013/>

Swiss booth China International Education Exhibition Tour 2013 (tbc)

Date: March 12th

Place: Shenyang
Contact: <http://www.cieet.com/sc/index.asp>

Breakfast on Innovation and Entrepreneurship with Olivier Glauser, Alumni EPFL, co-founder Shankhai Sports

Date: March 19th
Contact: Swissnex China

New Master of Health Sciences in University of Lucerne

Contact: University of Lucerne
<http://www.master-healthsciences.ch/>

University of Geneva Summer Course 2013 Application

Contact: University of Geneva
<http://graduateinstitute.ch/summer>