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Introduction

The story of the month covers Ministry of Science and Technology of China carried out a survey to understand the demands of China's scientific researchers for large research infrastructure and equipment. In science and technology, China's agricultural authority is set to conduct more comprehensive assessments of hybrid rice varieties. Chinese Academy of Sciences starts an investigation on the interaction mechanism between groundwater resource exploitation and regional climate. China's satellite navigation system expands coverage globally by 2020. Researchers gathering in Beijing aim to speed up biological databases. China mulls inland nuclear power plants. In education, The Ministry of Education in China is creating an online information management system for transnational education partnerships. The online education in China is booming.

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

Story of the Month

The Ministry of Science and Technology of China recently announced a survey on the demand of international cooperation and sharing of large research infrastructure and equipment. This is the first time that the Ministry is conducting such survey.

International cooperation and sharing of large research infrastructure and equipment are critical to China's endeavors to advance in research and innovation. Requirements about the opening and sharing of large research infrastructure have been advocated in many documents like the *Notice of the State Council on Issuing the Medium and Long-Term Plan for Key National Technology Infrastructure Construction (2012-2030)* and *Suggestions on the Opening of National Key Scientific Infrastructure and Large Scientific Apparatus to the Society*. According to the ministry, the goal of this survey is to obtain a better understanding on researchers' demand for large research infrastructure and the current status of international cooperation. The survey will then lead to a new management mechanism to better fund and administrate the usage and sharing of such research infrastructure, both at home and abroad.

While there have been repeated calls from the government to share infrastructure and to promote international collaboration, problems still exist. Funding such infrastructure is a highly complex process due to insufficient investment in basic research. Research institutes tend not to share the infrastructures for external use to overly strict internal regulations. Lack of proper staff training and lack of budget for maintenance also lead to low utilization rate of some infrastructure. The current regulation that research infrastructures are considered "state asset" and such budget has to be invested into a "made and used in China" has severely blocked Chinese researchers from collaborating with their international partners, both on co-financing and sharing of the infrastructure in China and abroad.

The Ministry of Science and Technology of China groups the reasons of this survey. By pushing research institutes and universities to thoroughly overview its research infrastructure and to examine how they are being used, the Ministry is pushing the scientific players to further open up its research facilities to external players, such as fellow universities and industry R&D personnel. Better sharing mechanism promotes efficient use of budget across academic sectors and in turn allows resources to be pulled together for better infrastructure and facilities. From a policy perspective, if the international collaboration regulations on research infrastructure will be made further flexible, it will generate great opportunities for Chinese researchers in basic science to work with their international counterparts and will bring in many more excellent foreign minds to China.

The large research infrastructure and equipment involved in this survey refer to the infrastructure and equipment which cost more than RMB 500 million to build. Currently China is home to several large size infrastructures which have been offering promising returns in the past years. Beijing Electron Positron Collider (BEPC), one of the earliest research infrastructures in China, is also one of the eight high-energy accelerator centers in the world. Shanghai Synchrotron Radiation Facility is one of China's major scientific projects and is until now the largest infrastructure. Since 2006, the Daya Bay Reactor has been running its neutrino experiment with an international research team. In March 2012, it announced the discovery of a new neutrino oscillation mode, which is regarded as a milestone in neutrino physics. The experience was awarded as one of the top ten scientific breakthroughs by American magazine of "Science" in 2012. Since 2014, scientists at the Institute of High Energy Physics (IHEIP) in Beijing are working with international collaborators in an exciting plan to build a "Higgs factory" by 2028 – a 52-kilometer underground ring that would be much larger than the LHC at CERN.

News

1. China: MoE creates TNE portal; adds courses to approved list

(The pie news, 07-04-2015)

The Ministry of Education in China is creating an online information management system for transnational education partnerships, it has announced. It has also published an updated list of approved joint ventures, including seven new programmes.

The 'one-stop' portal on the Ministry of Education's Joint Education and Supervision Information Platform will enable Sino-foreign higher education ventures to apply and register for approval and assessment by the Chinese government and publish materials online.

It will also include a registration system for joint programmes and institutes below degree level; a registration and verification system for overseas qualifications and degrees; and a publication system for annual reports and other relevant information from joint programmes and institutes.

