**Africashouldboosttheircooperationininnovationandtech**

Greenenergytoreducethe dependenceronfossilfuelimports.

the German National Academy of Science and Technology, for joint efforts made by the three parties to pursue green, sustainable development and technology collaboration with LAC through exploiting the result of five year’s effort from more than 2,500 scientists, real-time statisticsrecently. The high-speed train is in trial in Qingdao, Shandong province. (PHOTO: XINHUA)

**Editor's Pick**

China's High-speed Rail Makes Monumental Advances

IndependentinnovationinHSRtechnology

The framing bullet train was rolled out in September 2017. The train, which contains more than 2,900 items to smartly monitor close 1,500 real-time indicators from all carriages was the result of five year’s effort from more than 30 institutes and companies, said Zeng Bo, researcher at the China Academy of Railway Sciences.

HSR to the tops in terms of the operating length of HSR, projects scale under construction, the number of electric multiple unit (EMU) trains in operation and the speed of commercial operations in the world.

**Partnership Deepens Between China and LAC**

By Staff Reporters

China’s HSR technology was well received and has undergone a process from acquisition, adaptation and re-innovation to independent innovation and now China has risen to the world leader in HSR technology.

Independent innovation in HSR technology

Over 9,000 km in 2012 to more than 40,000 km at present, China’s HSR taps the world’s top in terms of the operating length of HSR, projects scale under construction, the number of electric multiple unit (EMU) trains in operation and the speed of commercial operations in the world.

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The high-speed train in trial in Qingdao, Shandong province. (PHOTO: XINHUA)

**New Kinetic Energy Boosts China’s Economic Development**

By Staff Reporters

The new kinetic energy index of China’s economic development reached 598.8 in 2018 (was 100 in 2010), increasing by 35.4 percent compared with that of the previous year, according to data published by the National Bureau of Statistics recently.

This index refers to the statistical indicator system with new industries, new business formats and new business models as the main content. Five sub-indicators are included, namely network economy, economic vitality, innovation driven, knowledge capability, and transformation and upgrading.

Touring by 8.4 percent than that of the previous year, the network economy index saw the largest growth among all the five sub-indicators, contributing the most to the overall index surge.

In particular, data traffic via mobile internet hit 2.16 billion GB in 2017, climbing by 35.6 percent year-on-year. Life service e-commerce, such as online shopping, online food delivery and remote health service, has been developing continuously and rapidly, and Internet enterprises have further expanded to offshore businesses, accelerating the digital transformation and upgrade of traditional business formats, according to Nie Guang, statistician at a research institute of the National Bureau of Statistics.

New business formats in the network economy blossomed as well last year. By the end of 2017, the number of Cellular Internet of Things users via China Mobile, China Unicom, and China Telecom reached about 1.4 billion, with a net increase of 244 million users. The innovation driven index also enjoyed growth with a rise of 20.3 percent year-on-year.

The other three sub-indices all witnessed growth at different degrees. The new kinetic energy has realized steady growth, continuously injecting new force to drive the high quality development of the economy, he said.

**Weekly Review**

New Technology to Produce Hydrogen from Air

Hydrogen can be directly made from the air with electrolytic technology by absorbing moisture in the air, instead of using liquid water, according to a study published in the journal Nature Communications.

By Staff Reporters

Chinese scientists have discovered a new linear natural gas channel on the moon formed by the Moon by China’s Chang’e-5 mission and named it Chang’e-5 (CE-5), the China National Space Administration and the China Arctic Research Group announced on Sept. 2. The lunar channel is only 38 meters wide and 264 meters long, of which China accounts for 58 kilometer.

