INTERNATIONAL

100% of electricity from renewable energy

Seven countries now generate nearly all of their electricity from renewable energy sources, according to newly compiled figures. Albania, Bhutan, Nepal, Paraguay, Iceland, Ethiopia, and the Democratic Republic of Congo produced more than 99.7 per cent of the electricity they consumed using geothermal, hydro, solar, or wind power.

Data from the International Energy Agency (IEA) and International Renewable Energy Agency (IRENA) also revealed that a further 40 countries generated at least 50 per cent of the electricity they consumed from renewable energy technologies in 2021 and 2022 – including 11 European countries.

Figures released by the IEA in January show that the UK generated 41.5 per cent of its electricity from renewable sources in 2022 – up 10.5 per cent from the year before. In Scotland, renewable energy technologies generated the equivalent of 113 per cent of the country's overall electricity consumption in 2022. While Scotland's electricity generation was dominated by wind power, researchers predict that solar will come to dominate global electricity supplies over the coming decades.

Significant progress has been made in recent years in improving efficiency rates for solar cells, primarily boosted by the so-called 'miracle material' perovskite. Commercial costs have also fallen, which led scientists at the University of Exeter and University College London to claim last year that solar energy has reached an "irreversible tipping point" that will see it become the world's main source of energy by 2050.

Their 2023 paper, published in the journal *Nature Communications*, found that technological and economic advances meant the transition to clean energy is not just reachable, but inevitable.

https://www.independent.co.uk

ASIA-PACIFIC

CHINA

Technology innovation hub

China's State-owned Assets Supervision and Administration Commission (SASAC) of the State Council recently launched the second phase of construction for original technology innovation hubs among centrally administered enterprises, in a bid to speed up the development of industrial upgrades driven by cutting-edge technology innovation. The move will support 40 centrally administered enterprises in establishing 52 original technology innovation hubs across 36 sectors such as quantum information, neuromorphic intelligence, and biomanufacturing, according to *Xinhua News Agency*.

Experts noted that state-owned enterprises possess scale and resource advantages, especially in technology research and development (R&D). The rapid progress in technological innovation by these firms serves as a pivotal driving force for fostering innovation in the private sector and propelling China's economic growth.

In the latest move, SASAC will urge central enterprises to bolster efforts in constructing innovation hubs and expedite 11 action plans to achieve original breakthroughs in fields such as quantum information, 6G, deep-sea exploration, controllable nuclear fusion, and advanced materials, *Xinhua* reported.

China has been vigorously pushing for its high-quality development, driven by new, high-quality, productive forces, and state-owned enterprises play a crucial role in advancing this process. Amid mounting global high-tech competition, it is imperative to encourage industrial innovation through policy and investment support, Li Chang'an, a professor at the Academy of China Open Economy Studies of the University of International Business and Economics, told the Global Times.

China's central government approved a guideline in February 2022 that required state-owned enterprises to enhance their innovation capabilities, promote the deep integration of industrial and innovation chains, and establish original technology innovation hubs.

SASAC's move marked the latest progress in this ambitious initiative, following the first batch of 29 key-supported technology innovation pilot projects launched since the plan was announced. Official data shows that centrally administered enterprises completed investments totaling 2.18 trillion yuan ($301.8 billion) in strategic emerging industries last year, representing a year-on-year growth of 32.1 percent, with a slew of key projects implemented in sectors such as photovoltaic hydrogen production, carbon fiber manufacturing, and automotive chips, according to media reports.

https://www.globaltimes.cn

R&D investment

Last year, China's annual R&D investment exceeded 3.3 trillion yuan ($458.4 billion), an increase of 8.1 percent over the previous year, said Yin Hejun, minister of science and technology. Yin made the remark in an interview following the opening meeting of the second session of the 14th National People's Congress on Tuesday. He added that among that, the funding for basic research was 221.2 billion yuan, an increase of 9.3 percent over the previous year. Last year, 950,000 new technology contracts were signed in China; authorized invention patents reached 921,000, an increase of 15.3 percent from the previous year, he said.

"New energy vehicles, lithium batteries, and photovoltaic modules, the so-called 'new three items' that everyone is focusing on, had very pleasing growth rates in exports last year. Technological innovation has not only

enhanced the competitiveness of our country's traditional industries but has also solidified the foundation for developing new quality productive forces, injecting momentum," he said. Yin mentioned that last year, China achieved a number of major original achievements in quantum technology, integrated circuits, artificial intelligence, biomedicine, and new energy, including the official operation of the world's first fourth-generation nuclear power plant and the commercial operation of the C919 large aircraft.