"The establishment of this online system will likely standardize and improve the efficiency of the TNE application, approval and assessment process, which will to some extent reduce the amount of paperwork involved in the TNE application process," commented Liu Jing, assistant director of education marketing at the British Council.

However, Liu warned that the impact on the less formal parts of the application process will be "limited". Once the platform is established, the Ministry of Education has said it will continue to work to improve the monitoring process of Sino-foreign education partnerships, along with its publicity, enquiries and complaints procedures.

"The newly approved joint programmes to some extent reflected Chinese authorities' TNE subject preferences"

The Chinese government's updated list of approved TNE programmes now numbers 86 ventures in total.

The seven newly-added programmes which are recruiting students for the first time include a joint undergraduate programme in food science and engineering between Ireland's University College Cork and Beijing Technology and Business University, and two partnerships between Beijing Jiaotong University and Rochester Institute of Technology in the US.

Other courses cover subjects such as communication, engineering and enterprise management.

"The newly approved joint programmes to some extent reflected Chinese authorities' TNE subject preferences, although there is flexibility in approval and all applications are assessed on a case by case basis," commented Liu. "In general the subject should address China's development needs (eg. Bio-engineering, environment)."

And he explained that China is strongly encouraging the establishment of more postgraduate and specialized joint programmes that will attract investment from overseas.

"Business and management related courses are still possible, but need to be positioned or focused on a specific direction which addresses Chinese needs (eg. entrepreneurship and innovation, financial engineering), and are more feasible at the Master's or PhD level as the number of postgraduate TNE programmes is still very limited compared to undergraduate programmes," he said.

(http://thepienews.com/news/china-moe-creates-tne-portal-adds-courses-approved-list/)

2. Online education platform starts young

(China daily, 02-04-2015)

Even as higher education goes increasingly online in the global market, many investors in China are banking on the K-12 segment.

In February, 17zuoye.com, an online learning platform focusing on afterschool assignments at the K-12 stage, received $100 million in a fourth round of financing. The company's estimated value has reached $600 million.

Investors include venture capital giants H Capital, Temasek, Digital Sky Technologies and Shunwei Capital Partners, which invested in groups including Alibaba, New Oriental group, Facebook and Twitter.

Tuck Lye Koh, founding partner and CEO of Shunwei Capital Partners, believes online education has a promising market in China.

"Investments in online education in China began to boom in 2014," said Xu Xiaoping, another angel investor and the founding partner of ZhenFund.com.

Former Harvard University president Larry Summers joined Minerva, an online university based in San Francisco, and former Yale University president Richard C. Levin became the chief executive of Coursera, a California-based online education provider. The moves showed that US top higher education administrators have faith in online education's future, Xu said, adding that investors in the US have seen the potential of online education since 2013, and the market is booming.

According to an online education report released in November by the TAL Education Group, one of China's largest K-12 after-school tutor providers, a total of $910 million has been invested in China's online education sector since 2013, and $470 million were invested from May 2014.

The central government raised the "Internet plus" concept in March 2015 during its work report, encouraging traditional industries to take advantage of the Internet to better serve people's needs.

The Ministry of Education said in its 2014 plan that it encourages schools to focus more on online courses.

17zuoye, which means "doing homework together in Chinese", was established in 2011. It has 12 million users now.

As of March 5, a total of 31 provinces, 46,001 primary schools, 601,222 teachers and 11,738,254 students have been registered with the website.

"Chinese children spend about two hours a day on homework on average … the large sum and lacks of diversity of these assignments have been widely criticized; 17zuoye helps address the shortfalls of the traditional homework model. It allows students to interact and teachers to adjust to the process. Parents can also monitor it," said Liu Chang, founder of the company.

Similar afterschool project providers in the US envy his group because Chinese parents pay a great deal of attention to children's homework, Liu said, adding that that culture is the soil nurturing the success of 17zuoye.

(http://www.chinadaily.com.cn/china/2015-04/02/content_19980990.htm)

3. Hybrid rice varieties to confront more comprehensive assessments

(China daily, 16-04-2015)

China's agricultural authority is set to conduct more comprehensive assessments of hybrid rice varieties following a massive crop failure in Anhui province caused by abnormal weather conditions and rice disease.

