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EDITOR'S NOTE

The melting of the world's cryosphere — our planet's frozen water systems — may seem like a distant polar issue, but its consequences are rapidly reshaping climates, water cycles, and economies everywhere, including Pakistan. As glaciers in the Himalayas, Karakoram, and Hindu Kush retreat at alarming rates, the lifeline of the Indus River system stands at risk. Pakistan, a country whose agriculture, hydropower, and water security depend heavily on glacier-fed rivers, faces a looming challenge that ties climate science directly to national energy policy.

The cryosphere's loss threatens to disrupt seasonal river flows, initially causing floods from glacial lake outbursts and later reducing water availability for hydropower generation. With over 30% of Pakistan's electricity coming from hydropower, reduced glacial input could strain an already fragile energy system. Meanwhile, rising temperatures increase energy demand for cooling, intensifying pressure on the national grid and expanding reliance on fossil fuels — the very emissions that accelerate global ice melt.

Pakistan's energy sector must therefore adapt with foresight and urgency. Diversifying toward solar and wind, improving grid efficiency, and investing in water storage infrastructure are no longer optional; they are essential to national resilience. Protecting our cryosphere may begin thousands of kilometers away, but its preservation is inseparable from Pakistan's climate stability and energy future. The country's path forward must link clean energy transition with the protection of global and regional ice reserves — because the fate of our glaciers is, ultimately, the fate of our power.

Local Scoop.

Here we bring you the latest updates on the green revolution happening in your region. Read about how your community is harnessing the power of renewables to shape a sustainable future and create positive environmental impact, one innovation at a time. We talk about breakthrough technologies, and local initiatives driving the renewable energy movement forward.





CPEC Phase-II to Strengthen Pakistan-China Partnership

Federal Minister for Planning and Development, Ahsan Iqbal, has stated that the second phase of the China-Pakistan Economic Corridor (CPEC) will take bilateral cooperation to a new level, prioritizing renewable energy, port development, biotechnology, and the livestock sector.

During his visit to Tianjin, the minister inspected the Huan Sheng New Energy Solar Plant, describing it as a cutting-edge, fully automated project that reflects the fourth industrial revolution. He emphasized Pakistan's commitment to adopting advanced green energy technologies and urged Chinese firms to invest in the country's renewable sector, particularly in solar power.

Highlighting agriculture, Ahsan Iqbal reaffirmed Pakistan's goal to foster biotechnology collaboration, enabling platforms that maximize the use of Chinese expertise and innovation. He stressed that green and solar energy are the future, and Pakistan is eager to benefit from China's progress in these areas.

The minister also visited an animal vaccine production facility, inviting the company to establish operations in Pakistan. He underlined livestock's crucial role in Pakistan's agri-economy, noting that ensuring disease-free animals would not only strengthen the sector but also boost meat exports significantly.

He added that CPEC Phase-II is designed to create fresh opportunities for sustainable growth, positioning Pakistan as a hub for renewable energy, agricultural advancement, and stronger trade connectivity with China.

Pakistan Unveils New Energy Vehicle Policy to Accelerate EV Transition

Pakistan has rolled out its New Energy Vehicle (NEV) Policy 2025–2030, an ambitious roadmap to cut emissions, curb oil imports, and utilize surplus electricity by accelerating the shift from petrol-powered to electric transport.

The country's first EV policy in 2019 struggled due to weak implementation and COVID-19 disruptions. Since then, however, adoption has grown from just 567 electric vehicles in 2021 to over 80,000 by mid-2025, largely led by two- and three-wheelers. By July 2025, 65 manufacturers had secured approvals for local production of electric bikes and rickshaws, while two firms received clearance to assemble electric cars and SUVs. Despite progress, uptake remains slow compared to global peers. High upfront costs, inadequate charging infrastructure, and financing hurdles are cited as key challenges. Transport accounts for nearly 10% of Pakistan's carbon emissions and contributes to a \$16 billion annual oil import bill—issues the government hopes the new policy will address.

According to the document, the NEV Policy 2025–2030 seeks to “reduce vehicular emissions, improve air quality, enhance productive use of excess electricity, and cut oil imports.”

Subsidies and Incentives

The policy introduces demand-side subsidies to bridge the cost gap with conventional vehicles: Rs65,000 (\$230) for two-wheelers, Rs400,000 (\$1,420) for three-wheelers, and up to Rs15,000 (\$53) per kilowatt-hour of battery capacity—or 5% of invoice value—for cars and commercial vehicles.

Priority will be given to two- and three-wheelers, which account for 87% of Pakistan's vehicle population and mainly serve low-income groups.

Charging Infrastructure

Plans include 3,000 charging stations nationwide by 2030, with 40 fast chargers on highways and motorways within six months. Oil marketing companies will be required to convert 10% of their fuel stations into EV charging points, while a new national tariff of Rs39.7 (\$0.14) per kWh has been set for commercial charging.

Funding Mechanism

Subsidies and infrastructure will be financed by a levy on the import and first sale of petrol and diesel vehicles, expected to generate Rs122 billion (\$430 million) during the policy period. The revenues will be ring-fenced to support the NEV program.

Long-Term Goals

Targets include making 30% of new vehicle sales electric by 2030, rising to 50% by 2040, with a net-zero transport fleet by 2060. Islamabad will serve as a pilot “electric mobility city,” with provinces encouraged to replicate the model. From 2027, all federal government purchases of two- and three-wheelers must be electric, with only NEVs allowed for official use thereafter.

Officials estimate the measures could prevent 4.5 million tons of carbon dioxide emissions by 2030 while creating new industries in battery manufacturing, software development, and smart mobility solutions.





ADB commits \$130m for Pakistan's energy sector as Govt pushes DISCO privatization

The Asian Development Bank (ADB) has pledged \$130 million to support Pakistan's energy sector, with \$30 million already available for immediate use, as the government accelerates reforms and privatization efforts.

In a meeting with Federal Minister for Power, Sardar Awais Ahmad Khan Leghari, ADB's Director Energy, Joonho Hwang, reaffirmed the Bank's long-standing partnership with Pakistan. He assured that ADB will extend full support in the privatization of distribution companies (DISCOs), modernization of transmission and distribution systems, promotion of renewable energy projects, and the establishment of a carbon market.

Minister Leghari outlined that three DISCOs will be privatized in the first phase, where both investment and technical assistance are expected to play a crucial role. He emphasized the government's priority on clean energy, noting that "Pakistan has shut down around 2,800 MW of fossil fuel power plants ahead of schedule as part of its environmental responsibility." He added that the country is seeking international cooperation to improve grid and metering systems, alongside access to green financing and carbon credits.

The minister further highlighted ongoing initiatives, including the introduction of a new tariff for electric vehicles, and stressed that transparency, sustainability and modern technology remain at the heart of all government projects. "The ultimate goal of government policies is to provide affordable and sustainable electricity to the public, for which international partnerships are of critical importance," he stated.

Hwang welcomed these measures, saying ADB values Pakistan's efforts to promote green financing and confirmed that the World Bank team will review projects from the initial stage to ensure maximum benefit. He also expressed pride in ADB's continued role in Pakistan's energy sector and its support for integrated energy planning and the Public-Private Partnership (PPP) model.



