WORLD FUTURE ENERGY SUMMIT

In collaboration with true

EMERGING INNOVATIONS AND THEMES IN ENERGY TRANSFORMATION

#WFES2026

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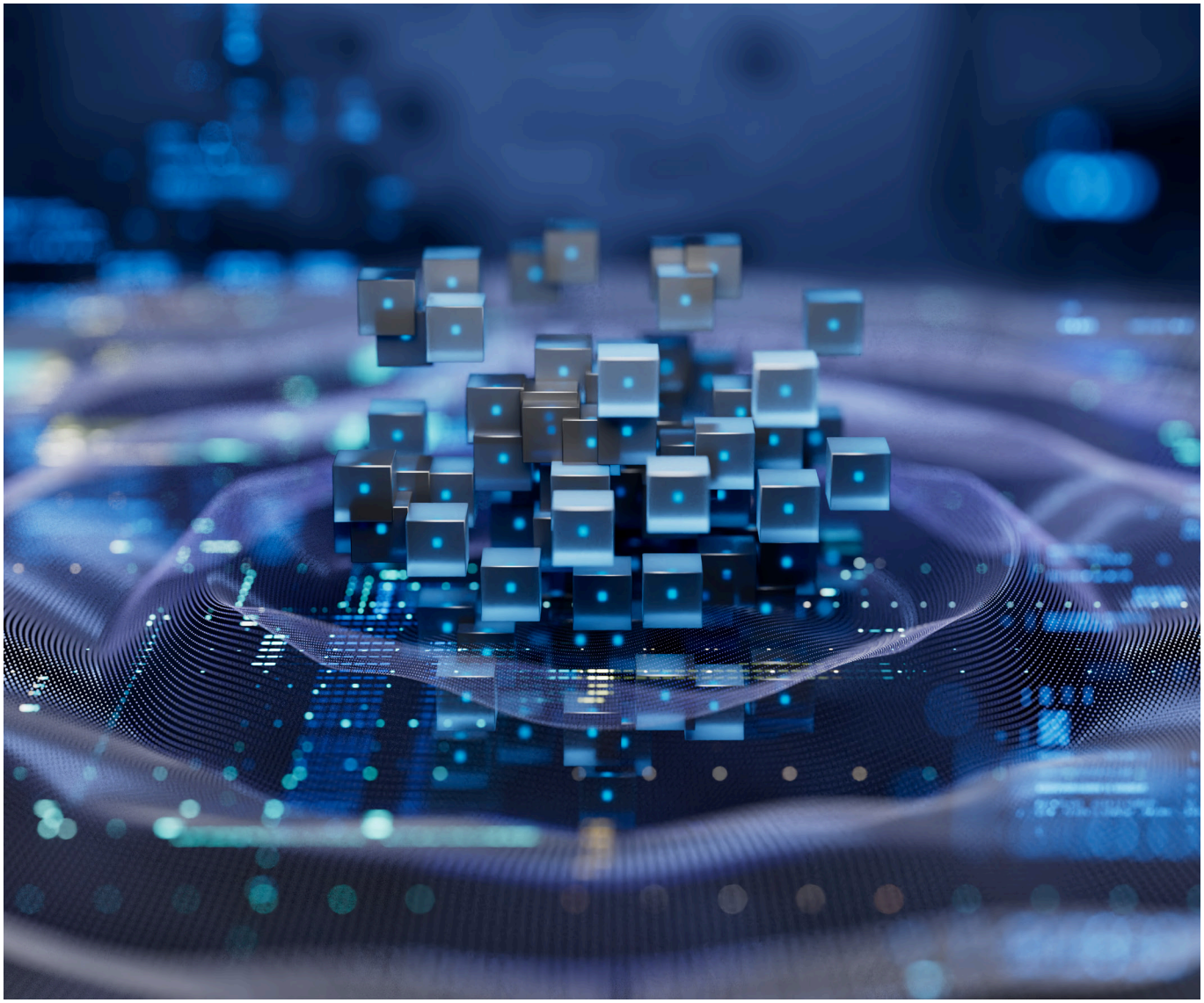
Foreword

From Hardware to Intelligence: The 2026 Pivot

The energy transition has historically been defined by hardware: bigger wind turbines, cheaper solar panels, and denser batteries. As we enter 2026, a fundamental shift is underway. We are moving from an era of pure hardware deployment to an era of **Intelligent Implementation** and **Resource Resilience.**

This year's report identifies two dominant forces reshaping the landscape. First, **Artificial Intelligence (AI)** has transcended its role as a mere software tool to become a physical catalyst-decongesting grids, inventing new materials in months rather than years, and optimising industrial loads in real-time. However, this intelligence comes with a cost: a voracious appetite for energy and water, necessitating a new class of cooling and efficiency technologies.

