COP15: Committed to Combating Desertification

Voice of the World

Edited by QI Liming

The 15th Conference of Parties (COP15) of United Nations Convention to Combat Desertification (UNCCD) was held in Abidjan, Côte d'Ivoire this May, agreeing to prioritize a global commitment to drought preparedness and resilience.

UNCCD's COP15 is the first Conference of the Parties of three Rio Conventions taking place in 2022, ahead of the UN Framework Convention on Climate Change COP27 and the UN Convention on Biological Diversity COP15.

Future meetings of the Conference of the Parties to the UNCCD and its subsidiary bodies will be held in Saudi Arabia (COP16 in 2024), Mongolia (COP17 in 2026), and Uzbekistan (Committee for the Review of the Implementation of the Convention in 2023).

People in Gansu province work together to combat desertification in the Tengger Desert. (PHOTO: VCG)

Drought an urgent issue for humanity

Humanity is "at a crossroads." When it comes to managing drought and accelerating mitigation, it must be done "urgently, using every tool we can, " said the report *Drought in Numbers, 2022*, issued by UNCCD.

The report, an authoritative compendium of drought-related information and data, helps inform negotiations of one of several decisions by UNCCD's 196 member states.

"The facts and figures of this publication all point in the same direction: an upward trajectory in the duration of droughts and the severity of impacts, not only affecting human societies but also the ecological systems upon which the survival of all life depends, including that of our own species," said Ibrahim Thiaw, executive secretary of UNCCD.

New commitments made among delegates

Speaking at the closing ceremony of UNCCD COP15, Patrick Achi, Prime Minister of Côte d'Ivoire, said: "Each generation faces this thorny question of how to meet the production needs of our societies [...] without destroying our forests and lands and thus condemning the future of those on whose behalf we endeavor."

Highlights among the new commitments:

1) Accelerate the restoration of one billion hectares of degraded land by 2030, through improving data gathering and monitoring to track progress against the achievement of land restoration commitments, and establishing a new partnership model for large-scale integrated landscape investment programs;

2) Boost drought resilience by identifying the expansion of drylands, improving national policies and early warning, monitoring and assessment; learning and sharing knowledge; building partnerships and coordinating action; and mobilizing drought finance;

3) Establish an Intergovernmental Working Group on Drought for 2022-2024 to look into possible options, including global policy instruments and regional policy frameworks, to support a shift from reactive to proactive drought management;

4) Address forced migration and displacement driven by desertification and land degradation by creating social and economic opportunities that increase rural resilience and livelihood stability, and by mobilizing resources, including from the diaspora, for land restoration projects.

Carry out concrete actions with sufficient funding

German media outlet DW described the COP15 conference as a meeting to address issues of land degradation, advancing deserts and deforestation. Experts and activists hope that this will not be just another high-level conference with no concrete results.

The Chadian environmentalist and Indigenous rights advocate Hindou Oumarou Ibrahim, said that she has seen progress in the promise of involving local communities in all projects implemented. "This is a positive aspect," she said, adding that, "We will see in two years, before the next COP, what will happen and if the promises will have concrete implementation."

Funding the fight against desertification remains a problem. "It would take more than 30 billion USD to achieve the objectives of UN Convention to Combat Desertification, if we want to avoid the impacts of inaction that could cost even more," said the Chadian environmentalist.

And according to UNCCD's senior coordinator for partnerships, Camilla Nordheim-Larsen, the 30 billion USD investment estimated by her convention could generate 400 million new jobs.

Opinion

Agri-tech Props up Sustainable Agriculture

By HU Shuwen

Despite the advent of global changes unseen in a century, couple with the COVID-19 pandemic's impact on agriculture, China has no concerns over its food supply.

National Bureau of Statistics said on July 14 that China's summer crops yield reached 147.39 million tons, an increase of 1.434 million tons over the same period last year.

According to this year's Government Work Report, China will boost agricultural production and promote all- around rural revitalization. The No.1 central document also gives top priority to agriculture, in order to ensure the stability and increase of agricultural production, as well as increasing farmers' incomes.

In addition, to reach these goals, agricultural technology has been contributing in several aspects:

· Conduct seed projects and breed new varieties with high yield and high quality

· Restore saline alkali land (salt-affected land) scientifically

· Increase soil nutrients via rational crop rotation

· Strengthen farmland conservancy facilities

· Promote green and low-carbon agriculture

The area of salt-affected land in China is about 500 million mu (about 33.33 million hectares), of which about two fifths have the potential to be developed into arable land.

Using agricultural technology to achieve comprehensive utilization of soil-affected land will transform 114 million mu of low- and medium-yield farmland into high-yield farmland and more than 100 million mu of high-quality grassland, assisting rural revitalization and ensuring national grain output.

With the innovative ecological technique developed by our research team, the soil desalination efficiency can be increased by more than ten times. Compared with traditional technologies, the use of fresh water can be reduced by more than 90 percent, through using 300 cubic meters per mu. The grain production can be increased by 3.6 times, achieving soil restoration and crop yield in the same year.

Through reshaping the soil structure and improving fertility, this method will greatly improve sandy land, restore vegetation, and boost ecological planting according to local conditions to achieve rural areas' sustainable development.

Taking east China's Shandong province as an example, the annual gross profit of honeysuckle (a Chinese herbal medicine) planting in the restored salt-affected soil will reach about 7,500 RMB per mu.