PM: GOVT TO WAIVE POWER BILLS OF FLOOD-AFFECTED CITIZENS

Prime Minister Shehbaz Sharif on Sunday announced that the federal government will pay the electricity bills of domestic consumers in flood-hit areas for August, covering the cost from its own resources. In a video message, the prime minister said households in affected regions will not be required to pay their August bills, while those who have already paid will receive adjustments in their upcoming statements. He confirmed that directives have been issued to power distribution companies to implement the measure immediately.

Shehbaz added that losses sustained by agricultural, commercial, and industrial power users are being assessed, with bill collections from these categories deferred until the evaluation is complete. Additional relief steps will follow if losses exceed a set threshold, he said.

Reiterating his commitment to rehabilitation, the premier vowed not to rest until every flood-affected person is fully supported and restored.

QATAR ASKS PAKISTAN FOR FORMAL LNG CARGO DEFERMENT PROPOSAL

Qatar has requested Pakistan to submit a formal proposal regarding the deferment of LNG cargoes beyond 2030 or to allow Doha to sell part of its contracted supply in the international market under the Net Proceeds Differential (NPD) clause, The News reported.

A senior official said Qatar will issue a counter-proposal once Islamabad submits a written request, with a final decision dependent on mutual agreement.

The development comes as Pakistan LNG Limited (PLL) has been diverting one ENI-supplied cargo per month to the international spot market since February 2025 due to declining domestic demand, a practice expected to continue until December.

Earlier, Pakistan sought to defer 177 LNG cargoes worth \$5.6 billion beyond 2030, but the plan mistakenly included ENI cargoes, which fall outside Qatar's agreements. Under a revised approach, Islamabad intends to utilize 80 of the 108 annual Qatari cargoes, leaving 28 surplus each year—or 140 over five years—valued at about \$4.4 billion.

During an August 25 visit to Doha, a Pakistani delegation led by Federal Petroleum Minister Ali Parvaiz Malik explained the drop in local gas demand and sought relief under existing

agreements. However, officials acknowledged that deferring 140 cargoes into 2031–2032 is not covered by current contracts.

Pakistan presently imports nine Qatari cargoes monthly—five under a 15-year contract priced at 13.37% of Brent and four under a 10-year contract at 10.2% of Brent. Both follow strict “Take-or-Pay” terms to fuel four Punjab-based RLNG power plants, though actual consumption is falling short.

Unlike Pakistan's ENI contract, which allows profit or loss sharing on diverted cargoes, Qatar's NPD clause assigns profits from international sales to Qatar, while any losses are borne by Pakistan.

Officials warn that the country's gas network is under pressure, with RLNG pipeline line-pack levels exceeding the 5 bcf danger mark. To reduce pressure, local gas fields producing 270–400 mmcf/d have been shut, risking permanent damage to wells and impacting LPG and crude output for refineries such as Attock Refinery.

Despite falling demand, Pakistan State Oil (PSO) and the Petroleum Division remain bound to import nine Qatari cargoes monthly. The government must now craft a legally sound and commercially viable proposal, as Qatar awaits a formal request before considering concessions.



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Strategic Energy Plan



PAKISTAN SHIFTS ENERGY STRATEGY, REDUCES LNG DEPENDENCE

Pakistan is moving away from liquefied natural gas (LNG) imports as a central part of its energy strategy, signalling a major policy shift for a nation once seen as a rapidly expanding LNG buyer.

According to Petroleum Minister Ali Pervaiz Malik, this transition reflects a broader effort to adapt to changing global energy dynamics and domestic constraints. LNG shipments to Pakistan, which peaked in 2021, have steadily declined due to soaring global prices following Russia’s invasion of Ukraine. Ship-tracking data indicates a 5% drop in LNG deliveries this year, with further reductions expected as the government negotiates lower volumes with suppliers.

“This is not a temporary blip; we have to readjust our strategy,” Malik said in Islamabad.

A decade ago, Pakistan had ambitious plans to expand LNG imports to compensate for declining domestic gas production. However, that vision has been derailed by high LNG prices and reduced power demand, largely due to government measures to secure IMF loans through increased electricity tariffs.

While new power projects are in development, Malik emphasised that LNG will not play a role in them due to its continued high cost. Pakistan remains tied to long-term contracts, particularly with Qatar, its largest LNG supplier. Malik recently met Qatari officials to discuss delaying shipments over the next five years, a move aimed at easing financial pressure.

Pakistan’s agreement with Eni SpA offers more flexibility, allowing the country to resell surplus LNG on the spot market and share profits. Meanwhile, the government is focusing on incentivising domestic gas exploration to meet growing energy demand sustainably.

Malik noted that increasing local gas output could offset declining LNG imports, reduce energy costs, and help relieve the country’s debt burden. “Our focus is now on local resources to ensure long-term energy security,” he added.

PAKISTAN IMPORTS 12.7GW SOLAR MODULES IN NINE MONTHS

Pakistan's solar energy drive is gathering unprecedented momentum, with imports of solar photovoltaic modules soaring to 12.7 gigawatts between July 2024 and March 2025. The surge — nearly one-fourth of the country's total power generation capacity of 46.6 gigawatts — reflects a major structural shift in the national energy mix away from expensive imported fuels. From residential rooftops to industrial estates, solar panels are rapidly reshaping Pakistan's energy landscape.

The trend is being fuelled by a combination of record-high electricity costs, frequent grid disruptions, and growing awareness of renewable alternatives. Energy experts believe the country is entering a decisive phase of solar adoption that could permanently alter its power dynamics. In parallel, the inclusion of Trina Solar among the world's Tier 1 clean energy firms by S&P Global Commodity Insights has further strengthened investor confidence in the sector.

Recognized for excellence in both solar modules and energy storage systems, Trina's standing underscores the importance of quality and innovation in meeting Pakistan's rising energy demands. Analysts say such international recognition of Trina Solar also benefits Pakistan by ensuring access to reliable technology and attracting long-term investment.

As solar adoption widens and global leaders expand their footprint in the local market, Pakistan's renewable energy transition is expected to gain deeper roots — reducing fuel import dependence, easing pressure on foreign reserves, and paving the way for a more sustainable power future.



SIFC STEPS IN TO AVERT FUEL CRISIS

The Sindh government has released Pakistan State Oil's (PSO) oil cargo following the intervention of the Special Investment Facilitation Council (SIFC), which stepped in to prevent a potential supply crisis.

According to industry sources, after the SIFC's involvement, the Sindh government granted permission for oil imports to continue until the end of October under the existing undertaking mechanism. A Parco cargo has already been cleared, while two more shipments — for PRL and NRL — are expected to arrive on October 23.

Officials from the oil sector explained that fuel prices are determined by the federal government, which includes various taxes in the pricing framework. "The cess issue is essentially between the provincial and federal governments," one official said, noting that the industry has urged the federal authorities to incorporate the Sindh Infrastructure Development Cess (SIDC) into fuel prices, much like the petroleum levy and other taxes passed on to consumers.

