

Big Plan for Yellow River Basin Ecological Environment Protection

By LI Linxu

A new plan focusing on Yellow River Basin ecological environment protection has been released by four government bodies, including the Ministry of Ecology and Environment (MEE).

The plan has drawn up a roadmap and timetable for the current and next stage of ecological environment protection in the basin, according to Wang Jinan, academician of the Chinese Academy of Engineering.

The ecological environment quality is expected to be markedly improved by 2030, according to the plan, with carbon peaking set to be achieved in the basin before then.

By 2035, the carbon emissions in the basin will drop further after peaking, and major strategic results will be made in its ecological protection and high-quality development.

The plan is a follow-up policy to the *Outline of Ecological Protection and High Quality Development Plan for the Yellow River Basin* released in 2020.

Yellow River Basin plays a crucial role in China's economic and social development as well as ecological safety. It possesses a trove of important ecological function areas, main agricultural production areas, and major bases of energy, raw materials and basic industries, said an official from MEE, noting that the basin has seen great improvement in its ecological environment after continuous conservation efforts.

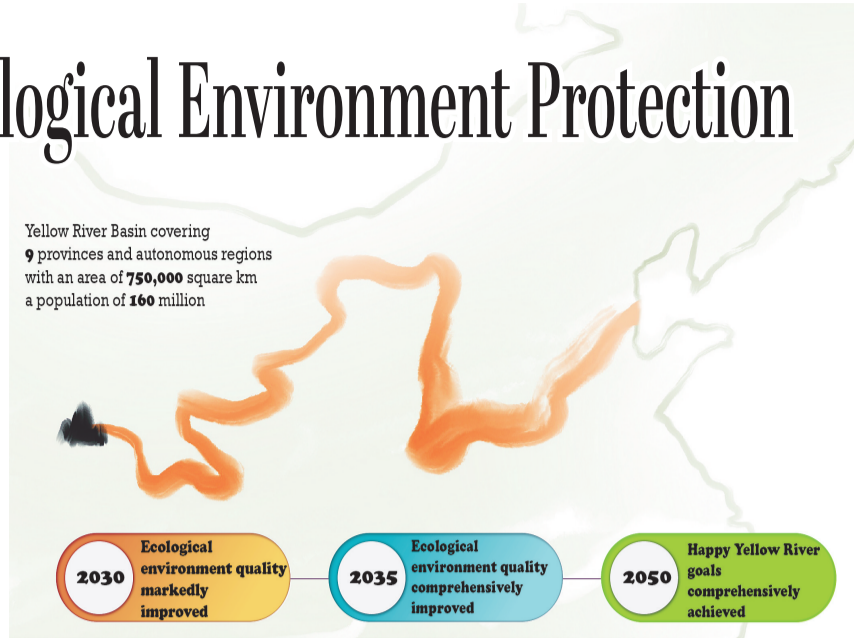
In 2019, the ecological protection and high-quality development of Yellow River Basin was elevated to a major national strategy.

Data shows about 84.7 percent of the surface water in the basin was graded Class I to III (good quality) in 2020, 28.1 percentage points higher than in 2015.

Meanwhile, its soil and water conservation rate has increased from 41.5 percent in 1990 to 66.9 percent in 2020.

The plan is guided by the principles of ecology first, green development, and systematic governance in light of local conditions.

Meanwhile, it prioritizes water sav-



Goals set for Yellow River Basin protection. (Designed by Li Linxu, PHOTO: VCG)

ing, and emphasizes the coordination of water resources, water environment and water ecology.

A series of key tasks are put forward, including the construction of green factories, green industrial parks, green industrial chains, and green agriculture.

It will accelerate the high-quality construction of Three-River-Source Na-

tional Park, and advance the establishment of national parks in Yellow River Mouth, Qinling Mountains and Nuogai.

Regional cooperation is also highlighted in the plan, calling for authorities in the nine provinces and autonomous regions along the Yellow River to promote green and low-carbon development, and come up with feasible timetables for carbon peaking.

