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**Three Strategic Plans of China Issued in the 4th Quarter of 2016**

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## Three Strategic Plans of China Issued in the 4th Quarter of 2016

Introduction: Following the printing and distribution of the Thirteenth Five-Year Plan for National Science, Technology and Innovation by the State Council in August 2016, the Central Committee of the Communist Party of China and the State Council successively released three strategic plans in October and December 2016, including the Outline of the Healthy China 2030 Plan, the Development Plan of China's Innovation Demonstration Zones for the Implementation of the 2030 Agenda for Sustainable Development, and the Thirteenth Five-Year Development Plan for National Strategic Emerging Industries. Related reports are as follows.

### Outline of the Healthy China 2030 Plan

On October 25, 2016, the Central Committee of the Communist Party of China and the State Council printed and distributed the Outline of the Healthy China 2030 Plan. The document sets the goal for China to join the ranks of high-income countries by 2030 in terms of main health indicators and build itself into a country of health commensurate with that of a modernized socialist country.

The specific targets of Healthy China 2030 include:

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Increase average life expectancy to 79 years from 76.34 at present; raise residents' health literacy level to 30% from 10% in 2015; lower the premature mortality rate of major chronic diseases by 30% from the 2015 level; and bring the overall health service industry size to RMB16 trillion.

The Outline sets out measures from 29 aspects, including the promotion of healthy lifestyles and the optimization of health service. One important task is to "push forward health science and technology innovation."

The Outline calls for efforts to establish a national system for medical innovation; greatly strengthen national clinical research center and collaborative innovation network building and further boost the building of laboratories, engineering centers and other research capacities; and, speed up the construction of biomedicine and big health industrial bases, nurture high and new tech enterprises in the health field, build a number of medical research and health industry innovation centers and promote collaboration between hospitals, research institutions and enterprises.

The Outline also calls for work to push forward the progress of medical science and technology, launch and implement health security and other major science and technology programs and projects, and carry forward major national science and technology special programs, national key R&D programs and special projects, and other science and technology programs. Key tasks are laid out for the innovation of drug development, the localized production of medical equipment and the modernization of traditional Chinese medicine so as to strengthen science and technology supporting capacities for the prevention and control of major diseases and the development of the health industry. China should strive to stand at the international forefront by 2030 in terms of research paper influence and total third party patent numbers and further increase the contributions of science and technology innovation to the growth of the medical industry and to the transformation of research results.

(Source: Science and Technology Daily, December 26, 2016)

## Building National Innovation Demonstration Zones to Implement 2030 Agenda for Sustainable Development

On December 13, 2016, the State Council printed and distributed the Development Plan of China's Innovation Demonstration Zones for the Implementation of the 2030 Agenda for Sustainable Development (hereinafter referred to as the "Plan"), which is a concrete measure taken by the Chinese government to push forward the implementation of the UN 2030 Agenda for Sustainable Development.

The Plan puts forward that innovation demonstration zones should be built in line with the policies to implement the 2030 Agenda for Sustainable Development, with implementation of the innovation-driven development strategy as the main line and the in-depth integration of science and innovation with social development as the goal so as to balance economic growth and development of public utilities.

The Plan stresses the need to follow the principles of innovation thinking, problem orientation, diversified participation, opening-up and sharing to build innovation demonstration zones under the national agenda for 2030 Agenda for Sustainable Development, form a number of reproducible and promotable real examples, play a demonstrative and promotional role for other regions in the country to achieve sustainable development and provide other countries with the China experience for implementing the 2030 Agenda for Sustainable Development.

The Plan specifies four major tasks for building innovation demonstration zones under the national agenda for sustainable development, which include: 1. formulating sustainable development plans with reference to the 2030 Agenda for Sustainable Development and in relation to specific local needs; 2. centering on bottlenecks that restrict sustainable development, strengthening technical support and forming mature and effective system solutions; 3. strengthening local capacities to

promote coordinated social and economic development and exploring new mechanisms for the integrated development of science and technology innovation and social utilities; 4. sharing experiences in serving sustainable development through science and innovation, playing a promotional role to other regions and providing the rest of the world with a China solution for sustainable development.

The Plan calls for efforts to make overall use of business investment, social capital and fiscal funds to support the construction of innovation demonstration zones. Provinces (autonomous regions and cities) with innovation demonstration zones are required to study and formulate special supportive policies based on their specific situations.

(Source: Xinhua News Agency,
December 13, 2016)

## Thirteenth Five-Year Development Plan for National Strategic Emerging Industries

On December 19, 2016, the State Council printed and distributed the Thirteenth Five-Year Development Plan for National Strategic Emerging Industries (hereinafter referred to as the "Plan"), laying out the development goals, key tasks and policy measures for strategic emerging industries in China for the Thirteenth Five-Year Plan Period.