In the future, China will further increase investment in scientific and technological research and continue to strengthen basic research, strengthen the power of national strategy, leverage the advantages of national laboratories and national scientific research institutions, and build a "national team" for the construction of a strong country in science and technology, he said. At the same time, China welcomes international cooperation to continuously inject new innovative power for high-quality development, he said.

https://www.chinadaily.com.cn

Green technology for carbon capture and sequestration

China is increasing its competitive edge in advanced technologies to combat global warming, a Nikkei survey shows, taking the global lead in patents related to the capture and sequestration of industrial carbon dioxide emissions. China's lead in the area is three times as large as that of second-place U.S. China is also the global market leader in batteries for electric vehicles and solar panels, giving it growing dominance in the decarbonization supply chain.

CO2 capture has been said to be a key to combatting global warming. The technology captures CO2 from factory and power plant exhaust and buries it underground or uses it as a raw material for chemicals. Companies in various countries are competing to develop the technology, for which the global market in 2028 is expected to expand to $15.24 billion, 6.5 times larger than in 2021. Working with the Mitsui & Co. Global Strategic Studies Institute, Nikkei analyzed patents granted or otherwise obtained in major countries from 2000 to February 2024.

The total number of patents in the field held by Chinese companies and research institutions have quadrupled from 2015 to 10,191, almost half the global total. Patent quality is also high, scoring second only to the U.S. in terms of attention they receive from competitors and other factors. It has rapidly closed the quality gap with the U.S. since the mid-2010s. Chinese companies and research institutes have advanced their technological capabilities in a wide range of fields, including CO2 separation and the conversion to hydrocarbons that can be used to produce chemicals.

The Chinese Academy of Sciences and China Petrochemical Corporation (Sinopec Group) also ranked top of the world in a number of patents by a research institute and a company. The Chinese Academy of Sciences excels in technology that converts CO2 into methane and other fuels. Sinopec started operating a large facility last year that can store more than 1 million tonnes of CO2 per year underground at an oil field.

https://asia.nikkei.com

INDIA

R&D to advance quantum communications networks

India's Department of Telecommunications (DoT) has urged the telecommunications industry to propose projects for an R&D initiative aimed at advancing the nation's quantum communications networks. In a statement, the DoT announced its intention to create "Quantum Standardization and Testing Labs" designed to foster innovation among quantum technology developers, manufacturers of testing equipment, and academic researchers. The DoT has invited applications from the communications sector to join these labs and contribute to the development of quantum technologies. Proposals must be submitted by August 5, 2024.

Quantum communications has emerged as a prominent research focus within the communications and internet sector. The IEEE Communications Society highlighted that leveraging quantum phenomena such as superposition and entanglement holds promise for enhancing the reliability, energy efficiency, and security of data networks. Moreover, the advent of a quantum-powered internet could unlock transformative applications in areas such as distributed computing and metrology.

As part of the standardization process, efforts will focus on defining benchmarks and protocols critical for incorporating quantum communication components like quantum key distribution, quantum state analyzers, optical fibers, and related elements into both current and forthcoming communication networks. "The main objective is to accelerate research and development (R&D) in quantum technologies, ensuring the interoperability, reliability, and security of quantum communication systems," the DoT press release stated.

https://telecomreviewasia.com

R&D partnership on decarbonization

Under its academic partnership, Open Innovation, Shell, the London-based oil and gas major says it has partnered with top Indian educational institutions to push deep research in various areas including decarbonisation to support its global energy transition. Ajay Mehta, VP, and Chief Engineer R&D, Shell India told *The Hindu,* "These partnerships aim to foster innovation and accelerate decarbonisation efforts in the energy sector to support the global energy transition."

Shell has so far collaborated with more than 15 Indian institutes on initiatives like decarbonisation, technology development, knowledge exchange, and start-up incubation. Indian Institute of Science (IISc), Bengaluru, IIT Madras, National Chemicals Lab, Pune, and TERI, New Delhi are some of these institutions. These partnerships focus on reducing greenhouse gas emissions and innovations such as low-carbon fuels, distributed electrification, carbon sinks, hydrogen generation, efficient power and refrigeration cycles using supercritical carbon dioxide, and so on.

With IISc alone, the British firm has 14 ongoing research projects as part of a Master Research Agreement ranging from computational science, catalysis, and biofuels, Mr., Mehta said. The partnership seeks to build on cutting-edge energy and environment-related research at the Interdisciplinary Centre for Energy Research (ICER) at IISc. Recently, the firm launched the Shell IITM Centre for Energy Research (SICER) in partnership with IIT Madras. This collaboration for five years is expected to promote innovation, research, development, piloting, and commercialisation of technologies in the energy sector.

https://www.thehindu.com

Auto R&D grows

India's automotive sector is making significant strides in research and development (R&D), yet global competition remains formidable. A new report entitled "State of Industry R&D in India" by the Foundation for Advancing Science and Technology India, in collaboration with IIFL Securities, shows both impressive achievements and areas needing improvement. The report highlights that India's automotive and components sector is a major player in global R&D, contributing to 40 per cent of the USD 31 billion spent on engineering and R&D. This sector accounts for eight per cent of India's total R&D expenditure. The primary focus areas for R&D include emission compliance and advancements in electrification technologies.