Sand Washing Operation at Xiaolangdi Reservoir on Yellow River

Tourists look on as sediment-laden water is gushing out from the Xiaolangdi Reservoir to the Yellow River during a sand-washing operation in Henan province, July 4.

The water and sediment regulating operation of Xiaolangdi Reservoir is conducted every year to clear out the mud and sand accumulated at the dam.

(PHOTO: XINHUA)



Renewable Power Reshaping China's Energy Map

By LI Linxu

As part of its green and low-carbon transition, China is forging ahead in renewable energy development.

The country's installed capacity of renewable-energy power generation had surpassed 1.1 billion kW by the end of May, up 15.1 percent year-on-year, according to the data from the National Energy Administration (NEA).

Of the total, the installed capacity of conventional hydro power genera-

tion reached 360 million kW, while that of pumped storage power stood at 40 million kW.

The installed capacity of wind, solar, biomass and other renewable energy power generation has exceeded 700 million kW, said NEA.

Meanwhile, its renewable electricity generation also registered double-digit growth in the first five months this year.

In the January-May period, renewable energy sources generated 1.06 tril-

lion kWh, an increase of 16.8 percent year-on-year, accounting for 31.5 percent of its total electricity consumption.

China has recently rolled out a series of policies and measures to promote the development of renewable energies.

By the end of 2025, about a third of power supply to the national grid will come from renewable sources, according to the 14th Five-Year Plan for Renewable Energy Development recently

released by nine government bodies, including NEA and the National Development and Reform Commission (NDRC).

The goals of carbon peaking and carbon neutrality have set new tasks and requirements for renewable energy development, said an official from NDRC, adding that large-scale, high-proportion, market-driven and high-quality development will be the new features of the country's renewable energy development during the 2021-2025 period.

Local Development

Open Innovation Patterns Envisioned for Guizhou

By CHEN Chunyou

Guizhou province, located in southwest China, has seen rapid development during the last decade. In 2021, Guizhou's regional innovation capacity ranked 18th, up four places from 2015.

This June, an action plan on advancing Guizhou's high-quality development via sci-tech support was released by the Ministry of Science and Technology and Guizhou provincial government. This is concrete implementation of the guideline titled *Supporting Guizhou to Break New Ground in the New Era*, issued by the State Council in late 2021.

According to the plan, open innovation patterns with innovative cities and counties, and high-tech industrial zones as the engine, will be established in Guizhou by 2025.

Leading experts in such industries as the digital economy, high-level manufacturing, and mountain farming are welcomed, says the plan. To create a good innovation ecosystem, sci-tech reform is highlighted in this plan, which proposed granting researchers the ownership of research achievements or the long-term right to use, and exploring market-oriented allocation of technology factors.

Guizhou is home to the Five-hundred-meter Aperture Spherical radio Telescope (FAST), which is the largest and most sensitive radio telescope in the world, and has huge potential for verifying and exploring mysteries of the uni-

verse. Promoting the scientific output of FAST was listed as a key task in this plan, proposing to increase support from national science and technology plans for FAST's core scientific goals, and improve its data resource integration capacity.

China would support Guizhou in building national major innovation platforms in development and utilization of predominant mineral resources, digital technology, aerospace science and technology, energy conservation and carbon reduction, says the plan, adding that Guizhou is also supported in applying for the construction of a national technological innovation center and building a green innovation base for aluminum-based new materials.

Xiong Qing, an official from the Guizhou Provincial Department of Science and Technology, said sci-tech support for high-quality development of the province not only needs local innovation resources, but also needs to create an open cross-regional innovation system.

For example, new collaboration patterns like "R&D in east China and manufacturing in Guizhou" and "producing research achievements in east China and commercialization in Guizhou" will deepen Guizhou's sci-tech cooperation with eastern regions, and promote the flow of talented individuals, enterprises, research projects and research institutes to the province, said Xiong.