Previously, the Sindh cabinet had required oil companies to submit annual bank guarantees worth Rs25 billion — a move that the industry deemed impractical. "How can the oil industry manage such massive guarantees — and what happens if the Sindh government decides to encash them?" one representative questioned. The Oil Companies Advisory Council (OCAC) raised these concerns in a letter to the petroleum secretary, who then referred the matter to the SIFC. The council's swift action led to the release of oil cargoes that had been stranded at Karachi port. Sources said the SIFC is now working toward a long-term resolution of the cess dispute. The oil industry has proposed that the government

formally include the cess in the pricing mechanism — a step that could, however, increase fuel costs for consumers.

The Infrastructure Development Cess (IDC) has been imposed by the Sindh and Balochistan governments on petroleum imports since 1994. Although the Sindh High Court (SHC) initially stayed the levy, it upheld its legality in 2021. The industry appealed to the Supreme Court, which suspended the SHC order but maintained the protection of sub judice bank guarantees.

In July 2023, the Sindh Sales Tax and Excise Department reinstated the requirement for a local taxes and levies declaration before the Goods Declaration process. Following intervention by the Petroleum Division and OGRA, an interim arrangement was reached allowing companies to submit undertakings instead of bank guarantees.

Industry stakeholders warn that the SIDC poses significant financial and operational risks to the downstream sector. A single 40,000 MT cargo, valued at around USD 40 million, represents a major financial exposure. With limited credit lines and heavy regulatory obligations, companies argue that mandatory bank guarantees would severely affect import operations and fuel pricing.

The industry has called for urgent federal intervention to direct FBR and Customs to clear petroleum cargoes without bank guarantees, ensuring national fuel supply continuity. It further recommends a comprehensive policy revision — including exemptions for petroleum products from IDC/SIDC — through clear federal regulations.

SUBSIDY FOR INDUSTRY, FARMERS AMID IMF-BACKED ENERGY OVERHAUL

Pakistan announced a three-year electricity subsidy for its industrial and agricultural sectors, offering power at Rs22.98 (\$0.08) per unit under the newly introduced “Roshan Maeeshat Bijli Package,” according to the Prime Minister’s Office.

The initiative is designed to stimulate exports, create jobs, and revive economic growth, even as the government continues implementing IMF-backed energy reforms aimed at curbing sector losses and reducing untargeted subsidies.

Under the package, industries and farmers will be able to purchase additional electricity at the reduced rate of Rs22.98 (\$0.08) per unit — down from the current Rs34 (\$0.12) for industry and Rs38 (\$0.14) for agriculture — from **November 2025 to October 2028**. The measure seeks to make Pakistani products more competitive in regional markets.

“The electricity supplied under the Roshan Maeeshat Bijli Package will not place any burden on households or other sectors,” Prime Minister Shehbaz Sharif said in a statement, emphasizing that economic recovery and employment generation depend on affordable energy for productive sectors. He described the program as “a timely step to strengthen Pakistan’s economy and drive export-led growth,” highlighting that sustained industrial and agricultural expansion would help reduce the country’s reliance on debt.

During a pilot phase of the package last winter, industries and farmers consumed an additional 410 gigawatt-hours of power, which officials said contributed to higher output, exports, and

new job creation. “By supporting our farmers and industries with affordable energy, we will accelerate growth and move toward self-reliance,” Sharif added, expressing confidence that continued collaboration between the government and the private sector would lead to “full economic sovereignty in the near future.”

Pakistan’s energy sector remains one of its toughest economic challenges, burdened by high generation costs, extensive subsidies, and a growing circular debt that had reached **Rs2.396 trillion (\$8.6 billion)** by the end of March 2025.

Under the **37-month, \$7 billion IMF Extended Fund Facility** approved in September 2024, Islamabad committed to improving cost recovery in the power sector, reducing line losses, and phasing out broad-based energy subsidies. The IMF has consistently urged Pakistan to align power tariffs with actual supply costs and restrict fiscal support to well-targeted, temporary relief measures.

To stabilize the sector’s finances, the government secured a **Rs1.275 trillion (\$4.6 billion)** syndicated loan from local banks in June 2025 to help offset part of the debt.

Business groups have long cautioned that steep tariff increases and unreliable power supply have constrained industrial growth, warning that high energy costs continue to erode the competitiveness of Pakistani exports in global markets.



Global Scoop.

Here we dive into the latest developments in the industry as we explore the remarkable strides countries are making towards sustainable power sources, highlighting groundbreaking innovations and initiatives that promise a greener future for our planet. From cutting-edge solar technologies to revolutionary wind farms, this is your gateway to staying informed on the global transition to clean energy.



GLOBAL RENEWABLE ENERGY MARKET SET TO HIT \$3.875 TRILLION BY 2035

The global renewable energy market is projected to reach **\$3.875 trillion by 2035**, expanding at a **compound annual growth rate of 12.5%** between 2025 and 2035. According to Transparency Market Research Inc., this marks more than a threefold increase compared to 2024, highlighting the accelerating shift toward clean energy solutions.

This expansion is being driven by the widespread adoption of solar, wind, hydro, and other renewable technologies, supported by strong government initiatives. The report notes that governments, corporations, and communities around the world are prioritising renewable energy to fight climate change, reduce carbon emissions, and secure energy independence. At the same time, technological progress, falling costs, and favourable policy frameworks are making renewables increasingly competitive with conventional energy sources.

By 2035, renewables are expected to dominate global power generation, propelled by commitments to achieve net-zero targets and reduce reliance on fossil fuels. The market will also see the mainstream use of renewable-powered green hydrogen, significant expansion of offshore wind and floating solar projects, greater deployment of decentralised microgrids to serve remote areas, and deeper integration of clean energy into heavy industries and transportation.

Growth will be led by the Asia-Pacific region, followed by Europe and North America, reflecting large-scale investments and robust government support. Major players including Iberdrola, Enel, Ørsted, and NextEra are strengthening their positions through extensive renewable portfolios, long-term power purchase agreements, and advanced digital operations designed to maximise efficiency and reliability.



10% OF FRANCE'S GREEN ENERGY WASTED IN FIRST HALF OF 2025

In 2025, around 10% of France's solar and wind energy output was wasted, according to grid operator RTE, as distribution networks struggled to handle the rapid growth of renewables. Despite the surplus, electricity prices did not fall, reflecting the intermittent nature of clean energy production. Solar output peaks between late morning and early afternoon, while demand remains highest in the early evening, creating a mismatch that the system has yet to balance.

France's reliance on nuclear power further complicates matters. Nuclear reactors provide the base load but cannot be easily adjusted to match short-term fluctuations. A striking example occurred in August, when jellyfish clogged cooling water intakes at the Gravelines nuclear plant, forcing four reactors offline for several days. During this period, nuclear still dominated power supply, though solar temporarily rose to account for nearly one-third of generation.

RTE data also highlights growing price volatility. In the first half of 2025, there were 363 hours of negative electricity prices, up from 235 the year before. Yet average prices have risen to €67 per MWh, driven by high gas costs and colder weather, though they remain among Europe's lowest.