The evaluations will focus on high yields and also the adaptability of varieties to different growing environments, including resilience to disease and insects, according to Zhang Taolin, vice-minister of agriculture.

"There will also be evaluations of the efficiency of fertilizers and the grain quality of hybrid rice," he said at a news conference at the State Council Information Office on April 14.

Hybrid rice seed provider Yuan Longping High-Tech Agriculture Co said on April 11 that it will stop selling its Liangyou 0293 variety following widespread low yields or crop failure.

This affected more than 650 hectares of rice fields in six cities in Anhui in October.

The company blamed abnormal weather conditions, including low temperatures and persistent rain in June and July 2014, for the crop failure as this variety is susceptible to rice blast fungus disease in such conditions.

Inadequate prevention measures also accounted for the crop failures, it said.

Agricultural scientist and company founder Yuan Longping, widely dubbed the "father of hybrid rice", said the crop failure in Anhui cannot serve as evidence that there are problems in all hybrid rice varieties.

"There is a chance that the Liangyou 0293 variety could have suffered a setback in quality after years of cultivation. There could also have been disease mutations," he told Hunan Daily.

"The average yield of hybrid rice per mu (0.07 of a hectare) has reached more than 1,026.7 kg to date. Even if the yield is reduced to 70 to 80 percent of that amount ... we can still improve the yield of the country's rice fields remarkably," he said.

Zhang, the vice minister, said hybrid rice remains an important part of the national strategy to ensure grain security.

"We need a variety that can adapt to different cultivation environments. However, evaluation of a variety is usually conducted in a specific area. If that variety is cultivated elsewhere, without adequate assessment, defects in the variety will be exposed," he said.

The Anhui crop failure has infuriated farmers, with many blaming the company for misleading advertisements. In Wuhe county, rice farmers were hit hard, with yields plummeting from an expected 500 kg to 50 kg per mu or even to zero.

The company said the farmers' losses will be covered by insurance and it will meet with them to discuss further measures.

As of last year, hybrid rice accounted for 30 percent of China's rice-growing area, with more than 9.07 million hectares of hybrid rice fields nationwide.

(http://hn.chinadaily.com.cn/2015/waimeikanhunan_0416/6787.html)

4. How Do Groundwater Exploitation and Utilization Affect Land Surface Processes and Regional Climate?

(CAS, 23-04-2015)

Winding its way in North China, the Haihe River is 1,329 kilometers long measured from the longest tributary. China's capital (and second largest city), Beijing, and the third largest city, Tianjin, both lie in the Haihe River Basin. The long-term water over-exploitation there has led to cones of groundwater depression, which is still enlarging. Despite of the serious situation of water resource over North China, the effects of anthropogenic water exploitation on land surface processes and climate are still inconclusive.

Recently, numerical simulation research on climatic effects of groundwater exploitation over Haihe River was conducted by scientists from two institutes of the Chinese Academy of Sciences, ZOU Jing, XIE Zhenghui, QIN Peihua, SUN Qin, and JIA Binghao in LASG/Institute of Atmospheric Physics, and ZHAN Chesheng and XIA Jun in Institute of Geographic Sciences and Natural Resource Research.

Together, they established a scheme of water exploitation and utilization based on the land surface model CLM3.5 and regional climate model RegCM4. A series of off-line and on-line simulation tests were conducted over Haihe River Basin, in order to investigate the interaction mechanism between groundwater resource exploitation and regional climate, as well as the sensitivity of climate change on water demand.

The research revealed that the long-term exploitation and utilization of groundwater resource had led to groundwater depressing with local cooling and wetting effects. Only 40%~50% of groundwater volume depressed was transferred into increased precipitation returned to local land surface, and the other water flew outside the basin as water vapor, discharge and etc. Additionally, the water utilization over the basin also caused declined annual mean temperature of 0.15°K, and the temperature even declined by 4°K due to irrigation during the crop growing season like June and July.

The key research topics of State Key Laboratory of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics are research on earth system models, dynamics of weather and climate, atmospheric predictability and geophysical fluid dynamics. The research on effects of human activity and land-atmosphere interaction is one of branches in earth system model research.

