Green Solution Augers Well on Tackling Climate Change

Voice of the World

Edited by TANG Zhexiao

Sheep flock are feeding under photovoltaic panels in Kangbao county, Zhangjiakou city of Hebei province. Up to July, 2023, the installed capacity of green energy in Zhangjiakou has accounted about 80 percent of the total installed power capacity. (PHOTO: XINHUA)

Many countries located in the northern hemisphere have been experiencing heatwaves this summer. And with the UN confirmed the return of El Nino, Earth is setting record global temperatures at a record pace.

"If we persist in delaying key measures that are needed, I think we are moving into a catastrophic situation, as the last two records in temperature demonstrates," Secretary-General Antonio Guterres told *The Guardian*, referring to the world temperature records broken on July 3.

As sea surface temperatures reaching "unprecedented" levels, record [high] temperatures on land and in the oceans will have potentially devastating impacts on ecosystems and the environment, said Radio France Internationale.

According to the Canadian Ministry of Natural Resources, the number of wildfires in Canada was "off the charts", with 670 recorded on July 7. These recent events show that the challenge of global climate change to human society is becoming increasingly severe.

As other countries debate, argue, shift blame and pontificate while the world burns, China has implemented a wide range of projects to tackle its own carbon footprint head-on, with an approach that is multifaceted, technology-focused and scalable, Quentin Parker, an astrophysicist based at the University of Hong Kong, said in *South China Morning Post*.

"A wave of actions is unfolding in China," said Parker, citing the 2 MW liquid-fuelled thorium molten salt reactor (MSR) in Gansu and the hybrid solar-hydro Kela power plant in the Yalong River plateau in Sichuan as demonstration projects.

Official data from National Development and Reform Commission showed China's energy intensity, which refers to the amount of energy consumed per unit of GDP, reduced by 26.4 percent in the past ten years.

However, strides and achievements made in the green energy field goes much more further. China is poised to double its wind and solar capacity, if all prospective projects are successfully built and commissioned, according to a new report from Global Energy Monitor, a San Francisco-based NGO. This, would hit the target the country set in 2020 of having 1,200 GW of panels and turbines by 2030, five years in advance.

The report also finds that right now China has more solar panels installed in large-scale projects than the rest of the world combined.

Wind and solar power are booming in China and the "green power surge will offer hope on warming," said the BBC.

John Kerry, U.S. special presidential envoy for climate, praised China's incredible job expanding renewable energy sources during his visit to Beijing on July 17, *The Washington Post* reported.

Green and low-carbon transformation is now globally accepted.

While undertaking its own green transformation, China has actively promoted international cooperation on climate and green development.

International collaboration on climate response and the aid for developing countries to level up their capacity to fight climate change through joint construction of low-carbon demonstration zones will be enhanced, according to a statement by the First High-Level Conference of the Forum on Global Action for Shared Development in Beijing on July 10.

Ahmed Latheef, Maldivian foreign secretary, said during the forum that the Maldives appreciates China's commitment to addressing climate change and achieving green development. The Maldives hopes to further cooperate with China in the blue economy sector and jointly promote the sustainable development of oceans and seas, he added.

Global Heatwave Signals Dangers of Climate Change

Comment

By GONG Qian

The world just experienced the hottest week on record, with the average global temperature on July 7 reaching 17.24°C, 0.3°C above the previous record in August 2016 — a strong El Nino year, said World Meteorological Organization (WMO). The last time Earth was this warm was around 120,000 years ago, Karsten Haustein at the University of Leipzig, Germany, told *New Scientist*.

Hot weather is sweeping across large parts of the world as many countries have seen unprecedentedly searing temperatures. More than 80 million people were under heat warnings or advisories on July 16, as relentless, record-breaking temperatures continued to bake western and southern states in the U.S., according to the Associated Press.

Though it's difficult to ascribe a particular weather event, such as a heatwave, directly to climate change, scientists insist human-linked global warming is responsible for the multiplication and intensification of heat waves, said AFP.