Hybrid Transmission National Powerline Connects East to West

By ZHONG Jianli

As an important part of China's west-to-east power transmission program, the Baihetan-Jiangsu ± 800 kV ultra-high-voltage (UHV) direct current (DC) power transmission line was put into operation in early July, with the ability to deliver more than 30 billion kWh clean electricity annually.

Stretching from Baihetan in southwest China's Sichuan province to east China's Jiangsu province, the project has a rated transmission capacity of eight million kilowatts and a line length of 2,088 kilometers.

For the first time, it applied hybrid cascading technology in the world's DC transmission field, that is, conventional DC converters connected in series with flexible DC converters.

This technology combines the advantages of conventional DC and flexible DC, which can effectively improve the safety, stability and flexibility of the power grid.

New equipment has been developed for the project, including the controllable self-recovery energy dissipation devices and amplitude-phase correctors.

With these new devices, the power receiving capacity of the grid has been greatly improved.

By transmitting clean hydro electricity, the project will reduce coal usage by 14 million tons, and cut emissions by 25 million tons of carbon dioxide, 250,000 tons of sulfur dioxide, and 220,000 tons of nitrogen oxides each year. It helps further optimize the energy supply structure, and ease the pressure on the prevention and control of air pollution.

As the UHV power grid has large investment and high industrial added value, the Baihetan-Jiangsu project effectively drives the development of upstream and downstream industries, including power supply, electrical equipment, energy equipment, and raw materials, and promotes transformation and upgrading of related industries.

With a total investment of more than 30 billion RMB, the project has increased the output value of the power transmission & transformation equipment manufacturing industry by about 18 billion RMB, led to the investment of about 100 billion RMB in other related industries, and created more than 20,000 jobs.

Decade of Sci-tech Cooperation Promotes Development Between East & West China

From page 1

In order to solve the problem of unbalanced and insufficient development, the country has also proposed plans for pairing assistance of science and technology. This includes cooperation between Lanbai STI Reform Pilot Zone in Gansu and Zhangjiang National Innovation Demonstration Zone in Shanghai.

Pooling resources

Through science and technology cooperation between the east and the west, various resources are flowing to the west at an accelerated pace. Breakthroughs made in a number of key and core technologies, and the commercialization and application of new technologies, are being promoted.

With east China's Shandong province as the coordinator, a mechanism

was formed to promote cooperation among provinces and autonomous regions along the Yellow River basin. During the 13th Five-Year Plan period (2016-2020), provincial governments invested 230 million RMB to implement 132 cooperation projects, built 11 sci-tech innovation platforms, and put 186 technologies into production.

In Inner Mongolia, the number of industrial enterprises with R&D activities increased by 78 percent, the R&D investment of enterprises was up 47.1 percent, and the technology trading volume increased by 77 percent. This is all since the plan was implemented in 2019 to use science, technology, and talent for its development and prosperity.

Over the past five years, Ningxia has made major efforts to promote sci-

entific and technological cooperation with the eastern region, and its investment in R&D increased from 0.99 percent in 2015 to 1.54 percent in 2021, ranking among the highest in the country.

Win-win development

Cooperation between the eastern and western regions in science and technology is no longer one-way assistance. As all regions have their unique advantages, so strengthening cooperation will help those regions develop in a complementary way and enhance the integration of industrial chain.

According to official statistics, since the 14th Five-Year Plan period, more than 1,400 projects of sci-tech cooperation have been completed in the fields of R&D, platform establishment

and personnel exchanges throughout these regions.

Mega energy transmission projects including a west-to-east power transmission project and west-to-east gas transmission project, have improved infrastructure in the western region, promoted local eco-socio development, and at the same time met the rising demand for energy in the eastern region, while facilitating the low-carbon transformation of the country's energy consumption structure.

In recent years, while introducing its advanced technology, specialists and ideas, Zhejiang's enterprises have also found new development space in Ningxia, said Xi Lingping, director of science and technology cooperation department of Zhejiang province.



Workers set up wires for the transmission line in Kunshan city, east China's Jiangsu province. (PHOTO: VCG)