Global firms outperform Indian firms in R&D intensity and the proportion of PhD employees by 3.1 times and 3.4 times, respectively. Ferrari N.V. leads globally with the highest R&D intensity at 15.2 per cent and the largest number of PhD employees as a proportion of total employees. Among Indian firms, Mahindra & Mahindra stands out with an R&D intensity of 5.7 per cent and the highest R&D expenditure, amounting to USD 335 million, which is more than 3.5 times that of Maruti Suzuki, the second highest Indian R&D spender.

In terms of patents and publications, global firms produced 29.8 times more patents per USD billion revenue and 1.6 times more publications per USD billion revenue compared to Indian firms. BYD leads globally in patents per USD billion revenue. TVS Motors displays an exceptional number of patents relative to revenue, ranking second globally and first among Indian firms with 2,548 patents, which is approximately 6.2 times that of Mahindra & Mahindra. Bosch has the highest number of publications per billion USD revenue among Indian firms and ranks second globally, with 2.4 times more publications per USD billion revenue than Tesla.

High-revenue cluster firms such as Mahindra & Mahindra, Hero MotoCorp, and Maruti Suzuki show varying degrees of R&D intensity and PhD employee ratios. Bosch and TVS Motors, despite being in the low-revenue cluster, have significant achievements in publications per billion USD revenue.

https://businessworld.in

ISLAMIC REPUBLIC OF IRAN

Capacity of renewable power plants

The capacity of Iran's renewable power plants has reached 1,199.71 megawatts (MW), based on the latest data released by Iran's Renewable Energy and Energy Efficiency Organization (SATBA). Of the mentioned figure, the share of wind power plants is 31 percent with 366.3 megawatts and the share of solar power plants with 529.9 megawatts is 58 percent, according to the SATBA data for the end of the third Iranian calendar year of Khordad (ended on June 21). Small hydropower plants account for 9.0 percent of the country's total renewable power with 103.67 megawatts. Biomass power plants also have a one percent share with 12.5 MW, and the share of expansion turbine power plants with 9.6 MW is also one percent.

Over the past few years, the Iranian government has taken serious measures to accelerate the growth and development of renewable energies in the country. Diversification of financing models for renewable projects, increasing the ceiling of guaranteed electricity purchase, providing the possibility of buying and selling renewable electricity in the green board of the Iran Energy Exchange (IRENEX), and providing the possibility of exporting renewable electricity have been the most important measures taken for this purpose.

Iranian Energy Ministry has also put it on the agenda to add 10,000 MW to the capacity of the country's renewable power plants by the end of the current government's administration (August 2025). Considering the fact that the country's renewable power generation capacity stood at about 800 MW when the current government took office in August 2021, the mentioned increase in renewable energy capacity would mean a 13-fold rise.

Back in January 2022, the Energy Ministry and some of the country's private contractors signed memorandums of understanding (MOU) for cooperation in the construction of new renewable power plants across the country. The electricity generated by renewable sources increased by 28 percent in the third Iranian calendar month of Khordad (ended on June 20) compared to the same month last year. Renewable sources generated more than 230 million kilowatt hours of electricity, an increase of 21 percent in comparison with a month earlier. Wind power plants held the lion's share of the rise in the production of electricity by renewable sources.

Based on the Energy Ministry data, renewables currently account for nearly seven percent of the country's total electricity generation capacity. Of the country's total renewable capacity, 44 percent is the share of solar power plants while the share of wind farms stands at 40 percent and small-scalded hydropower plants generate 13 percent of the total renewable capacity.

https://www.tehrantimes.com

MALAYSIA

Innovation, commercialization ecosystem

The Ministry of Science, Technology, and Innovation (MOSTI) is optimistic about seeing more market-ready products emerging this year with the launch

of Supercharger Series 2024, which aims to invigorate Malaysia's innovation ecosystem. With the launch of the Series, Minister Chang Lih Kang said, Mosti is hoping to see an increase in high-quality products ready for commercialisation this year.

The Series stands as a strategic initiative designed to foster collaboration, engagement, and knowledge sharing within Malaysia's research, development, commercialisation, and innovation ecosystem. Focused on facilitating the commercialisation journey from idea inception to market entry, the Series is set to revolutionise the pre-commercialisation phase of Malaysian innovations and, for 2024, it aims to create significant and far-reaching impacts through cultivating local technopreneurship champions, increasing Malaysia's commercialisation rate, improving economic growth through R&D commercialisation and high-skilled jobs creation.