Second, Water Security has emerged as a critical technological battleground. Innovation here is decoupling from massive, centralised utility models, favouring decentralised, membrane-free, and atmospheric solutions that offer resilience to the Global South.
As we explore these themes, we must also confront the "Watt Future"- a reality where AI's energy hunger could compete with community needs. The challenge for 2026 is not just generating power, but ensuring Global Equity in its distribution, preventing a divide where "energy fragile" nations are left behind while tech giants consume the surplus.



Global Innovation Outlook: 2026 & Beyond

The AI Paradox: Catalyst vs. Consumer

In 2026, the energy sector faces a unique paradox: AI is both the greatest accelerator of the transition and a significant new source of demand.

A. AI as the Multiplier: The Catalyst

AI is rewriting the physics of energy innovation. It is no longer just optimising software but is now deeply embedded in the physical world:

- **Material Discovery at Warp Speed:** Traditional material science is a game of trial-and-error spanning decades. In 2026, Generative AI and physics-informed machine learning are cutting R&D timelines by up to **10x.** Algorithms are now "reverse-engineering" chemical formulas to meet specific performance criteria-such as non-toxic battery electrolytes or high-efficiency solar perovskites-reducing early-stage testing costs significantly.
- **Grid Decongestion:** AI is unlocking hidden capacity in existing infrastructure. By using real-time data from sensors to dynamically manage line ratings (Dynamic Line Rating), AI can unlock gigawatts of transmission capacity globally without laying a single new cable.

B. The Infrastructure of Intelligence: The Consumer

The "brain" of the transition creates heat. The exponential rise of Large Language Models (LLMs) and neo-cloud data centres is straining local grids and water supplies.

- **The Cooling Imperative:** With data centre electricity consumption projected to double by 2030, traditional air cooling is becoming obsolete. The industry is aggressively pivoting to **Direct-to-Chip** and **Immersion Cooling technologies**. These are no longer niche but essential for handling the thermal density of next-gen GPUs.
- **Energy-Water Nexus:** The "thirst" of AI is driving a conflict between digital growth and water scarcity. Innovations in **hybrid liquid cooling** can cut water usage by 90% in arid regions, becoming a prerequisite for data centre permits in water-stressed locales.

AI is not just a tool but a catalyst, speeding up material discovery and grid efficiency by 10x.

Artificial Intelligence in 2026 is the "silent infrastructure" of the energy transition. It is solving problems that were previously limited by human cognitive bandwidth and physical testing time.

Top Emerging Themes for 2026

Looking to 2026, the energy transition is increasingly influenced by AI, a force that optimizes systems even as it reshapes consumption patterns.

1. The AI & Digitalisation Surge

Artificial Intelligence has graduated from a tool for predictive maintenance to a system of autonomous operation. The focus in 2026 is on **Grid Intelligence**-using AI to turn passive assets (batteries, EVs, data centres) into active grid stabilisers-and **Urban Resilience**, where hyper-local heat mapping guides physical city planning.

The integration of digital technologies in energy began in the 1970s with SCADA (Supervisory Control and Data Acquisition) systems, which allowed utilities to monitor grid infrastructure remotely. For decades, "smart grid" efforts focused on installing smart meters and basic automation. However, true AI adoption lagged due to data silos and processing limitations. It wasn't until the early 2020s, with the explosion of generative AI and cloud computing, that the industry moved from monitoring data to predicting and autonomously acting on it.