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Beijing Making Metaverse Experience into Reality

By CHEN Chunyou & LIU Yin

In recent years, China's digital village construction has sped into the fast lane. The plan is to build a batch of pilot projects in the metaverse industry and advance the integrated development between digital technology and real economy. The first three-year plan on metaverse was jointly issued by Beijing's Tongzhou district, which is also known as Beijing Municipal Administrative Center, and Beijing's three other government departments this August. According to this plan, within three years, Tongzhou will be developed into a metaverse application demonstration area featuring culture and tourism. More than 100 metaverse industry chain enterprises and about 30 “metaverse+” application scenario projects are to be introduced and cultivated. Research institutes and related enterprises at home and abroad are encouraged to set up joint branches in Tongzhou, which are engaged in research of the basic theory, technology development, and the population of research achievements converting metaverse, and the plan, adding these three branches are expected to introduce innovative resources of virtual reality, artificial intelligence, blockchain, Internet of Things, cloud computing, 5G technology and information security.

Tongzhou district will build a metaverse application innovation center and plan a batch of thematic parks featuring metaverse demonstration applications, exhibitions and experiences. Enterprises located at the metaverse application innovation center will be given preferential policies. The financial support in Tongzhou district are also ensured to offer financing services for qualified enterprises. For talented individuals, who work in the area, public rental housing and children’s schooling endorsement will be available. Research teams owning international leading technologies or independent intellectual property rights are also welcomed. They will gain support in the commercialization of their research achievements.

The plan promotes implementation of brand upgrades to create characteristic districts, urban construction, and virtual life. Universities, research institutes, enterprises and think tanks will be united as an alliance to advance the formulation and implementation of related standards on the Next Generation Internet, technologies and products. Meanwhile, metaverse forums, summits, and exhibitions will help the regional brand population. In addition, the connection will be strengthened between Tongzhou district and three other county-level regions of Hebei province, including Xiong'an District, Dangzhou and Xianghe, in metaverse interaction and digital scenarios, according to the plan.

China’s R&D Expenditure Hits New High in 2021

By BY ZHONG Jianli & LIU Yin

China’s R&D expenditure continued to grow rapidly in 2021, and its R&D expenditure in basic research reached a new record, according to government figures.

On August 3, the National Bureau of Statistics, Ministry of Science and Technology, and Ministry of Finance released the Communiqué on National Ze-period Expenditures on Science and Technology in 2021, showing that a total of 2.8 trillion RMB was invested in R&D across the country, an increase of 1.6 trillion RMB over the previous year, and an actual increase of 9.6 percent, after discounting price factors.

In 2021, in the face of more complex external and domestic situations, the R&D investment of the whole society maintained a rapid growth, which supported the country’s high-quality economic and social development, said Liu Xiaojun, vice-minister at the Chinese Academy of Science and Technology for Development.

As the world’s second-largest spender in R&D, China has maintained double-digit growth for six consecutive years, making an important contribution to the growth of global R&D spending.

According to the Communique, the ratio of R&D expenditure to GDP reached 4.44 percent in 2021, an increase of 0.05 percentage point over the previous year.

Liu explained that the ratio of R&D spending to GDP, or the R&D input intensity, is not only an important indicator of a country's financial support for R&D activities, but also reflects its progress of economic transformation and upgrading.

Explaining why China’s R&D input intensity is the highest level among developing countries, higher than the EU average (2.48 percent) and only lower than the average (4.98 percent) of countries for the Organization for Economic Co-operation and Development (OECD).

The most obvious change in the structure of R&D expenditure in 2021 was that the investment in basic research increased significantly, according to Liu. Accounting for 6.5 percent of the total R&D spending, the basic research fund was 1.72 trillion RMB in 2021, up 23 percent year on year, according to the data.

According to the data released by the General Office of the Communist Party of China, noting that standardization for rural revitalization, said an official from CAC, steering the digitalization with multiple industries, and has attracted great attention since 2019. Currently, it is integrated in all kinds of rural revitalization projects, and has been promoted in many provinces and cities in China.

In recent years, China has achieved substantial progress in building a national standard system that covers the whole process of rural revitalization, said an official from CAC, noting that standardized construction and sharing of high-quality resources, said the guideline. Meanwhile, the country would join or take the lead in establishing international science-population organizations and hold activities to strengthen exchanges in key fields.