This initiative provides invaluable opportunities for university spin-off companies, researchers, private sector entities, and agencies to not only gain essential knowledge but also to identify and address various challenges, which in turn, will drive economic growth and strengthen the innovation ecosystem, ensuring that emerging technologies and research breakthroughs can effectively reach the market and benefit society as a whole.

https://thesun.my

Initiatives for cloud and AI skills

The Government of Malaysia and Google have created two initiatives to equip Malaysian youth with AI skills and improve public service delivery with cloud-native, AI-driven productivity tools. Between the Ministry of Higher Education (MoHE) and Google, the first initiative aims to upskill Malaysian youth from different backgrounds by providing 161 institutes of higher learning with 500 Google Career Certificate scholarships in 2024. The certificates cover expertise across cyber security, data analytics, and IT support. They can be completed in three to six months via self-directed online training, without any prior experience. This initiative is an extension of Gemilang, which has benefited over 31,0000 Malaysians with 80 per cent of certificate graduates receiving positive career outcomes.

In collaboration with Jabatan Digital Negara (JDN), the second initiative equips 445,000 public officers with Google Workspace tools to increase productivity. This accelerates policy development, budget planning, and public consultations by enabling public officers to collaborate on tasks, easily find information across organizations, and use AI tools to streamline workflows and facilitate data-driven decision-making.

https://www.channelasia.tech

PHILIPPINES

Share of solar and wind in power output

The Philippines plans to boost the share of solar in power output to 5.6 per cent in 2030 from 2.4 per cent in 2024, and wind to 11.7 per cent from 3.1 per cent, according to a government presentation, potentially making the archipelago's grid among the cleanest in the region. The Southeast Asian nation expects a higher share of solar and wind to offset a decline in the share of other clean sources such as hydropower and geothermal energy, helping non-fossil sources account for 35 per cent of power generation by 2030.

Hydroelectricity's share is set to fall from 10 per cent to 9.1 per cent, while geothermal energy is expected to account for 7.7 per cent of overall output by 2030, compared with 8.9 per cent in 2024, Ms Mylene Capongcol, assistant secretary at the Philippines Department of Energy, said in the presentation, at the Renewable Energy Markets Asia conference.

The Philippines plans to achieve the targets by doubling solar capacity and tripling wind capacity over six years, Ms Capongcol added in the presentation, which was shared with Reuters. The country is betting on a rapid build-out of offshore wind farms, which have high upfront costs. Spiralling costs amid high inflation have resulted in some developers canceling or pausing projects in the US and Britain in 2023. The archipelago also expects to add 1,200 megawatts of nuclear capacity by 2032, Ms Capongcol said in the presentation, adding that the country plans to upgrade its transmission infrastructure to help manage the addition of renewables.

The energy department will also create a long-term programme to facilitate the voluntary early decommissioning or repurposing of over 3.8 gigawatts of coal-fired power plants which are more than 20 years old, Ms Capongcol said. The Philippines is targeting to reduce the share of coal in power generation to 47.6 per cent by 2030, from about 60 per cent currently.

https://www.straitstimes.com

National AI Strategy Roadmap

Taking a significant step towards a more innovative future, the Department of Trade and Industry (DTI) with support from the Asian Development Bank (ADB will launch the National Artificial Intelligence (AI) Strategy Roadmap 2.0 (NAISR 2.0) and the Center for AI Research (CAIR) on 03 July 2024. Building upon the foundation laid by the first AI roadmap in 2021, the NAISR 2.0 incorporates recent technological advancements, including Generative AI. This recalibrates the strategic actions, considering recent developments, and addresses emerging themes such as ethics and governance. In line with the country's science, technology, and innovation-driven Industrial Strategy, the new roadmap pursues the strategic mission to harness AI's transformative potential in boosting the Philippine economy and improving the quality of life for its citizens.

Anchored on a solid vision to be a Center of Excellence in AI R&D, CAIR will play a pivotal role in leveraging AI's transformative potential to address societal and industrial challenges, stimulate economic growth, and promote inclusive development. CAIR's mission is to transform the Philippines into a premier destination for AI-driven innovation and investments.

By creating AI solutions for regional concerns notably sustainable agricul-

ture, urban planning, and disaster resilience, CAIR hopes to establish the Philippines as a leader in multiple AI application areas. Through technological innovation, multidisciplinary and cross-disciplinary research, and the development of full-time research scientists, engineers, and R&D personnel, CAIR aims to promote socio-economic R&D, improve scientific knowledge, and strengthen the competitiveness of science and technology in the country while balancing and ensuring responsible AI adoption to improve public services and the lives of Filipinos.

This groundbreaking launch marks the establishment of the first AI hub in the Philippines, housing pioneering AI experts who will be spearheading the Center's goals. The event will unveil the pioneering CAIR team and mark the Center's official commencement of operations.