The Plan sets the goal of bringing the added value of strategic emerging industries to 15% of China's GDP by 2020, forming the five new pillar industries of new-generation information technology, high-end manufacturing, biotechnology, green & low carbon and digital creativity, establishing new crossover, integrated points of growth in wider fields and creating more than one million new jobs on average each year. China should further optimize its industrial structure, improve the innovation capacity and competitiveness of its industries and form new high ground in global industrial development.

The Plan specified development tasks in eight major areas: 1. Developing IT industry and expanding new room of growth for the Internet economy; 2. developing high-end equipment and new material industries and leading the way for the development of Made in China; 3. developing bioindustry and nurturing new impetus for the development of the bioeconomy; 4. developing new energy vehicle, new energy, energy conservation and environmental protection industries and establishing new modes of sustainable development; 5. developing digital creativity industry and creating new consumption; 6. formulating plans for strategic industries and nurturing new advantages for future development; 7. promoting the clustering of strategic emerging industries; and 8. boosting international cooperation in strategic emerging industries.

The Plan puts forward policy support for the six areas of improving management practices, establishing industrial innovation systems, strengthening the protection and application of intellectual property rights, deepening the integration of military and civilian technologies, stepping up financial and taxation support, and strengthening talent training and incentives. It calls for all regions and all departments concerned to pay great attention to the development of strategic emerging industries, work hard to implement this Plan, and strengthen the connection between the Plan and various special plans and local plans.

(Source: Science and Technology Daily,
December 20, 2016)

## Top 10 China Science and Technology News in 2016

On December 27, 2016, Top 10 2016 Science and Technology News in China was revealed. Sponsored by Science and Technology Daily, the Top 10 news items were jointly selected by some members of the Chinese Academy of Sciences and the Chinese Academy of Engineering, senior science and technology reporters and netizens. The selected news items feature the most important scientific discoveries, technological breakthroughs, as well as public events in the science and technology field in the past year.

**1. Most Accurate Reactor Neutrino Spectrum Measured at Daya Bay**

Close to the nuclear power plant in Daya Bay, Shenzhen, particle physicists conducted in-depth research on neutrinos. According to a report released in February 2016, the Daya Bay neutrino experiment measured hitherto the most accurate reactor neutrino spectrum. It also found two discrepancies between this energy spectrum and previous theoretical predictions.

Scientists measured and analyzed data containing more than 300,000 neutrinos and found that the neutrinos achieved unprecedented accuracy-better than 1 percent-over most of the energy range. The two newly discovered discrepancies provide important measurement data for future reactor neutrino experiments.

**2. Plan for Implementing the National Strategy of Innovation-driven Development Released**

In May 2016, the Central Committee of the Communist Party of China and the State Council printed and distributed the Plan for Implementing the National Strategy of Innovation-driven Development (hereinafter referred to as the "Plan"). The Plan sets China's development goal for decades to come: It is a three-step goal for China to become an innovative country by 2020, join the ranks of leading innovative countries by 2030 and become a country strong on scientific and technological innovation by 2050.

It is believed that the Plan is a guideline for China to promote innovation in the new period, deliver the innovation-driven development strategy and speed up the pace to build an innovative country. The plan will have practical and historical significance to socio-economic progress and scientific and technological advances in the country.

**3. Chinese Scientists Lead Research to Finish Totally New Human Brain Mapping**

Following six years of efforts, scientists mainly composed of the research team led by Jiang Tianzi of the Brainnetome Center of the Institute of Automation of the Chinese Academy of Sciences successfully finished totally new mapping of the human brain: the Brainnetome Atlas. It is more refined than the brain atlas which German neuroscientist Dr. Korbinian Broadmann mapped more than 100 years ago. For the first time, the Brainnetome Atlas establishes a map of live brain connections at the macroscopic scale.

The new brain map completed by Chinese scientists includes 246 fine brain subregions and the multimodal connection pattern between them. It introduces the brand-new idea and method of refined brain region division and brain mapping based on brain structure and functional connection information and possesses objective and accurate boundary positioning.

**4. Tan Suo Yi Hao Completes Deep Sea Exploration at 10,000 Meters Underwater**

On August 12, 2016, the Tan Suo Yi Hao, the mother vessel of China's 4500-meter manned submersible and 10,000-meter submarine operations, completed her maiden voyage and returned home. The results of the voyage show that the 10,000m deep sea is no longer a forbidden area for China's ocean science and technology circles. The voyage marks another milestone in ocean science and technology following the successful sea trial by the Jiaolong submersible at a depth of 7,000 meters underwater.

From June 22 to August 12, the Tan Suo Yi Hao vessel made China's first comprehensive 10,000-meter deep sea scientific exploration of the Challenger Deep of the Mariana Trench. The voyage lasted 52 days, with 37 operating days, and executed a total of 84 operational tasks.