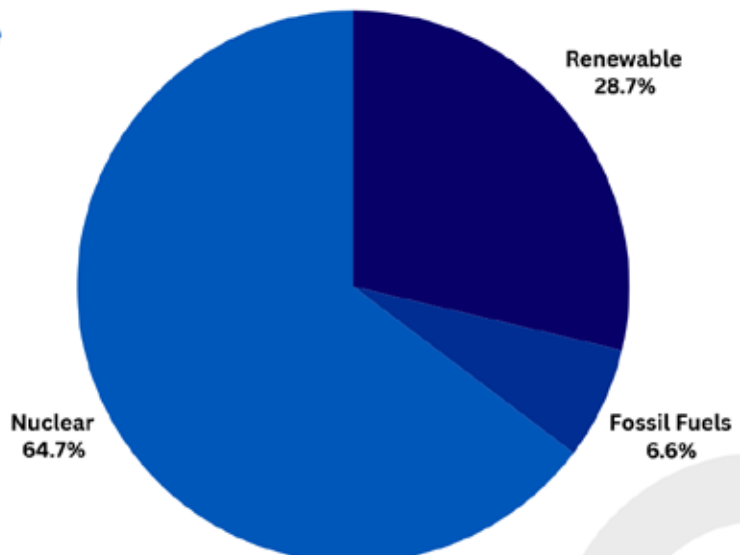
France continues to expand renewable capacity, adding 2.1GW of solar and 0.2GW of wind in the first five months of 2025. However, storage remains limited, with just 1GW of batteries installed nationwide compared to 61GW across Europe. While EDF and others are promoting domestic batteries to reduce household bills by up to 80%, high installation costs mean payback periods of 10-15 years.



● Renewable Energy Share

Nuclear energy dominates electricity generation at 64.7%, followed by renewable sources at 28.7%. Fossil fuels play a minor role, accounting for only 6.6% of the electricity mix.

This heavy reliance on nuclear power underscores France's long-standing commitment to nuclear energy as a primary source of electricity, while also demonstrating significant investment in renewable energy sources for a more sustainable energy future.





US SOLAR INSTALLATION FORECAST SLASHED DUE TO TRUMP POLICIES,

The U.S. solar industry could install **27% less capacity between 2026 and 2030** compared with projections made before President Donald Trump's tax law rolled back key subsidies, according to a report released Monday by the Solar Energy Industries Association (SEIA) and research firm Wood Mackenzie.

The trade group warned that Trump's policies are hindering the growth of clean energy, a sharp contrast to former President Joe Biden's climate agenda, which positioned renewables at the center of U.S. energy transition efforts. "Instead of unlocking this American economic engine, the Trump administration is actively discouraging investment, driving up energy costs for households and businesses, and undermining the reliability of the electric grid," SEIA President and CEO Abigail Ross Hopper said.

Despite policy headwinds, solar and storage still represented **82% of new U.S. electricity capacity** in the first half of 2025. Domestic solar module production also expanded, rising by **13 GW** in the same period to reach **55 GW** in total. Notably, more than three-quarters of solar projects installed this year have been concentrated in Republican-led states such as Texas, Indiana, and Florida.

Costs across the sector have been climbing, however, due to tariffs on imports and rising permitting and overhead expenses. Utility-scale solar prices increased by 4% in the second quarter of 2025, while residential system costs rose by 2% and commercial installations surged by 10%.



U.S. AND U.K. TO SEAL LANDMARK NUCLEAR POWER AGREEMENTS DURING TRUMP'S STATE VISIT

The United States and Britain are set to finalize a series of major nuclear power agreements during President Donald Trump's state visit this week, aiming to spark what leaders are calling a "golden age" of nuclear energy.

Among the multi-billion-pound deals are plans for U.S. and U.K. companies to construct up to 12 advanced modular reactors in Hartlepool, northeast England, and to develop data centers powered by small modular reactors (SMRs) in Nottinghamshire.

Officials say the partnership will create thousands of jobs, accelerate nuclear power development, and unlock billions in private investment. Prime Minister Keir Starmer hailed the initiative as putting both nations "at the forefront of global innovation and investment."

X-Energy and Centrica, the parent company of British Gas, expect the Hartlepool project to power 1.5 million homes and generate up to 2,500 jobs, with an estimated £40 billion (\$54.25 billion) in total economic impact. Separately, U.S.-based

Holtec, together with EDF and Tritax, plans to build SMR-powered data centers in Nottinghamshire valued at about £11 billion.

Advocates argue SMRs, being smaller and more flexible than conventional reactors, could be quicker and cheaper to build once commercialized. Tech giants including Amazon and Google have already struck U.S. deals for SMRs to meet surging data center demand. The broader initiative, branded the Atlantic Partnership for Advanced Nuclear Energy, also includes plans for the world's first micro modular nuclear power plant.

"With President Trump's leadership, the United States is ushering in a true nuclear renaissance—harnessing commercial nuclear power to meet rising energy needs and fuel the AI revolution," U.S. Energy Secretary Chris Wright said.

Supporters point to nuclear's low-carbon potential in cutting emissions and reducing reliance on fossil fuels, while critics argue it remains a costly and risky diversion from renewable alternatives.

SAUDI ARABIA TARGETS 130 GW OF SOLAR POWER BY 2030 IN PUSH FOR RENEWABLE LEADERSHIP

Saudi Arabia, long synonymous with oil wealth, is undergoing a sweeping energy transformation with plans to generate 130 gigawatts (GW) of solar power by 2030.

According to The Wall Street Journal, several large-scale solar projects are already underway across the Kingdom, with some nearing completion. Vast stretches of desert are being converted into solar farms, reflecting Riyadh's ambition to become a global force in renewable energy.

Official data shows Saudi Arabia's solar capacity climbed to 4,340 megawatts (MW) in 2024, up from 2,585 MW in 2023. By the end of the decade, the government aims for half of the nation's electricity to come from renewables.

Officials emphasize that the transition is motivated by both environmental concerns and economic opportunity, as solar power continues to be the world's cheapest and fastest-growing energy source. The initiative marks a bold effort to reshape Saudi Arabia's global image—from oil superpower to renewable energy leader.



Happen- ings.

Get ready to immerse yourself in a comprehensive exploration of the dynamic world of renewable energy and beyond. Here we will uncover the latest trends, breakthroughs, and impactful events shaping the global transition to sustainable practices, empowering you with the knowledge and inspiration to be at the forefront of the green revolution.





Why Big Banks Are Leaving the Net-Zero Banking Alliance

The announcement that the Net Zero Banking Alliance (NZBA) will cease operations marks an “unfortunate step backward” at a time when the effects of climate change are worsening, according to a leading industry expert.

David Carlin, founder of D. A. Carlin and Company — a firm advising governments and corporations on climate risk and finance — described the dissolution of the NZBA as a “real loss” in a LinkedIn post. He urged businesses to take greater responsibility in confronting a climate crisis that continues to escalate.

“We must recognize that this is not a self-correcting issue,” Carlin wrote. “If the financial system keeps driving climate change, financial collapse will inevitably follow. Between the laws of economics and the laws of physics, there’s only one victor — and it’s not economics.”

Member Withdrawals

The decision to disband the NZBA comes after the exit of several major members and a recent vote to restructure it as a guidance framework rather than a membership-based alliance.

In August, the NZBA announced it was ‘pausing’ operations to allow members to vote on its future direction following the departures of major banks, including Goldman Sachs, UBS, HSBC, JPMorgan, Citi, Morgan Stanley, and Macquarie.