NAISR 2.0 and CAIR present an opportunity for the government, academia, and industry to continue collaborating and guarantee that Filipinos will reap the most benefits from these AI advancements. These initiatives are in line with the Department's implementation of the Tatak Pinoy (Proudly Filipino) Act or Republic Act No. 11981, which fosters innovation to promote greater industrial sophistication, economic diversification, and industrial transformation.

https://www.dti.gov.ph

WIPO treaty adopted

The Intellectual Property Office of the Philippines (IPOPHL) on Wednesday shared that the Philippines has joined 193 other member countries of the World Intellectual Property Organization (WIPO) in adopting a landmark treaty on intellectual property (IP), genetic resources (GR), and traditional knowledge associated with genetic resources (ATK). The 194 member states of WIPO achieved a consensus after 25 years of negotiations to create a more inclusive global patent system.

This new treaty is the first to specifically address the connection between patents, genetic resources, and traditional knowledge, which includes provisions that recognize the rights of indigenous peoples (IP) and local communities. "The treaty showcases our collective effort to empower marginalized groups globally while maintaining a fair intellectual property system," IPOPHL Director General Rowel Barba said at the Diplomatic Conference in Geneva last May 13 to 24.

The adoption of the new treaty, now requires inventors to disclose if their patents are based on genetic resources and their associated traditional knowledge. This transparency is expected to prevent the misuse or theft of genetic resources and traditional knowledge.

https://www.pna.gov.ph

REPUBLIC OF KOREA

Digital technology adoption

According to a recent announcement by the Republic of Korean Ministry of Science and ICT, the Republic of Korea has been recognized for the highest adoption rates of leading-edge digital technologies among member countries of the Organisation for Economic Co-operation and Development (OECD). This information was derived from the 'Digital Economy Outlook Report 2024' published by the OECD, which now releases its findings biannually, spotlighting global digital trends based on statistical data and survey responses.

While cloud computing and the Internet of Things (IoT) are commonly embraced by OECD businesses, the uptake of big data analytics and) has been slower due to cost-related issues, with smaller companies particularly feeling the pinch. Yet, South Korea differentiates itself with impressive rates of digital tech implementation: a 53% rate for IoT, 40% for big data analysis, and 28% for AI technologies—all of which place the country at the top of the OECD rankings. Moreover, the country's cloud computing adoption is also remarkable, ranking fifth at 70%.

The report further sheds light on the economic growth experienced in the ICT sector among OECD members from 2011 to 2022, which was 2.5 times faster than the overall economic growth, averaging an impressive 5.3%.

https://elblog.pl

Semiconductor packaging R&D

The Republic of Korea will inject 274.4 billion won ($200 million) into a state-run R&D project for semiconductor packaging technology, a key to producing the high-performance, low-power chips essential for AI applications. The government spending aims to narrow the gap with Taiwan, China, and the US in the semiconductor back-end process market, where Korea controls less than 10%. In contrast, it commands 60% of the memory chip market as of 2022, according to the Ministry of Science and ICT.

The Ministry of Trade, Industry and Energy said the R&D spending plan had passed the preliminary feasibility test conducted by the science ministry. That means the government has given the go-ahead to the seven-year project running until 2031. The plan represents a follow-up to a 65-billion-won, state-run project on semiconductor packaging R&D undertaken between 2018 and 2022.

Packaging refers to assembling different types of semiconductor chips and providing them to customers in one piece. The process involves detaching chips through wafer sawing and mounting the chips on a module that will be installed onto a motherboard. The package allows the chips to be electrically and mechanically connected to external components. To meet the growing demand for high-end chips such as high bandwidth memory (HBM) amid the AI boom, chipmakers are focusing on improving back-end processing or packaging technology now that semiconductor miniaturization has reached its physical limits.

The advanced semiconductor packaging market is forecast to expand at a compounded annual growth rate of 10% to $78.6 billion by 2028, from $44.3 billion in 2022, according to research company Yole.

Samsung Electronics will launch three-dimensional (3D) packaging services for HBM chips within the year, according to the company and industry sources earlier this month. To do so, its advanced packaging team will vertically interconnect HBM chips

produced at its memory business division with GPUs assembled for fabless companies by its foundry unit. 3D packaging reduces power consumption and processing delays, improving the electrical signal quality of semiconductor chips. Presently, HBM chips are horizontally connected with a GPU on a silicon interposer via the 2.5D packaging process.

https://www.kedglobal.com

Corporate R&D investment

Research and development (R&D) expenditures by major Republic of Korean companies hit an all-time high last year despite their falling sales amid an economic slowdown. The Ministry of Trade, Industry and Energy (MOTIE) and Korea Institute for Advancement of Technology (KIAT) announced on June 24 the top 1,000 Korean R&D investor companies of 2023. The sales of 1,000 top R&D investor companies declined 2.8% year-on-year in 2023, but their R&D investment increased 8.7% to KRW 72.5 trillion, up KRW 5.8 trillion compared to that of 2022. Accordingly, the ratio of R&D investment to sales advanced from 3.9% to 4.4%.