Human-caused climate change made excessive heat in many places in the Southwest of the U.S. at least 5 times more likely, signifying an exceptional climate change event, according to Climate Central, a non-profit organization focusing on climate change science, effects and solutions. "Carbon emissions from burning coal, oil and natural gas made this event more likely, longer, and more intense," said Dr. Andrew Pershing, VP of Science at Climate Central.

This year's heat wave is driven by a combination of climate change, the early stages of an El Nino weather pattern and hot summer conditions, according to the U.S. National Oceanic and Atmospheric Administration.

The prolonged spell of sweltering weather has triggered many human and environmental problems. That the heat can kill people is no exaggeration, as extremely hot weather could lead to the occurrence of some diseases which could be fatal. More than 61,000 people died because of last year's brutal summer heat waves across Europe, according to a study published on July 10 in the journal *Nature Medicine*. Moreover, the heat wave is also killing animals and crops, sparking concerns about food security and water scarcity, thus threatening the whole interconnected natural and human ecosystems.

"Earth is screaming at us right now and people need to listen," Chief Meteorologist and Director of Climate Matters, Bernadette Woods Placky told CNN. "It should be a wake-up call or an urgency to people that this is just not normal," she said.

More immediate actions are required to make Earth "cooler," meaning the world should strengthen cooperation to curb global warming, for example, by reducing greenhouse gas emissions.

At the beginning of July, the International Maritime Organization revised its greenhouse gas (GHG) strategy, with its member states agreeing to reach net-zero GHG emissions from international shipping close to 2050.

Artificial Spider Silk Makes Two Major Breakthroughs

Hi! Tech

By Staff Reporters

Researchers from two Chinese Universities and Chinese Academy of Sciences, have developed two kinds of artificial spider silk, namely artificial spider silk with a buckled sheath and neuron-inspired sticky artificial spider silk.

As for the natural spider silk, the axial orientation of molecular chains always results in an increase in fiber strength and a decrease in toughness. Meanwhile, the core structure of artificial spider silk with a buckled sheath has made some innovations, with mechanical strength and toughness reaching 1.61 GPa and 466 MJ/m^3 respectively.

Taking inspiration from the skin structure, the buckled structure is achieved by nano-pulley combing of polyrotaxane hydrogel fibers through cyclic stretch-release training, which exhibits axial alignment of the polymer chains in the fiber core and buckling in the fiber sheath.

The artificial spider silk with a buckled sheath also exhibits excellent super-contraction behavior, achieving a work capacity of 1.89 kJ kg−1, and an actuation stroke of 82 percent. This work provides a new strategy for designing high-performance and intelligent fiber materials.

The sticky artificial spider silk is developed by employing a proton donor-acceptor (PrDA) hydrogel fiber for application as artificial neuron fibers. Tuning the molecular electrostatic interactions by modulating the sequences of proton donors and acceptors, enables combination of excellent mechanical properties, stickiness, and ion conductivity.

Spider web in macro lens. (PHOTO: VCG)

In addition, the PrDA hydrogel exhibits high spinning capacity for a wide range of donor-acceptor combinations. The PrDA artificial spider silk would shed light on the design of new generation of artificial neuron materials, bioelectrodes, and artificial synapses.

The artificial spider silk can be used in the construction of artificial synaptic transistors to realize controllable regulation of pseudo-neural signals. In the future, it can be applied to biological electrodes, brain-computer interfaces, and wearable electronic devices.

Opinion

Why US Shouldn't Impose Technological Curbs on China

By LIANG Yilian

The U.S. is making another geopolitical move following its ban on semiconductor exports to China last year. It looks to restrict China's access to cloud computing to "close loophole in chip-export controls," *The Wall Street Journal* reported.

While national security concerns are important, it is essential to take a broader perspective and consider the potential benefits of maintaining an open approach to global technology collaboration.

Cooperation brings benefits

Business ties between the two countries remain deep. "The one thing that hasn't changed (after the pandemic) is that the level of economic interdependence between the United States and China is still quite deep," Ken Jarrett, former President of the American Chamber of Commerce in Shanghai and U.S. Deputy Consul General in Hong Kong, said in an interview.