Launched in 2021 by the UN Environment

Programme, the NZBA began with 43 founding banks and eventually grew to include over 140 institutions, representing approximately \$74 trillion in assets as of last year.

Members had committed to aligning their operational and financed emissions with pathways limiting global warming to 1.5°C, including interim 2030 targets. In 2024, the alliance expanded its scope to cover capital markets activities such as debt and equity underwriting.

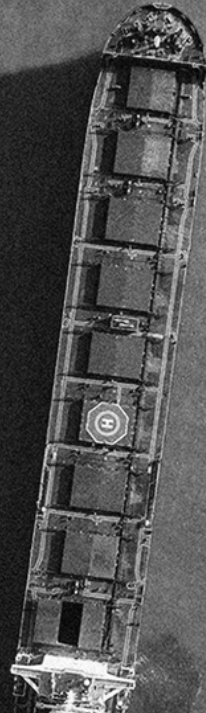
However, mounting political scrutiny — especially in the United States — triggered a steady wave of high-profile withdrawals that ultimately led to the alliance’s end.

Guidance for Climate Target Setting

Alongside the announcement of its closure, the NZBA has released a Guidance for Climate Target Setting for Banks, intended to serve as an ongoing resource for institutions developing climate transition strategies.

Reflecting on the alliance’s legacy, Carlin wrote, “Having witnessed NZBA’s inception and understood its founding vision, I believe the alliance offered far greater value than the headlines suggested. I salute my former colleagues at the UN Environment Programme Finance Initiative (UNEP FI) and the many professionals across the banking industry who dedicated immense effort to advancing sustainable finance.”

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The Loss of the Cryosphere

The cryosphere—the frozen water component of the Earth system—encompasses glaciers, ice caps, sea ice, permafrost, and snow cover. It plays a fundamental role in regulating the planet's climate, supporting ecosystems, and sustaining human livelihoods in polar and high-mountain regions. However, this vital system is undergoing unprecedented change. Driven by anthropogenic climate warming, the loss of the cryosphere has become one of the most visible and alarming indicators of global environmental disruption. The consequences extend far beyond the poles, influencing global weather patterns, sea levels, water supplies, and even geopolitical stability.

Defining the Cryosphere

The term cryosphere derives from the Greek word *kryos*, meaning “cold” or “frost.” It includes every part of the Earth where water exists in solid form for extended periods—ice sheets in Antarctica and Greenland, mountain glaciers, permafrost soils, river and lake ice, and sea ice in the Arctic and Antarctic Oceans. These frozen regions cover roughly 10% of the Earth's surface today, though this area fluctuates seasonally. The cryosphere interacts constantly with the atmosphere, hydrosphere, and biosphere, making it a key regulator of Earth's energy balance and hydrological cycles.

Observed Trends in Cryosphere Decline

Scientific observations over the past century show an accelerating decline across nearly every component of the cryosphere. According to the Intergovernmental Panel on Climate Change (IPCC), global temperatures have already risen by approximately 1.1°C since pre-industrial times, with the Arctic warming at more than twice the global average. The result is rapid ice melt and snow loss. Arctic sea ice extent has decreased by roughly 13% per decade since 1979, with summer ice shrinking faster than winter ice. In 2012, the Arctic reached its lowest recorded minimum sea ice extent,

covering just 3.4 million square kilometers—less than half the typical area measured in the early 1980s. Greenland's ice sheet is also losing mass at an alarming rate, contributing around 0.7 millimeters per year to global sea-level rise. Antarctica, once considered more stable, is now showing accelerating ice loss, particularly in the West Antarctic Ice Sheet, where warming ocean currents are melting ice shelves from below. Mountain glaciers are retreating on every continent. The Himalayas, Andes, Alps, and Rockies are all witnessing dramatic shrinkage, threatening freshwater supplies for millions. Snow cover in the Northern Hemisphere has declined in both duration and extent since the 1960s, and permafrost—permanently frozen ground in high-latitude and alpine regions—is thawing rapidly, releasing large amounts of carbon dioxide and methane.

Causes of Cryosphere Loss

The primary driver of cryosphere loss is global warming, fueled by greenhouse gas emissions from fossil fuel combustion, deforestation, and industrial activities. The physical processes that accelerate melting are well understood. Rising air and ocean temperatures directly melt ice surfaces and undermine ice shelves. Darkening surfaces—caused by soot deposition, dust, and biological growth—reduce the albedo effect, meaning less solar radiation is reflected back into space and more is absorbed, amplifying warming. In the Arctic, feedback loops intensify this process. As sea ice diminishes, the darker ocean absorbs more sunlight, further warming the region and leading to even more ice melt. This ice-albedo feedback contributes to Arctic amplification, where temperature increases outpace those in lower latitudes. Similarly, the thawing of permafrost releases trapped greenhouse gases, creating another positive feedback that accelerates climate change globally.

Consequences of Cryosphere Loss

The impacts of cryosphere loss are wide-ranging, affecting physical systems, ecosystems, and human societies.

1. Sea Level Rise

Melting ice sheets and glaciers contribute directly to rising sea levels. Between 1901 and 2018, global mean sea level rose by about 20 centimeters, and the rate of increase has accelerated in recent decades. The IPCC projects that sea levels could rise by more than one meter by 2100 under high-emission scenarios, threatening coastal cities, small island nations, and low-lying deltas. Millions could be displaced by flooding and saltwater intrusion into freshwater aquifers.

2. Disruption of Ocean and Atmospheric Circulation

The cryosphere influences ocean salinity and density, which drive major circulation patterns such as the Atlantic Meridional Overturning Circulation (AMOC). Freshwater from melting ice can weaken these currents, potentially disrupting global climate systems and altering weather patterns across continents. The loss of sea ice also changes atmospheric circulation, sometimes linked to extreme winter events and altered storm tracks in the Northern Hemisphere.

3. Ecosystem Impacts

Cryospheric decline reshapes entire ecosystems. Polar bears, walruses, and seals depend on sea

ice for hunting and breeding; as it vanishes, they face starvation and population collapse. In mountainous regions, melting glaciers alter river flow regimes, threatening aquatic habitats downstream. Snow loss affects plant and animal species adapted to cold environments, while thawing permafrost destabilizes landscapes, leading to landslides and changes in vegetation cover.

4. Human and Cultural Implications

For many Indigenous peoples of the Arctic and high-mountain regions, the cryosphere is central to identity, livelihood, and culture. Traditional hunting, fishing, and herding practices are being disrupted by unstable ice, changing animal migration patterns, and unpredictable weather. Communities built on permafrost face collapsing infrastructure as the ground beneath them thaws. Water security is also at risk: billions rely on glacier meltwater for drinking and irrigation, particularly in regions like South Asia and the Andes. Beyond local impacts, the cryosphere's decline has global geopolitical implications. The opening of new Arctic sea routes and access to previously unreachable oil, gas, and minerals are creating tensions among nations eager to exploit emerging economic opportunities in a rapidly changing polar landscape.

280

Global glaciers are billion tonnes of ice each





The Carbon Feedback Threat

One of the most concerning consequences of cryosphere loss lies in the potential release of vast stores of greenhouse gases trapped in frozen soils. Permafrost regions hold roughly twice as much carbon as is currently in the atmosphere. As they thaw, microbes decompose once-frozen organic matter, emitting carbon dioxide and methane—both potent greenhouse gases. This could trigger a “runaway” warming effect, where human-induced climate change activates natural feedbacks that further accelerate the process, making it much harder to limit global temperature rise to the targets set by the Paris Agreement.