Of the 1,000 companies, 171 were large conglomerates and 491 were second-tier mid-sized companies. The remaining 338 firms were mid- and small-sized companies. In particular, major companies increased their R&D investment. Samsung Electronics R&D investment accounted for about 33% of the total, making it more dependent on Samsung Electronics for R&D than the combined R&D investments from the top 2nd to 10th, including Hyundai Motor, SK Hynix, and LG Electronics.

According to the "2023 Corporate R&D Scoreboard" released by MOTIE and KIAT, investments by the top 1,000 companies in the Republic of Korea's R&D investment reached KRW 72.5 trillion last year, up 8.7% from the previous year, the largest ever. Sales of these companies fell 2.8% last year, but the share of R&D investments to sales rose to 4.4% from 3.9% in 2022. The increase came despite their sales falling 2.8% on-year to KRW 1,642 trillion, and the proportion of corporate R&D investment out of sales rose 4.4% in 2023 from the previous year's 3.9%.

The top 10 and top 50 investor companies' R&D investment add up to KRW 45.5 trillion and KRW 56.6 trillion, respectively, each taking up 62.7% and 78.1% of the total 1,000 companies' R&D investment. Samsung Electronics, Hyundai Motor, SK Hynix, and LG Electronics are among the nine companies that invested over KRW 1 trillion, with Samsung Electronics' R&D investment (KRW 23.9 trillion) taking up 32.9% of the total R&D investment of the top 1,000 investor firms.

The top 1,000 list consists of 171 large corporations, 491 middle-market companies, and 338 SMEs. Compared to 2014, the number of mid-sized companies increased from 407 to 491, rising by 84, among the top 1,000 companies. Among mid-sized companies, NC Soft (KRW 467.1 billion, 17th) and Korea Aerospace Industries (KRW 408.8 billion, 19th) were included. The top 100 list includes 33 middle-market companies, indicating their increasingly central role in the innovation ecosystem.

A ministry official said, "The number of mid-sized companies that were among the top 1,000 major R&D investing companies has risen over the past years. The government will extend support for companies to increase investment for innovation." Last year, Samsung Electronics had the largest amount of R&D investment, with its investment reaching KRW 23.9 trillion, up 14.4% from the previous year. This accounts for 32.9% of the total investment of the top 1,000 companies. Samsung Electronics' R&D investment in sales was 14.0% last year. Leading carmaker Hyundai Motor Co. came next with KRW 3.7 trillion, which marked 15.6% on-year growth. R&D spending by chip behemoth SK hynix Inc. fell 10% on-year to KRW 3.6 trillion.

Home appliances giant LG Electronics Inc. increased its R&D expenditure by 10% to KRW 3.3 trillion, and Samsung Display Co. spent KRW 2.8 trillion on R&D last year, up 12% on-year. Kia Corp. was the fifth-largest R&D investor last year with KRW 2.2 trillion, the data showed. The top 1,000 companies expanded their average annual R&D investment by at least 6.6% over the last 10 years and the number of Republic of Korean firms among the top 2,500 global R&D investor companies is 47 in total as of 2022, ranking ninth by country.

Meanwhile, as of 2022, only 47 Korean companies were among the top 2,500 global R&D investment companies, making the Republic of Korea the ninth-largest R&D investment in the world. According to data from the European Union, only 47 Republic of Korean companies were among the top 2,500 companies in the global R&D standings in 2022. The Republic of Korea was behind the United States (827), China (679), Japan (229), Germany (113) and Taiwan (77).

https://www.koreapost.com

THAILAND

Climate technology platform launched

True Digital and Alibaba Cloud launched an AI-based platform aimed at supporting organisations in implementing sustainability goals. The two industry giants collaborated to build the Climate Technology Platform for businesses to tackle energy-efficiency challenges and implement technologies that can help guide businesses to reach their net-carbon goals.

The Thai government's draft Climate Change Act aims to reduce the country's greenhouse gas emissions by up to 40% by 2030 and reach carbon neutrality by 2050. Although many companies are trying to step towards being sustainable, Vice President of Alibaba Cloud Intelligence and General Manager for International Industry Solutions, William Xiong, said organisations lacked the tools to get there, stressing that being low-carbon is important and companies need to know how to manage their carbon footprints. "In our partnership with True Digital Group, we are introducing AI-driven sustainability solutions to Thailand, helping businesses with new capabilities to improve their energy efficiency."

True Digital Group developed the Climate Technology Platform, which integrates technologies such as cloud, IoT (Internet of Things), and big-data analytics with various data sources on

DataVisor, which is an integrated data management platform that provides in-depth analysis on how to lower and manage carbon emissions.