(http://english.cas.cn/newsroom/research_news/201504/t20150423_146623.shtml)

5. China's satellite navigation system to expand coverage globally by 2020

(Xinhua, 23-04-2015)

The Beidou satellite navigation system will be fully operational worldwide by 2020, said Li Jian, deputy director of the Civil Aviation Administration of China (CAAC) on Thursday. Li was speaking at an international forum on aviation security in Beijing.

The system has been successfully tested in the general aviation sector, which includes all civil aviation operations other than scheduled air services, as well as by general aircraft including helicopters and private jets.

"We are promoting the Beidou system up to the standards of International Civil Aviation Organization [ICAO], and will gradually apply it to carriers," Li said.

Currently there are four satellite navigation systems in the world, the U.S. Global Positioning System (GPS) and Russian GLONASS, as well as the European Galileo and Beidou, which are still being developed.

(http://news.xinhuanet.com/english/2015-04/23/c_134177164.htm)

6. Researchers aim to speed up biological databases

(CAS, 27-04-2014)

More than 270 biocuration researchers, including world-leading experts, gathered in Beijing for the 8th International Biocuration Conference.

Hosted by the Beijing Institute of Genomics under the Chinese Academy of Sciences, the event highlighted the creation of a platform for curators and developers of biological databases to discuss their work and promote international collaboration.

"Biocuration involves the analysis, interpretation and integration of biological information into data repositories, primarily to add value by annotating and interconnecting research data and results within a common biological framework," according to the National Institute of Health in the United States.

Tan Tieniu, deputy secretary-general of the Chinese Academy of Sciences, stressed the importance of biocuration in today's science researches during opening remarks.

In the world of science, "biocuration, like a highway, helps scientists make their discovery quicker," explained Alex Bateman, chair of the International Society of Biocuration.

"For example, if a new medicine has been developed, it will be developed more quickly because they (scientists) used the 'highway' we produced for them".

A non-profit organization founded in 2008, the society promotes biocuration and provides a forum for information exchange through meetings and workshops.

Its first conference took place in California, US in 2005 and the first five were held biennially. Since 2012, with the increasing need for biocuration, conferences have been held annually. It is the first time the event has been held in China.

Bateman hopes the Beijing conference, which opened on April 24, helps break down the barrier between researchers from China and the rest of the world.

Currently, due to a lack of standard data collection system, Chinese researchers send data to international organizations, such as the National Center for Biotechnology Information in the US and European Bioinformatics Institute in Europe.

Chinese researchers realize the importance of establishing its own system to "collect big data and lead to big discovery", said Zhang Zhang, researcher from the host organization. Zhang's team has proposed founding a big data center in biology and medicine.

(http://english.cas.cn/newsroom/news/201504/t20150427_146672.shtml)

7. China mulls inland nuclear power plants

(China daily, 27-04-2015)

China's National Energy Administration is analyzing whether the country should build inland nuclear power plants. The topic has aroused fierce debate.

China Nuclear Energy Association has released a research report about the environmental security of inland nuclear power plants, and has come to the conclusion that such a facility would be safe.

Professor Zhou Ruming with the Association claims that the impact of liquid radioactive waste over underground water is within the allowable range, if nuclear power plants are running properly.

"When plants are running properly, the radioactive impact caused by disposal of liquid waste will fluctuate within the range of natural background radiation. It is not only our prediction but also facts have been proved by experiences of the United States and France. Our country has adopted many measures to treat liquid radioactive waste in order to secure the water quality of downstream. We can achieve that."

However, different from the US and France, China is densely populated and short of water resources. Additionally, earthquakes frequently happen in this country. Some people doubt if proper locations for nuclear power plants can be found.

Chang Xiangdong is the vice chief engineer of the Nuclear and Radiation Safety Center, an agency directly under China's Ministry of Environmental Protection.

(http://www.chinadaily.com.cn/china/2015-04/27/content_20548337.htm)

(Collaborating Opportunities)

Lift China Open Call for Workshops and Masterclasses

Date: June 16th- 21st2015

Place: Shanghai

http://liftconference.com/news/2015/03/31/lift-china-open-call-workshops-and-masterclasses

Contact: swissnex China

Swiss Week Shanghai

Date: May 13rd– 17th 2015

Place: Shanghai

Contact: swissweek@sim.biz

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