13% Arctic sea ice is shrinking by per decade since 1979.

Mitigation and Adaptation Strategies

Addressing cryosphere loss requires urgent and coordinated global action. Mitigation remains the most effective tool: reducing greenhouse gas emissions is essential to slow warming and stabilize ice loss. Transitioning to renewable energy, improving energy efficiency, and protecting carbon sinks such as forests and wetlands are all critical measures.

Adaptation strategies are also vital for communities already facing cryospheric impacts. Coastal defenses, managed retreat, and improved water management systems can reduce vulnerability to sea-level rise and glacial melt. In the Arctic, local knowledge and modern technology can be integrated to strengthen resilience and preserve cultural traditions. International cooperation—through agreements such as the Arctic Council and global climate

frameworks—is necessary to share data, fund adaptation projects, and protect vulnerable regions.

The Need for Awareness and Policy Action

Despite clear evidence, political action often lags behind scientific warnings. Public understanding of the cryosphere’s importance remains limited, especially in countries far from the poles. Yet, what happens in the Arctic or on the Himalayas affects everyone. Sea-level rise, climate feedbacks, and disruptions to global weather patterns transcend borders. Integrating cryosphere protection into international climate policies, education, and research funding is imperative. The 2022 IPCC Sixth Assessment Report emphasized that every fraction of a degree of warming matters: limiting global warming to 1.5°C rather than 2°C could halve the projected loss of Arctic sea ice and dramatically reduce glacial retreat.

Conclusion

The loss of the cryosphere is not merely a regional issue—it is a planetary crisis. The melting of ice and snow signifies a profound transformation in Earth’s climate system, driven by human activity and sustained by feedback loops that amplify warming. The consequences—rising seas, shifting weather patterns, biodiversity loss, and human displacement—are already visible. Yet, the future remains within our control. With decisive mitigation, adaptation, and global cooperation, it is still possible to slow the decline of the cryosphere and preserve its vital functions for generations to come. Protecting the frozen heart of our planet is not only an environmental necessity but also a moral responsibility to the world’s most vulnerable communities and to the stability of Earth’s life-support systems.

SUSTAINABILITY

what people see

Reducing CO2 emissions

Social justice

Reducing other GHGs

Education access

Food security

Plastic reduction

Ozone recovery

Lively reefs

Water replenishment

Plant-based food system

Circular economy

Regenerative design

Protecting biodiversity

Carbon equality

Limiting ocean acidification

what it also communicates

PAKISTAN'S SOLAR EXPANSION COULD SPARK A WATER CRISIS

Farmers in Pakistan are replacing diesel-fueled pumps with solar energy to power the typical irrigation technique in a large part of the world's fifth most populous country. Many farmers rely on the so-called tube wells—a water well and a motorized pump to take water from groundwater. Amid soaring diesel prices and unreliable electricity supply in recent years, more farmers are installing solar panels to help them with crop irrigation.

The solar-powered tube wells provide smoother irrigation. Solar panels have steep upfront costs for a farmer in Pakistan, but they save a lot on energy costs that would have gone for diesel or (often unreliable) grid electricity.

However, as the number of solar-powered pumps has surged in recent years, some experts and analysts fear that farmers who have constant access to energy to irrigate at will could deplete the underground water levels, the so-called water table, in a country that is already under water stress.

The solar power boom in Pakistan's huge agriculture sector could lead in the longer term to a full-blown water crisis in provinces such as Punjab, Pakistan's bread basket, and Balochistan, the country's fruit basket province, which produces more than 90% of the fruit in Pakistan.

Related: OPEC+: Leaks on Oil Plans Again
The solar-powered irrigation boom is "good for the environment because it's clean energy," Muhammad Kazim Pirzada, the irrigation minister of Punjab.

"But at the same time, it is also impacting our water table," the minister added. The underground water levels are depleting, according to reports by the Punjab water authorities reviewed by Reuters. The documents, however, did not pinpoint reasons for the falling water table levels.



Earlier this year, Pakistan's Power Minister, Awais Leghari, said that it is a "misconception that solar tube wells are depleting groundwater." Some experts disagree, while the water department in Punjab continues to study whether tube wells are depleting groundwater. Pakistan needs measures to map the tube wells and monitor groundwater levels and withdrawals, to avoid what could be a major water crisis, analysts say.

Pakistan is a water-stressed country, and its water supply situation may further worsen. Earlier this year, rising tensions with India led to New Delhi threatening to suspend the 1960 Indus Waters Treaty (IWT), a vital water treaty between the two rivals mediated by the World Bank, to share water resources from the Indus River basin downstream to Pakistan.

Climate change and population growth are also stressing water resources in Pakistan. Many people do not have access to clean water. Depletion of groundwater would be devastating to a country with a rapidly growing population, as potentially falling crop yields due to water shortages could also lead to food scarcity.

Solar-powered irrigation could also contribute to the water stress of Pakistan, according to a study published in the *Journal of Agriculture and Food Research* earlier this year.

The paper by researchers from the Pakistan Agricultural Research Council and the Wageningen University in the Netherlands studied the effect of the ongoing transition from diesel to solar power for irrigation. The authors noted that farmers using solar pumps typically extract more groundwater compared to farmers using diesel pumps under similar conditions. While solar-powered tube well pumps have environmental and economic benefits, they could cause over-extraction of groundwater, the study found.

The authors of the paper conducted one-to-one comparisons of solar vs diesel pumps in 30 pairs of farmers working in similar circumstances. The researchers found that in 77% of the cases, farms using solar pumps extracted more water than their diesel counterparts under comparable conditions. The up-scaling of solar pumps could deplete groundwater aquifers and have drastic implications for future sustainable food production in Pakistan, the authors of the study wrote.



WHAT IS RENEWABLE ENERGY?

The Answer is Blowing in the Wind

We hear a lot about renewable energy, but what is it, exactly?

It is an energy source that is perpetual ... inexhaustible... "to infinity and beyond!" Renewable energy has storage limitations, however, and some types are not available 24/7.

A FEW FACTS

- According to the University of Michigan (U-M) Center for Sustainable Systems, about 80% of the nation's energy comes from fossil fuels, 8.4% from nuclear and 11.4% from renewable sources.
- In 2019, renewable energy sources accounted for about 17% of energy generation, according to the U.S. Energy Information Administration (EIA).
- The EIA projects that the share of renewables used for U.S. electricity generation will increase from 21% in 2020 to 42% in 2050.
- Wind and solar are the fastest-growing renewable sources, but they provide just 3.8% of total energy used in the U.S., according to the U-M center.