China and the U.S. have a deeply integrated global supply chain and rely on each other for various products and services. Restricting China's access to cloud computing and semiconductors could trigger a domino effect, causing disruptions and adverse consequences for American businesses and consumers. Maintaining a collaborative approach ensures stability and the continued growth of both economies.

More than economic benefits and cooperation, as well as competition, drive technological innovation. China has emerged as a global technical leader in several domains, including cloud computing and semiconductors. By restricting China's access to cloud computing and semiconductors, the U.S. could stifle the exchange of ideas and hinder technological advancements. Collaboration between nations leads to a healthy exchange of knowledge, expertise and resources, resulting in more robust and cutting-edge technologies.

Tech hegemony doesn't work

The U.S. semiconductor export ban on China has already shown negative consequences. U.S. allies faced detrimental effects on their chip-making industries as they heavily rely on the Chinese market. Facing the strong opposition of chip manufacturers in these regions, the U.S. is set to allow semiconductor manufacturers from there to maintain and expand chip-making operations in China, according to *The Wall Street Journal*. This reversal demonstrates the flawed nature of attempting to exert tech hegemony.

Moreover, the U.S. crackdown on the Chinese AI industry by restricting cloud services may not yield the desired results. China's dominant players in the cloud computing market, including Alibaba, Tencent and Huawei, have already secured significant market shares. Since Amazon and Microsoft have smaller market shares in China, the effect of the crackdown by restricting cloud services to Chinese companies may not be substantial, Xiang Ligang, Director-General of the Information Consumption Alliance, a telecom industry association, told *Global Times*. Therefore, isolating China through restrictions would be ineffective and counterproductive.

Addressing security concerns

Addressing cybersecurity and intellectual property concerns should not be overlooked, but a blanket restriction on China's access to cloud computing and semiconductors may not be an effective solution. Instead, the focus should be on implementing robust security protocols, fostering collaboration to develop secure systems, and enhancing bilateral agreements to protect intellectual property rights. By working together, the U.S. and China can establish frameworks that address security issues of common concern to both sides, while facilitating technological advancements.

Instead of pursuing restrictive measures, the U.S. should prioritize global collaboration in the cloud computing and semiconductor industry. Recognizing the deep economic interdependence between China and the U.S., and the importance of cooperation in driving innovation, stability and economic growth, an open approach is the logical choice.

In an increasingly interconnected world, isolating and restricting China's access to cloud computing and semiconductors goes against the prevailing technological trends. It is imperative for the U.S. to carefully reconsider its goals.

Australian Media: We Must Engage with China, Our Future Depends on It

Research Box

There have been voices calling for our universities to curtail their ties with Chinese universities and academics. Advocates of this position argue that such linkages facilitate the leakage of our intellectual property, promote China's rise as a hostile technology power, and enable the staging of influence operations on Australian university campuses.

This is a view that is both limiting and misinformed. There is no realistic future scenario in which China will not be one of the most significant countries affecting Australia's future.

Two-way academic exchanges and collaborations are the best way for our society to keep abreast of a rapidly changing society.

Academic collaboration is not built on protecting knowledge; it is predicated on an understanding that research will be freely published. Chinese researchers don't need collaborations to "steal" our intellectual property - all they need to do to access new Australian knowledge is to read the journals in which it is published.

It is also mistaken to believe that ending collaboration with Australian universities will hamper China's rise as a technology power. China has already risen. Since the mid-1990s, China's investment in basic research grew by an average of more than 20 percent a year, to a point where it is now many multiples of Australia's research spending.

Its nine leading universities are much better funded than any of Australia's, or the world's outside the elite American universities. According to recent studies referenced in the journal *Science*, Chinese researchers account for the highest proportion of the most cited scientific papers of any country in the world. Other studies also show Chinese research is rising fast in innovation and quality.

To completely disengage from this already significant and still ascending knowledge power would be an act of self-harm for Australia and its universities.

—Michael Wesley (deputy vice-chancellor at University of Melbourne), Financial Review, 02-07-2023