The voyage is China's first scientific exploration

attempt at 10,000 meters underwater. Its success has narrowed the gap between China and major developed countries in 10,000-meter deep sea exploration abilities, symbolizing that China's deep sea exploration has now entered the 10,000-meter underwater stage.

**5. China Launches Several Advanced Scientific Satellites**

Following the launch of a dark matter detection satellite in 2015, China launched a series of advanced scientific satellites in 2016, drawing much attention from the rest of the world.

The SJ-10 Satellite which was launched in April 2016 and has now been successfully recovered is China's first dedicated microgravity experimental satellite. It contains 19 scientific experiments, involving micro-gravity fluid physics, micro-gravity combustion, space materials science, space radiation effects, gravity biological effects, space biological technology and other fields.

In August 2016, Micius, the world's first quantum science experimental satellite, was launched into space. Its role is to distribute in space entangled photons to the ground station and complete the designed scientific experiments. Chinese scientists are now trying to establish a confidential quantum communication network from space to the ground through quantum satellites.

In December 2016, China launched its first carbon satellite into orbit. With an accuracy of 1-4ppm, the satellite is designed to monitor CO2 concentrations in China and the rest of the world.

**6. Aero Engine (Group) Corporation of China Inaugurated**

On October 28, 2016, Aero Engine (Group) Corporation of China (AECC) was inaugurated in Beijing. The Group is a state-owned controlling corporation jointly funded and established by the Chinese government, Aviation Industry Corporation of China and Commercial Aircraft Corporation of China, Ltd. AECC has a registered capital of RMB50 billion and a workforce of 96,000 workers, including six academicians of the Chinese Academy of Sciences and Chinese Academy of Engineering and six experts under the National Recruitment Program of Global Experts.

The newly-founded AECC will focus on the design, manufacturing and experiment of engines and the R&D of related material, and establish a complete industrial chain of aero power research, development and manufacturing to raise the overall level of aero engines in China, carry out innovations and meet China's demand for aero power.

**7. Shenzhou XI Docked with Tiangong-2**

On October 17, 2016, the Shenzhou XI manned spacecraft accurately entered its pre-determined orbit after a successful launch into space. After orbiting for three days, the two astronauts entered the Tiangong-2 space laboratory launched one month earlier and stayed in space for 30 days, completing several space science experiments and technological tests and setting a new record of space stay for Chinese astronauts. On November 18, the return capsule of the Shenzhou XI landed in central Inner Mongolia, drawing the docking mission to a successful close.

It is understood that the Tiangong-2 lab is 10.4m in length and 3.35m in diameter and is a high-level space laboratory independently developed by China. It consists of an exercise area and a medical experiment room.

**8. FAST Telescope Put into Operation**

On September 25, 2016, a 500-m Aperture Spherical Radio Telescope (FAST) was completed in Pingtang County, Guizhou Province of China.

Situated in a huge area surrounded by mountains is a silver-gray concave mirror comprised of 4,450 triangular reflector plates of different sizes. It is as large as 30 football pitches and takes people about 40 minutes to walk around its perimeter. It is understood that FAST can receive electromagnetic signals from 13.7 billion light-years away, which is a distance close to the edge of the universe.

**9. Heavy Lift Rocket Long March 5 Completes Maiden Flight**

On November 3, 2016, Long March 5, China's first heavy lift vehicle, made its successful maiden flight, marking China's joining of the international advanced ranks in terms of space carrying capacity.

According to reports, the Long March 5 rocket has a diameter of 5m and is bundled with four 3.35m diameter boosters. With a total length of approximately 57m and a takeoff weight of around 870 tons, the Long March 5 has a takeoff thrust of over 1,000 tons.

The large thrust rocket will provide strong support for China's space program, which includes the tasks of landing the Chang'e 5 on the Moon for sample collection

and recovering it in 2017 and launching the core capsule of the Chinese space station in 2018 and a Mars explorer in 2020.

**10. "Sunway TaihuLight" Wins World Supercomputing Championship Twice**

On November 14, 2016, the world's TOP500 Supercomputers List was released. China's Sunway TaihuLight topped the list again, with a fairly big computing speed lead. The TOP500 List is released every six months. On the list unveiled in June 2016, Sunway TaihuLight, which was developed by China's National Research Center of Parallel Computer Engineering & Technology, unexpectedly took the title with a floating point computing speed of 93 petaflops/s.

Sunway TaihuLight is the world's fastest supercomputer in terms of both peak computing speed and continuous computing speed. It consists of 40 computing cabinets and 8 network cabinets and occupies a 1,000m2 room at the National Supercomputing Center in Wuxi. With 1,024 processors in one cabinet, the entire Sunway TaihuLight has a total of 40,960 processors.

(Source: Science and Technology Daily, December 28, 2016)