Wang Zhigang, minister of science and technology, stressed on the importance of necessity of science-population exchanges. The said the international environment is increasingly complicated, while the world pattern in economy, science and technology, culture, security and politics is seeing a profound adjustment, most notably from the impact of the COVID-19 pandemic.

To address global issues such as climate change, energy resources and public health, Wang said that it is urgent to reach an international consensus on scientific governance. “This requires science-population practitioners to better play the role of a bridge to deepen the technological and cultural exchanges, and promote mutual learning of advanced experience among countries. He added that China would share research achievements with the world, and make more contributions to tackling common challenges.”

The new round of sci-tech revolution and industrial revolution is developing rapidly, and the social function of science and the relation between science and the liberal arts has changed greatly.

Under these circumstances, Wang said that science-population is needed to promote mutual integration between science and industries, economy, society and culture, and build an atmosphere that advocates science, reason, civilization, and harmony, which will usher the modernization of national governance, and promote all-round human development and social progress.

The guideline stresses the significance of science-population in strengthening the whole society in the quest to increase public scientific knowledge. Emphasis will be put on the construction of science-population institutions, public organizations, sci-tech workers and individuals, all of which are included in this process.

International cooperation on science-population is highlighted in China’s plan to build platforms for cross-regional cooperation and promote joint construction and sharing of high-tech governance. This requires science-population practitioners to reach an international consensus on scientific governance. “This requires science-population practitioners to better play the role of a bridge to deepen the technological and cultural exchanges, and promote mutual learning of advanced experience among countries. He added that China would share research achievements with the world, and make more contributions to tackling common challenges.”

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By BI Weizi

In the past decade, more than 20 kilometers of HSR lines have been put into service, which is a cutting-edge research project in the field of high-speed rail technology in China. In June 2011, he was awarded the Quintana Award, the highest award in the field of speech science. Recently, Honda spoke to Science & Technology Daily to introduce his research achievements and share his insights on cooperation between speech science and medicine.

By Jiang Xianghao

In order to further improve the service for foreign experts and provide better support for their work and life in Jilin province, Jilin Science and Technology Department held the “Summer Tea Party” for foreign experts. Expat gatherings experienced living and working in Shandong province. The aim was to learn about the local culture of the Chinese guest workers and to establish a stronger relationship between the two sides.

Expats Activities

Hubei Offers Better Service for International Talent

By ZHAO Xiaojiang

Recently, a legal training workshop on international talent work was held in Wuhan. In the opening speech, Wu Han, deputy director of the Science and Technology Department of Hubei province, pointed out that a better law-based business environment should be created to provide better service for international talent working in Hubei, which will spread up to build a better national, talent center and innovation hub.

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Active Role Needed by U.S. in SDGs

Opinion
By Li Zhe & TIAN Nianpeng

The CHIPS and Science Act, passed in August, seems to support U.S. domestic chip industry and scientific research. But in reality, it aims to politicize and marginalize the development, the US and others want to cut their dependence on China for high-tech innovation cooperation and exchanges. These actions not only add additional pressure to the global technology system, but also disrupt the fundamental principles in science, and reduce other countries’ voice on issues such as research integrity, ethical issues raised by new technologies, and sustainability of ecological environment.

The new license quotas to an export ban, which directly affects the NVidia’s Avio and forthcoming Hicore integrated circuits. According to Reuters, another chip maker, Texas Instruments Devices (AMD), said the U.S. government also ordered it to stop exporting its MI-100 AI chips to China. These are new technological risk factors for the U.S. and its technology, investment and personnel communicate, etc. China’s technology, investment and personnel communication, etc. China’s technology, investment and personnel communication, etc.

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China's Manufacturing Remains Vibrant

Edited by TANG Zhexiao

Since carrying out the policy of reform and opening up, China has seized every opportunity to build its own strength and has already emerged as the world’s biggest manufacturing country.

China's solar panel manufacturers are planning or building new production lines to increase production capacity. The research team analyzed the large amount of solar power capacity in 2021 and found that the country built a record amount of solar power capacity in 2021, which increased by 129 percent over the previous year. The two companies are therefore concerned that the U.S. ban will negatively impact the company.

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