AI will act as a virtual infrastructure layer, unlocking gigawatts of capacity without pouring a single cubic meter of concrete. By 2030, AI-driven dynamic line ratings could increase transmission capacity by 30-40%, solving the "interconnection queue" crisis that currently stalls renewable projects. Furthermore, AI will be the primary architect of climate adaptation, simulating micro-climates to design cities that remain liveable in a warming world.

Trend Watch

Monetising Stranded Renewables: A new class of **"Switchable Off-takers"** is emerging. From modular data centres to bitcoin miners, these flexible loads act as "anchor tenants" for renewable projects, absorbing surplus electrons that would otherwise be curtailed. This model turns stranded energy into a revenue stream while stabilising the grid.

Featured Technology (Fuse AI):

Stand AI11	**Splight:** Solves grid congestion by using real-time data and AI to treat batteries and data centers as "virtual transmission lines," unlocking up to 100% more capacity without new infrastructure.
Stand AI16	**FortyGuard:** Uses advanced AI to generate hyper-local urban heat maps, enabling developers and city planners to cool outdoor spaces with surgical precision.
Stand AI22	**Etalytics:** Deploys the etaONE platform to analyse industrial energy data in real-time, optimising cooling and heating systems to significantly cut emissions in data centers and pharmaceutical plants.
Stand AI18	**Infrared City:** Democratises climate simulation by allowing architects to assess complex environmental factors—wind, heat, and sunlight—in seconds rather than days.
Stand AI12	**QEA Tech:** Combines drones with patented AI software to audit building envelopes, identifying thermal leaks and quantification energy loss to guide precise retrofits.
Stand AI20	**Smarterise:** Brings the "Internet of Energy" to West Africa by combining IoT sensors and AI to optimise grid reliability and reduce waste for industrial clients in emerging markets.
Stand AI19	**Gyre Energy:** Integrates AI with thermal energy storage to optimise cooling loads in cold storage and data centers, intelligently shifting demand away from peak tariff windows.

Stand AI24 **Greenie Web:** A digital decarbonisation tool that uses AI to rewrite computer code into more efficient, low-carbon versions, directly reducing the energy footprint of software.

Stand AI14 **i-ESG:** An AI-powered SaaS platform that automates carbon accounting and ESG reporting, helping enterprises navigate complex global sustainability regulations.

Stand AI15 **Maiven:** A business intelligence platform leveraging AI to track and interpret the rapidly changing landscape of global climate regulations for corporate strategy.

Stand AI23 **7dxperts:** Specialises in digital twin technology and digital transformation consulting, enabling industrial facilities to simulate and optimise operations before implementation.

Stand 6100 **Huawei:** displaying its "Digital Power" portfolio, which integrates AI into photovoltaic inverters and energy storage systems to maximise yield and grid stability.

Stand 5250 **BEEAH:** Demonstrating how digitalisation drives the circular economy through smart waste management systems and AI-sorted recycling facilities.

2. Water Security & Resilience

The era of "mega-desalination" is being complemented by **Decentralised Water Production**. Technologies that harvest water from air (atmospheric generation), treat wastewater with molecular precision (bioreactors), or desalinate using subsea pressure are critical for the Global South and water-stressed industrial hubs.

Desalination rose to prominence in the 1960s and 70s, primarily through thermal distillation in the Gulf region. The 1990s saw the revolution of Reverse Osmosis (RO), which drastically lowered energy costs. However, for the last 30 years, the model has remained centralised: massive coastal plants piping water inland. Efforts to decentralised water have historically struggled with high costs and maintenance complexity, limiting their reach to niche disaster relief applications until recent breakthroughs in materials science.

The future of water is "distributed," mirroring the shift from centralised power plants to rooftop solar. Decentralised technologies will decouple water security from the heavy electrical grid, allowing agriculture and industry to thrive in off-grid or arid regions. This shift will also reduce the **"energy-water nexus"** strain, as new methods like atmospheric generation and subsea desalination drastically lower the carbon footprint of every litre produced.

Featured Technology:

Stand G57 **Ocean Well:** Pioneers subsea water farms that harness natural hydrostatic pressure at depth for reverse osmosis, eliminating the land footprint and reducing the energy intensity of desalination.

Stand G12 **Majik Water:** Deploys solar-powered atmospheric water generators (AWG) to harvest clean drinking water from air humidity, providing a decentralised lifeline for water-scarce communities in the Global South.

