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Content

China’s major S&T achievements in 2018

2018 Report on Evaluation of Innovation Capacity of National Hi-tech Zones issued in Beijing

China's Major S&T Achievements in 2018

In 2018, a number of major STI achievement were shown to the public in China — the world's first cloned monkey was born, Asia's deepest scientific drilling program was completed and the artificial sun achieved a temperature of 100 million degrees Celsius. These achievements indicated that China has made a huge leap in science and technology.

I. The world's first cloned monkey was born in China

On January 24, CAS announced that Zhongzhong, the world's first monkey cloned through somatic cell nuclear transfer was born on November 27, 2017, and the second, Huahua was born ten days later. CELL, the international authoritative journal, publicized online the achievement as a cover story.

II. China successfully launched its first seismo-electromagnetic satellite

On February 2, China successfully launched its first seismo-electromagnetic satellite "Zhang Heng-1" using carrier rocket Changzheng-2D at the Jiuquan Satellite Launch Center. This indicates that China has become one of the few countries in the world that have on-orbit geophysical field detection satellites with multi-loads and high precision.

III. Asia's deepest scientific drilling program was completed

A scientific drilling program in Northeast China's Heilongjiang province, called the Songke Second Drilling Well, has just completed an exercise that successfully reached 7,018 meters underground. It was the deepest drilling point in Asia since the International Continental Scientific Drilling Program was established 22 years ago.

IV. Tiankun, China's largest cutter-suction dredger completed its first sea trial.

On June 12, Tiankun, China's first self-designed and self-built cutter-suction dredger completed its first sea trial. It is the largest of its kind in Asia. With a cutter power of 6,600 kilowatts, the 140m-long and 27.8m-wide dredger can excavate 6,000 cubic meters an hour at a maximum depth of 35 meters. Its total installed power reaches 25,843 kilowatts.

V. Yuan Longping's team succeeded in planting seawater rice in desert

On July 22, Qingdao Seawater Rice R&D Center announced that the over 80 rice varieties including seawater rice planted by Yuan Longping's team became mature, exceeding the world's rice yield of 4.539 ton/hectare. This marks that the team's trial is successful.

VI. China's home-grown large amphibious aircraft AG600 completed its first water take-off and landing

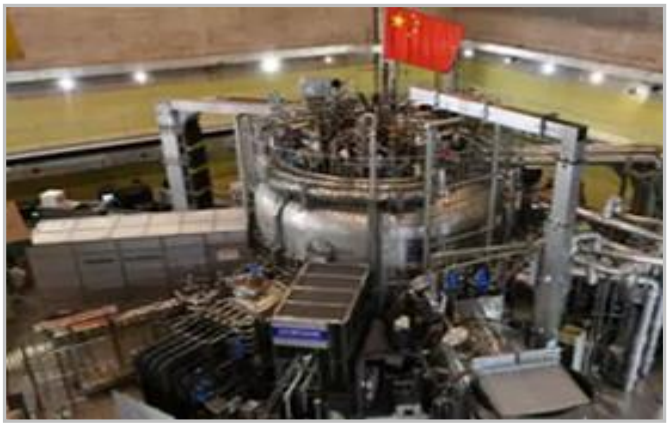
On October 20, China's home-grown large amphibious aircraft Kunlong AG600 completed its first water take-off and landing in Jingmen's Zhanghe Reservoir. This marks another important breakthrough in large aircraft manufacturing and stops a gap in the R&D of amphibious aircraft.

VII. World's first PBMR steam reactor was checked and accepted

On October 31, the world's first PBMR steam reactor was checked and accepted. As one of the most critical devices in HTGR nuclear power system, steam generator is called the lung of nuclear power system.

VIII. China's artificial sun achieved a temperature of 100 million degrees Celsius for the first time

On November 12, Institute of Plasma Physics of CAS announced that the Experimental Advanced Superconducting Tokamak (EAST), the artificial sun made many major breakthroughs, including achieving an operation temperature of 100 million degrees Celsius.



IX. Chang'e 4 lunar probe was launched successfully

On December 8, China's Chang'e 4 lunar probe was launched successfully via a Long March 3B rocket from Xichang Satellite Launch Center, thus starting a new journey of lunar exploration. In the later phase, the probe will experience earth-moon transfer, braking at perilune and circumlunar flight. Ultimately, it will achieve soft landing at the far side of the moon for the first time in human history.

X. Beidou-3 starts serving the world

On December 27, Ran Chengqi, head of the Office of China Satellite Navigation System Management and spokesperson of Beidou Satellite Navigation System, announced at a press conference of the State Council Information Office that the basic system of Beidou-3 has been completed and put into operation for global service. This symbolizes that Beidou system expands its service scope to cover the world and officially enter into global era.

（Source: Official Wechat account of MOST）

2018 Report on Evaluation of Innovation Capacity of National Hi-tech Zones issued in Beijing

On December 25, 2018, *the 2018 Report on Evaluation of Innovation Capacity of National Hi-tech Zones* was issued in Beijing.

The report evaluates all the 156 national hi-tech zones and Suzhou Industrial Park by the end of 2017. The related statistics all come from the annual statistical survey of hi-tech zones approved by the National Bureau of Statistics and organized by Torch Center. The latest statistics of the report means statistics in 2017.

I. Over the 30 years, national hi-tech zones have made remarkable contributions to the progress of the nation and has become the major force and platforms for implementing the innovation-driven development strategy.

1. The hi-tech zones are playing an increasingly important role in national economy development. In 2017, the GDP of the zones stood at 9.51714 trillion yuan, accounting for 11.5% of the GDP of the country.