THE MAJOR TYPES OF RENEWABLE ENERGY SOURCES ARE:



**BIOMASS,
INCLUDING
BIOFUELS**
(comes from plants
and animals)



**WATER OR
HYDROPOWER**



GEOHERMAL
(comes from the heat
of the earth)

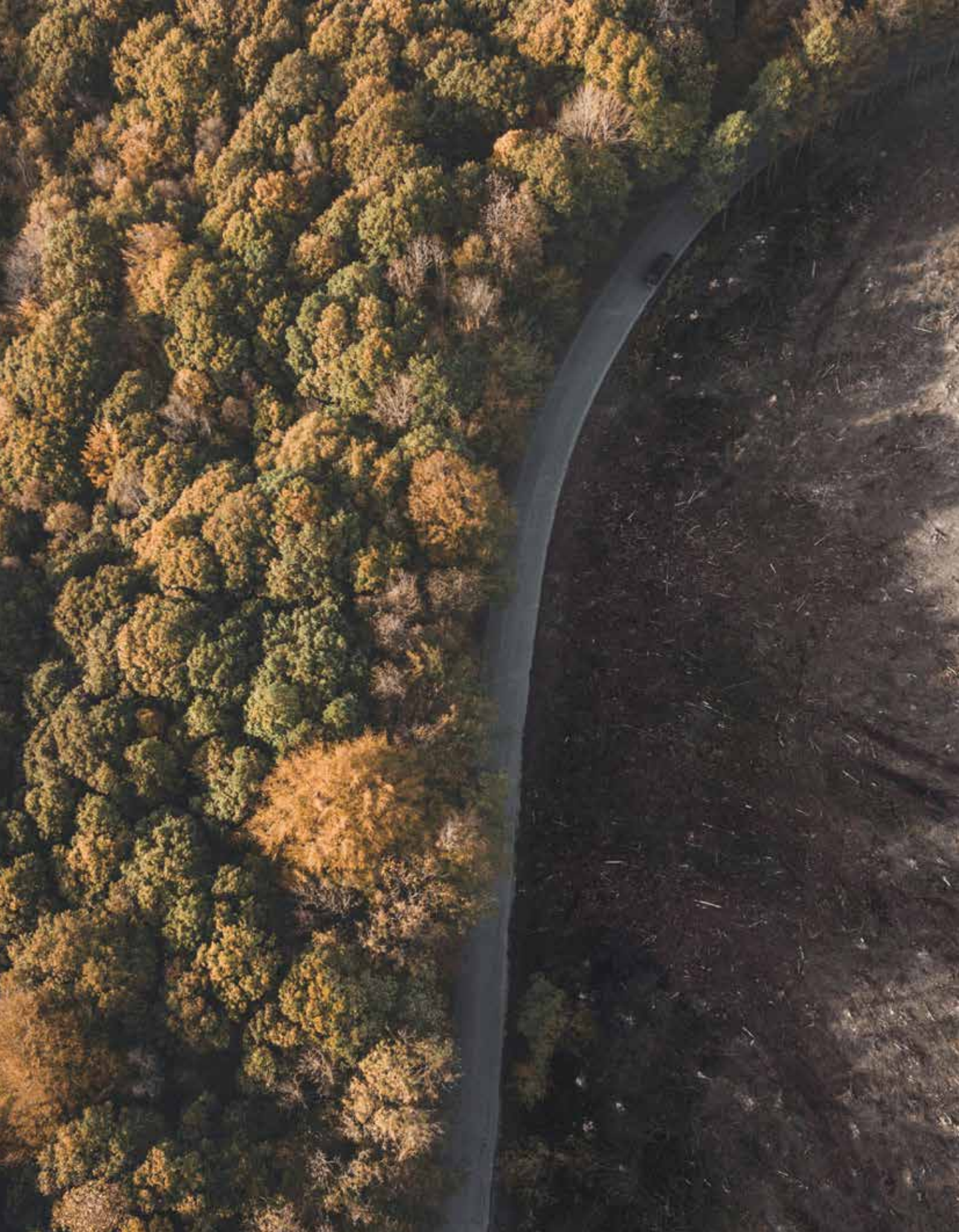
WIND



SOLAR

“FORESTS ARE THE WORLD’S
AIR-CONDITIONING SYSTEM -
THE LUNGS OF THE PLANET - AND WE ARE ON
**THE VERGE OF
SWITCHING IT OFF.”**







DISCOs Propose Fixed Charges on Solar Net Metering

Pakistan's power distribution companies (DISCOs) have proposed introducing fixed charges on solar net metering to offset growing revenue losses as more consumers shift away from the national grid.

At a Nepra public hearing, officials from Multan Electric Power Company (Mepco) and Gujranwala Electric Power Company (Gepco) argued that the rapid growth of rooftop solar systems has reduced their income, as solar users export electricity to the grid but contribute less toward fixed transmission and capacity costs. The Ministry of Energy (Power Division) backed the proposal, stating that solar consumers are avoiding their fair share of grid-related expenses, leaving the burden on non-solar users.

The proposal comes amid record-high power tariffs, which have accelerated the shift toward solar energy as a cheaper alternative. DISCOs are urging Nepra to approve fixed charges to sustain their financial health and fund maintenance and infrastructure improvements.

During the hearing, Nepra officials expressed concern over delayed payments to solar users for exported energy, which often depend on consumer applications. Meanwhile, Nepra took regulatory action against Gepco for installing smart meters without approval or data backups, while Mepco reported an annual Rs 900 million in unrecoverable dues despite a 100% recovery target.

The debate highlights the government's challenge to balance renewable energy expansion with grid stability and equitable cost-sharing, as Pakistan navigates its energy transition.

Pakistan's power distribution companies (DISCOs) have proposed the introduction of fixed charges on solar net metering consumers to address growing revenue losses from the rapid shift toward decentralized solar energy generation. The move comes as more households and businesses turn to rooftop solar systems to escape soaring electricity tariffs and frequent billing issues associated with the national grid.

The proposal was discussed during a public hearing held by the National Electric Power Regulatory Authority (Nepra), where officials from Multan Electric Power Company (Mepco) and Gujranwala Electric Power Company (Gepco) highlighted the financial strain caused by the increasing adoption of solar net metering. They argued that as more consumers produce their own electricity and export surplus power to the grid, the fixed operational costs of running the transmission and distribution network are falling on a shrinking number of non-solar users.



WHY YOUNG PEOPLE SHOULD CARE ABOUT INVESTING IN CLEAN ENERGY

For younger generations, investing in clean energy is one of the most impactful ways to shape a better future—both for the planet and for their own financial well-being. As the climate crisis intensifies, clean energy offers a practical and forward-thinking investment option that supports innovation, job creation, and global sustainability.

Renewable energy sources like solar, wind, and hydropower are no longer niche technologies—they are rapidly becoming the backbone of modern energy systems. The clean energy sector is one of the fastest-growing industries in the world, offering vast opportunities in technology, engineering, finance, and entrepreneurship. For young people entering the workforce or beginning their investment journey, this sector represents growth, resilience, and long-term returns.