Ekaraj Panjavinin, Chief Digital Officer, True Corporation Plc. said these technologies empower the Climate Technology Platform to serve all dimensions of energy management requirements for enterprises. He explained that the platform transitions from traditional ways of turning physical labour into a digital system of sensors and IoT devices. The platform also connects various energy sources into a single energy management system and transits to renewable energy such as solar power, water power, and electricity from power grids.

https://www.nationthailand.com

Renewable power plan unveiled

The Department of Alternative Energy Development and Efficiency (DEDE) is forging multiple plans to maximise renewable energy benefits and align with global efforts to combat climate change. DEDE director-general Wattanapong Kurovat told Nation Group's Krungthep Turakij on Monday that it was updating this year's energy plan to meet clean energy requirements for Thailand to achieve carbon neutrality by 2050 and net-zero carbon emissions by 2065. He explained Thailand's energy policy planning has become increasingly complex amid the global focus on long-term environmental impacts.

Two draft plans – the Alternative Energy Development Plan (AEDP) and the Energy Efficiency Plan (EEP) – were set for a public hearing on Tuesday (June 18). Both will be included in the National Energy Plan 2024 alongside the Power Development Plan (PDP), Gas Plan, and Oil Plan.

The new energy plan aims to increase the production of electricity from renewable energy to over 50%, using solar, wind, and biomass sources generated from the agriculture sector. Although renewable energy costs more than fossil fuels, the Thai industry must adopt renewables to comply with new global trade regulations like the Carbon Border Adjustment Mechanism (CBAM), Wattanapong said.

Under the new Power Development Plan, the ministry aims to procure 77,407 megawatts (MW) of electricity to meet Thailand's forecasted peak of 56,133 MW in 2037. The plan must also factor in a drop in production capacity to 34,984MW as existing power plants expire. The plan includes sourcing 47,251 MW of new electricity, 12,957 MW from backup electricity generation, and 17,199 MW from power plants contracted to the ministry.

Of the new electricity, 34,851 MW will come from renewable sources: solar power (24,412 MW), wind (5,345 MW), biomass (1,045 MW), biogas (936 MW), floating solar (2,681 MW), industrial waste (12 MW), community waste (300 MW), hydropower (99 MW) and geothermal power (21 MW). The remaining 12,400 MW will come from combined-cycle power plants (6,300 MW), nuclear power plants (600 MW), overseas procurement (3,500 MW), and other sources like vehicle-to-grid systems (2,000 MW).

The 2024 plan will boost the share of renewable energy in total electricity production to 51%, up from 36% under PDP 2018. The electricity price is expected to fall from 3.94 baht per unit under the previous plan to 3.87 baht. To reduce reliance on gas imports, the ministry aims to increase procurement of liquefied natural gas (LNG) from the Gulf of Thailand and Myanmar to meet the country's demand of around 4.8 billion cubic feet daily, as per the Gas Plan 2024. The ministry is also considering additional infrastructure to support LNG import, storage, and distribution to boost liquidity and support electricity production.

https://www.nationthailand.com

VIET NAM

Guidelines for innovation development

Viet Nam has issued major guidelines, policies, and orientations to develop innovation and startups, as the Party and State always consider science-technology and innovation as a "strategic breakthrough" and a "main driving force" to create improvements in productivity, quality, efficiency, and competitiveness of the economy. Over the past time, Vietnam's innovation activities have achieved many remarkable results. The country has continuously climbed up the Global Innovation Index (GII) from the 59th position in 2016 to the 46th in 2023, making it rank fourth in the Association of Southeast Asian Nations (ASEAN).

Viet Nam has always maintained the second position in the group of lower middle-income countries and is one of the seven middle-income countries that have achieved the most progress in innovation over the past decade. On March 12, 2024, for the first time, the Ministry of Science and Technology released the Provincial Innovation Index (PII). The 2023 index provided the grounds and evidence on strengths, weaknesses, potential, and necessary conditions for the country to promote socioeconomic development based on science, technology, and innovation of each locality.

The Government has also had many investment solutions to improve innovation indicators, including building a national innovation system that gathers experts and scientists, developing policies to encourage innovation, especially in businesses, and setting up the National Startup Support Centre. To date, framework conditions serving the development of the national innovation system have been formed such as policies to ensure intellectual property rights, and innovation of scientific and technological activities, simplifying administrative procedures, implementing support funds, and strengthening the linkages between scientific research and production and business.