2. The innovation capability of the hi-tech zones increases markedly. In terms of R&D, the R&D input of the enterprises in the hi-tech zones accounted for 45.1% of the national total; the R&D intensity (R&D expenditure/turnover) reached 2.01%, about the same with the average R&D input intensity of China's listed companies in 2017 (approximately 2.2%); FTE R&D staff in enterprises accounted for almost half of the national total; national-level research institutes including state key labs in the hi-tech zones accounted for two thirds of the national total. The innovation output turned out to be remarkable. In 2017, the enterprises received 93,000 authorizations of domestic invention patents, 46.3% of the national total; the efficiency of innovation output far exceeded that of the nation, with the application, authorization and ownership of invention patents per 10,000 people being more than seven times of the national average.

3. The hi-tech zones keep cultivating innovation players and the industries become featured by high-quality development. Over half of the incubators of the country were located in hi-tech zones; in 2017 more than 1,000 enterprises were newly registered in the zones per day on average; 37.4% of the enterprises were hi-tech ones according to the statistics of the zones; 36.8% of the NEEQ-listed companies were located in the hi-tech

zones. In 2017, the sales revenue of the new products of the enterprises reached 7.35945 trillion yuan, accounting for 33.3% of the sales revenue of the zones; the turnover of hi-tech industries in the zones accounted for 30.7% of the total turnover; the sales revenue of electronic information reached 4.9194 trillion yuan, about 1/3 of the output value of the national electronic information manufacturing industry; the proportion of technical revenue in sales revenue increased from 4.4% in 2000 to 10.8% in 2017.

4. The hi-tech zones are an important window of opening-up and development of the country. In 2017, the export volume of the hi-tech zones accounted for 19.1% of the national foreign trade export volume, and the export of hi-tech products accounted for as much as 41.7% of the national total; the actual utilization of foreign capital accounted for 36.9% of the national total; in 2017 there were 2,824 foreign-funded R&D institutions and 16,427 foreign experts; in 2017, the enterprises owned 34,000 invention patents authorized by foreign entities, a year-on-year increase of 23.5%; there were 60,000 trademarks registered overseas, a year-on-year increase of 12.9%.

II. Indicators of innovation capacity of hi-tech zones in 2017

The evaluation indicator system of the innovation capacity of hi-tech zones consists of 25 secondary indicators concerning five aspects of innovation resource cluster, innovation & entrepreneurship environment, innovation activity performance, international development of innovation and innovation-driven development. The report illustrates the innovation capacity level and development status of the national-hi-tech zones. The sub-index and secondary indicators manifest the innovation capacity building and innovation development performance from five perspectives and represent dynamic monitoring of the innovation development of the hi-tech zones as a whole and those in various localities.

1. The overall index of the innovation capacity of the zones is seeing concrete growth, with the index of innovation & entrepreneurship eco-system increasing in a faster pace. In 2017, the overall index was 233.8, 34.7 higher compared with 2016, which was an unprecedented growth; the five sub-indexes maintained the general upward momentum, with the index of innovation & entrepreneurship eco-system increasing by 85.2; in recent three years, the increase of the five sub-indexes experienced the transformation from disequilibrium to relative equilibrium.

2. The hi-tech zones in different localities are remarkably different: the zones in Beijing enjoy the greatest innovation capacity and those in the east are generally stronger and the west weaker. According to the statistics of the report, Beijing, Guangdong, Shanghai and Jiangsu were the leaders, the first echelon were all eastern regions and the fourth echelon were all western ones.

3. Among all provinces and localities, Anhui saw the fastest growth in the innovation capacity of the hi-tech zones. The latecomers saw dynamic growth. The imbalance between eastern and middle and western regions were resolved in a faster pace. According to the statistics of the report, Anhui, Hunan, Guizhou and Liaoning witnessed strong growth, the innovation capacity of the hi-tech zones in the middle region increased the fastest in 2017 and kept ranking No.1 in the growth rate for two consecutive years, and the growth rate of the zones in western regions increased from the 4th place in 2016 to the 2nd place in 2017.

4. The zones are featured by quicker clustering of innovation resources, faster growing of innovation players, optimized personnel structure and better realization of the value of talents. In 2017, all the five secondary indicators for innovation resource clustering increased, with the accreditation of the hi-tech enterprises increasing by 50.2% for the year; in 2017 the growth rate of highly educated employees (11.0%) and that of scientific personnel (10.5%) exceeding the average (5.6%); from 2011 to 2017, the index of the proportion of employees' remuneration in enterprises' added value kept increasing and reached 37.7% in 2017.

5. The incubators were built in a faster pace, the entrepreneurship and investment were further vitalized and the mass entrepreneurship and innovation were elevated. In 2017, among the 157 hi-tech zones, there were 2,151 incubators for tech-based enterprises, among which 544 were national-level ones, respectively a year-on-year increase of 22.2% and 18.4%; there were 640 accelerators for tech-based enterprises, up by 32.3% compared with the previous year. There were 2,545 makers' spaces, a year-on-year increase of 53.7%, among which 867 were put on record at MOST, a year-on-year increase of 55.6%.

6. There is still a gap between the zones and the Silicon Valley in terms of absorption of venture capital investment, which indicates the need for further improvement in the quality of overall innovation and entrepreneurship development. In

2017, the venture capital investment reached 14 billion dollars in the Silicon Valley, a year-on-year increase of 69%. In contrast, venture investment institutions invested a total of 37.4 billion yuan in enterprises in the zones, a year-on-year increase of 33.6%. The VC capital investment in the hi-tech zones was only 39.3% of that of the Silicon Valley and 22.1% of the Pan-Silicon Valley area.

（Source: MOST）