Salt-affected land management is a worldwide problem that has attracted much attention. According to UN statistics, there are more than 12 billion mu (about 80 million hectares) salt-affected soils around the world, with 1.5 billion people living with soil too salty to be fertile.

With the sharpening contradiction between the supply and demand of global soil resources, agriculturally developed countries such as Israel, Netherlands, the U.S., and Australia are facing the problem of soil salinity. Most notably in arid and semi-arid countries and regions along the Belt and Road Initiative (BRI),salt-affected land has become a major bottleneck restricting the development of local agriculture.

Worldwide cooperation is required to deal with this global challenge for sustainable development, as well as to halt soil salinization and boost soil productivity. Promoting global agricultural cooperation and exchanges in the future will not only benefit broadening the research ideas of salt-affected land management, but also building of a green BRI.

The author is a professor at the College of Resources and Environmental Sciences, China Agricultural University.

Hi! Tech

Jets Fly on Waste Cooking Oil

By TANG Zhexiao

China's oil producer Sinopec recently announced the country's first successful trial production of bio-aviation kerosene.

Aviation kerosene is the fuel used by airplanes and helicopters equipped with turbine engines, such as pure jets, turboprops, or turbofans.

A ground staff refueling a plane at Nantong Xingdong International Airport, southeast China's Jiangsu province. (PHOTO: VCG)

As the aviation industry moves into the renewable fuel era, using available alternatives including bio-aviation fuel to replace conventional aviation fuels has become a new trend.

Bio-aviation fuel is produced from renewable resources such as waste cooking oil and animal and plant fats.

Because the oil contains a large number of fatty acid compounds, sulfur, chlorine, metal elements and other impurities, which are difficult to remove, Sinopec developed a special catalyst to optimize the processes of mixing, catalysis and heating.

Compared with traditional petroleum-based aviation fuel, it can reduce carbon dioxide emissions up to 50 percent throughout an airplane's entire service cycle.

A plant with a processing capacity of bio-aviation fuel around 100,000 tons per year, can make use of all the recycled oil of a city with 10 million population annually and reduce carbon dioxide emissions by about 80, 000 tons per year, which is equivalent to stop driving 50,000 economic cars for one year.

Interventional BCI Surgery on Track

By QI Liming

China's first interventional brain-computer interface (BCI) technology, led by a research team from Nankai University, has successfully completed animal trials in Beijing.

The BCI can be connected to a brain computer through a minimally invasive procedure similar to heart bypass, and the whole implanted procedure can be completed in two hours.

Core technologies, such as interventional electroencephalogram (EEG) electrodes and intravascular EEG acquisition, have made significant breakthroughs. The development of stent, catheter and other neural interventional devices has been completed, which solved the drawbacks of irreversible damage to the brain caused by traditional invasive BCI.

Interventional BCI is a new type of BCI. The research team is inspired by the neural interventional technology for stroke treatment, implanting EEG sensors into brain regions, such as motor cortex and visual cortex through veins. Thus, when the neural stent dilates, the electrodes are squeezed on the blood vessel wall close to the brain, so as to obtain signals from the corresponding brain regions. The biggest advantage of this technique is that no cranial drilling or craniotomy is required to obtain EEG signals.

Interventional BCI experiments can improve the functional independence of patients with severe paralysis caused by brain, spinal cord, peripheral nerve or muscle dysfunction, which is of great significance in the treatment of epilepsy, sleep disorders, Parkinson's disease and other diseases, enjoying broad application prospects in the future.

Interventional robot-assisted experiments. (PHOTO: SCREENSHOT)

China Optics Valley: A Model of Industry-University-Government Cooperation

From page 1

Enterprises playing their role

"70 percent of parts in a smart phone need to be processed by laser. The highest precision of laser processing now reaches one hundredth of a single human hair, and we have offered nearly 20,000 sets of equipment for premium cell phone brands all over the world," said Ma Xinqiang, chairman of HGTECH, the first laser-based hi-tech company to go public in China.

The company was initially a factory affiliated to HUST before it grew into a national high-tech enterprise, and it is a prime example of the collaborative innovation of bringing together enterprises, academia, and research institutes.

With coordinated innovation efforts, a series of key technology breakthroughs were achieved by HGTECH, including fiber laser, ultrafast laser and semiconductor laser diode chips. In 2008, the company delivered its first laser welding equipment for pressure vessels, the first of its kind made by China.

The "start-ups" that emerged when HGTECH was established have also played their part in making the Optics Valley more innovative. Temperature measuring facilities using Infrared imaging were installed in hospitals, train stations and airports in many parts of China. One of the facility suppliers, Guide Infrared, owned world class technologies in terms of cooled infrared detectors.

Policy support

The rise of Optics Valley cannot be realized without support from government policies.

In March, Optics Valley released ten policies specific to supporting the development of its laser industry cluster, especially for enterprises that research and produce raw materials, key parts, control systems and laser equipment.

Optics Valley also highly values talent. Last year, Optics Valley issued the 3.0 version of policy regarding talented personnel. The policy was designed to follow the personal development of talent in several scenarios, offering corresponding services when talented personnel study and do research in university, when they try to find accommodation during the early stage of their career, and when they need to further develop their career.

High-level talent will get funds for research and projects, rent subsidies and education options for their children. Overseas personnel can enjoy services to make their lives in Optics Valley more convenient.

Optics Valley is a miniature of national high-tech development zones all over China, and a vivid example of the success achieved by the coordinated innovation of bringing enterprises, academia, and research institutes together.