National innovation and startup support centres are being formed in Hanoi, Da Nang, Ho Chi Minh City, and other localities, while innovation and startup centres have been set up in over 20 localities to connect local, regional, and national resources. As a result, enterprises are becoming more aware of the importance of innovation activities, putting this content at the centre of their production and business activities.

https://en.vietnamplus.vn

Human-centered artificial intelligence

The Science and Technology Ministry has issued guidelines for the responsible development of AI systems, promoting a human-centered society where everyone benefits from AI. Accordingly, the Ministry of Science and Technology has just released its Decision 1290/QD-BKHCN about guiding a number of principles on research and development of responsible AI systems that are aimed at a human-centered society where there is a reasonable balance between the benefits and risks of AI systems.

AI technology is now considered the core when digital technology is increasingly dominating social life as well as economic development. Many Vietnamese enterprises, such as FPT, Viettel, VNG, and VNPT have all affirmed that AI is the foundation and opportunity for Vietnam to develop technology on par with the world in the near future. AI can support and solve tough problems that people and communities are facing in the country at present.

Both domestic and foreign experts in the field agree that AI system research and development in Vietnam must fulfill the goal of creating a human-centered society, where everyone benefits from these AI systems while still ensuring a reasonable balance between benefits and risks.

The benefits of AI must be promoted via research, development, and innovation activities and minimize the risk of violating the rights or legitimate interests of organizations and individuals. This calls for the urgent need to form an ethical code to promote responsible AI development, which will in turn build user and social trust in AI systems that are being applied in all aspects of life in the face of unpredictable impacts and risks, as said by Prof Dr Andy Hall from the Commonwealth Scientific and Industrial Research Organisation (CSIRO – Australia). AI development is fraught with risks and uncertainties, so "responsible innovation" needs to be based on the proactive choice of safe, ethical, and socially appropriate technologies.

https://en.sggp.org.vn

Innovation Challenge 2024 launched

The Ministry of Planning and Investment announced the launch of the Vietnam Innovation Challenge 2024 with a focus on expediting the growth of Viet Nam's semiconductor and artificial intelligence (AI) sectors. With the theme "Innovation to accelerate the semiconductor industry and artificial intelligence to go global", the programme aims to create an intellectual playground, bringing together resources for collaboration, generating breakthrough ideas, leveraging the potential, and seizing the opportunities of the semiconductor and artificial intelligence industries.

Speaking at the event, Deputy Minister of Planning and Investment Trần Duy Đông emphasised the pivotal role of the semiconductor industry amid global economic competition and the strategic importance of AI in Việt Nam's development agenda. He reiterated the government's unwavering support for high-tech industries, aligning with the objectives of the VIC programme. "The programme not only reflects the vision and robust support of the Ministry of Planning and Investment in advancing these two promising sectors but also actively contributes to achieving the strategic objectives outlined by the Government," Đông said.

Việt Nam, with its strategic location, expanding digital infrastructure, highly skilled workforce, and abundant young talent brimming with creativity, is rapidly emerging as a key player in the semiconductor industry, poised for immense growth in the coming years. Projections from the SEMI Southeast Asia indicate that Việt Nam's semiconductor market is set to expand by over 6 per cent between 2022 and 2027.

With its two primary pillars focusing on optimising semiconductor processes and harnessing AI solutions for business development, the Vietnam Innovation Challenge 2024 seeks to foster collaboration, attract essential resources, and establish a multilateral cooperation platform. Through this, Vietnamese businesses are poised to enhance their value proposition and fortify their position within the global value chain.

https://vietnamnews.vn

RE firms to benefit from direct purchase agreements

Viet Nam's renewable energy developers, especially those with projects located near industrial parks, economic zones, and export processing zones, are likely to win big with the newly approved mechanism for direct power purchase agreement (DPPA), say analysts. On July 3, the government issued Decree No. 80/2024/ND-CP on the DPPAs between renewable energy generators and large electricity consumers.

Analysts with broker Saigon Securities (SSI) say that the DPPA mechanism can encourage more investment in domestic renewable energy projects, thereby promoting environmentally sustainable development and improving the efficiency of the power market in Viet Nam. The mechanism will create a better competitive environment for participants and has the potential to resolve state utility Vietnam Electricity's (EVN) financial problems, they add. They note that renewables play a key role in the roadmap drawn by the 2021-2030 National Power Development Plan (with a vision until 2050), or PDP VIII.

The plan targets expanding power generation capacity to over 150,000 MW by 2030 and nearly 600,000 MW by 2050, contributing to the nation's goal of achieving net zero emissions by 2050. Encouraging renewable energy production, especially in the North, can solve or at least reduce significantly Vietnam's electricity shortage problem in the long term; and the new mechanism will allow risk prevention through regulations on forward contracts, the SSI analysts say.

According to a study conducted by the Ministry of Industry and Trade at the end of 2023, out of 67 renewable power projects surveyed, 24 with a combined capacity of 1,773 MW wished to participate in the DPPA as sellers, while 17 others (2,836 MW) were considering participation. On the buyers' side, 20 out of 41 respondents wanted to join the mechanism.

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