Investing in clean energy also reflects values that matter to many young people. Climate change, environmental justice, and sustainability are priorities for this generation. By choosing green investments—such as sustainability-focused

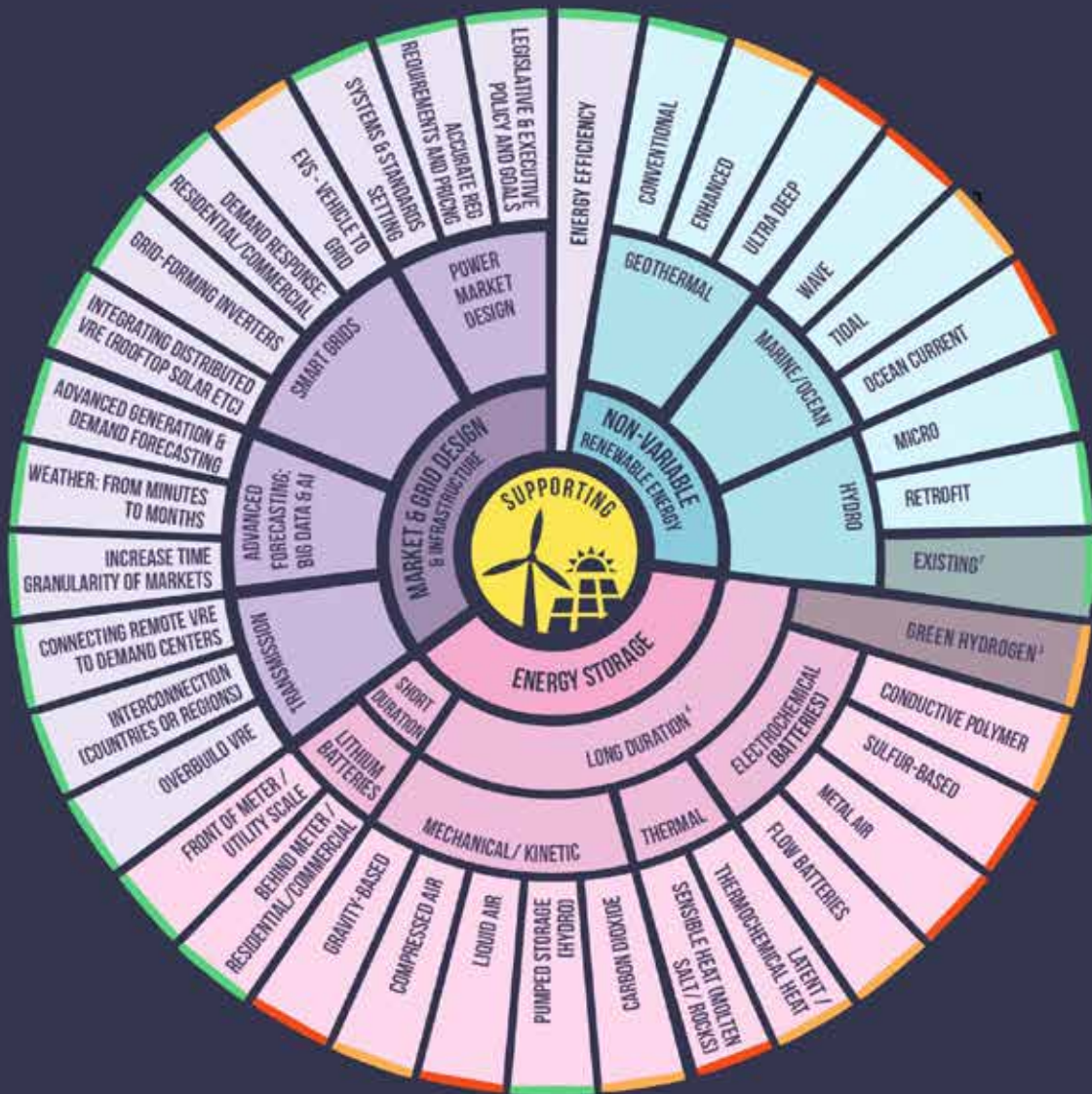
mutual funds, green bonds, or shares in renewable energy companies—young investors can align their financial choices with their personal beliefs, contributing to positive environmental and social impact.

Moreover, clean energy is a more stable and secure alternative to fossil fuels, which are prone to price volatility and geopolitical risks. Renewable technologies offer decentralized, low-cost, and increasingly reliable energy solutions. As demand for electric vehicles, energy storage, and smart grids grows, so does the potential for clean energy to deliver strong financial performance.

Thanks to digital investment platforms, getting started is easier than ever—even with small amounts. For young people looking to build wealth while supporting the planet, clean energy offers a powerful and accessible opportunity. It's more than an investment—it's a step toward a cleaner, smarter, and more sustainable world they'll inherit.

Achieving Fossil-Free Electricity¹

Policies, Tools and Technologies for Supporting Wind and Solar



Key: Market Readiness

- █ Commercial
- █ Newly Commercial
- █ Demo/Pilot

Footnotes:

1. Infographic shows the many choices available for supporting wind & solar to achieve reliable, dispatchable fossil-free energy. There is no one silver bullet. Not all are necessary, although most Market & Grid Design reforms are. List is not exhaustive.
2. No new large hydropower dams should be built. Existing projects should be operated in a way that minimizes impact on vulnerable communities.
3. Converting electricity to hydrogen and back again is inherently inefficient but may make sense in some contexts. Hydrogen should be manufactured, stored, and converted back to electricity, all at the same location, in order to limit inefficiencies and leakage risks.
4. Long Duration storage is mostly not needed until over 50% VRE penetration.



NEW ELECTRIC VEHICLE MANUFACTURING PLANT TO LAUNCH IN PAKISTAN

Capital Smart Motors (CSM) has announced the launch of its manufacturing and assembly operations in Pakistan, marking a major step forward in the country's transition toward localized electric vehicle (EV) production.

The company revealed that it is setting up one of Pakistan's first New Energy Vehicle (NEV) CKD (Completely Knocked Down) plants. CSM confirmed that it is now entering the manufacturing phase — Phase 1 will involve taking over an existing local facility for interim production, while Phase 2 will see the construction of a fully equipped, state-of-the-art CKD plant.

A relatively new entrant in Pakistan's auto sector, Capital Smart Motors has already introduced four Chinese EV brands to the market: Riddara, an all-electric pickup truck brand; Zeekr, a luxury EV line; Forthing, known for its Friday model — Pakistan's first range-extended electric C-SUV (REEV); and JMEV, maker of the all-electric sedan Elight.

Until now, the company has been importing vehicles as CBUs (Completely Built-Up units). The move toward local assembly is expected to help CSM reduce costs and make EVs more affordable for Pakistani consumers.

It's worth noting that Seres 3 was the first NEV to be locally assembled in Pakistan. More recently, Hub Power Company (Hubco) partnered with Chinese EV leader BYD to establish another NEV assembly facility, expected to begin operations in 2026 — signaling growing momentum in Pakistan's emerging EV manufacturing landscape.

GLOBAL EVENTS



Intersolar Europe Exhibition
Date: 23 – 25 June, 2026
Venue: Messe, München



SNEC
Date: 3 – 5 June, 2026
Venue: Shanghai, China



SOLAR PAKISTAN
Date: 17 - 19 April, 2026
Venue: Lahore Expo Centre



WORLD BATTERY & ENERGY STORAGE INDUSTRY EXPO
世界电池、储能产业博览会

WBE
Date: 16 – 18 Sep, 2026
Venue: Guangzhou, China

Global Events



RE+
Date: 16 – 19 Nov 2026
Venue: Las Vegas, NV



WETEX & DSS
Date: 20 – 22 Oct, 2026
Venue: Dubai World Trade Centre (DWTC)



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