Stand G21 **Desolenator:** Delivers a circular, solar-thermal desalination solution that produces ultrapure water without relying on polymer membranes or toxic chemicals, ideal for off-grid industrial resilience.

Stand G66 **Exposome:** Revolutionises wastewater treatment with molecular filtration technology that removes heavy metals and recalcitrant pollutants, enabling the safe reuse of industrial effluents.

Stand AI13 **Droople:** Known as the "Internet of Water," this platform uses IoT sensors and AI to monitor decentralised water assets in real-time, predicting maintenance needs and drastically reducing wastage.

The Global South is leapfrogging traditional utility models with decentralised water and power.

Just as mobile phones allowed the Global South to leapfrog landlines, decentralised technologies are now allowing these regions to bypass massive, capital-intensive utility grids.

Stand G3 **Plantaform:** Utilises fogponics technology to grow food with 98% less water than traditional farming, demonstrating how decentralised water efficiency can secure food systems in arid regions.

Stand 5100 **Dubai Electricity and Water Authority PJSC - DEWA:** A global leader in utility-scale water security, showcasing innovations in smart water grids and high-efficiency desalination to decouple water production from carbon emissions. Location: WFES Exhibition Halls

Stand A230 **Emirates Water and Electricity Company (EWEC):** Drives the region's transition to low-carbon water production by integrating massive reverse osmosis capacity with solar energy to reduce the energy-water nexus strain. Location: WFES Exhibition Halls

Stand 3115 **Abu Dhabi Waste Management Company (Tadweer) P.J.S.C:** Addresses the critical water-waste nexus by deploying advanced treatment technologies to manage leachate and wastewater, supporting circular water economy goals.

Stand 4205 **ENGIE:** A major developer of independent water and power projects, focusing on energy-efficient desalination solutions that support industrial hubs and municipal resilience.

Stand A320 **Masdar:** Actively developing renewable-powered desalination projects, bridging the gap between clean energy generation and sustainable water access for water-stressed regions.

3. Hydrogen & Green Molecules: The Cost Battle

The hype has settled, and the focus is now purely on Cost Reduction (CAPEX). Innovations include **Membrane-Free Electrolysis** (eliminating expensive iridium/PFAS), **Waste-Heat Integration** to lower electricity needs, and alternative production methods like methane splitting.

Hydrogen has been an industrial staple for over a century, primarily produced via steam methane reforming (grey hydrogen). The concept of "Green Hydrogen" (electrolysis) emerged in the 19th century but remained uneconomical. It gained serious prominence post-2015 with the Paris Agreement, sparking a wave of pilot projects. However, historical efforts were hampered by the high cost of electrolysers and the inefficiency of renewable energy integration, keeping green hydrogen at <1% of global production for decades.

These innovations will move green hydrogen from "pilot purgatory" to commercial viability. By slashing CAPEX and utilising waste heat, companies are bringing the cost of green hydrogen closer to parity with fossil-fuel-based hydrogen ($1-2/kg). This will unlock the decarbonisation of hard-to-abate sectors like steel, shipping, and aviation, which cannot simply be electrified.

Featured Technology:

Stand GH3 **Advanced Ionics:** Their Symbion™ electrolyser utilises industrial waste heat (instead of just electricity) to produce green hydrogen for less than $1/kg, directly addressing the cost barrier for heavy industry.

Stand GH10 **Supercritical Solutions:** Pioneering a membrane-free electrolyser that delivers hydrogen at ultra-high pressure (220 bar), eliminating the need for expensive compressors and reducing CAPEX.

Stand GH12 **Hycamite:** Produces low-carbon hydrogen and solid carbon (graphite) by splitting methane, turning a fossil feedstock into a clean fuel and battery material without CO2 emissions.

Stand GH4 **Power to Hydrogen:** Offers an AEM electrolyser that cuts capital costs by 65% and integrates directly with renewable sources, solving the high CAPEX challenge of traditional systems.

Stand GH1 **Matteco:** Developing next-gen catalysts and electrodes to make green hydrogen production cost-competitive at gigawatt scale, focusing on material efficiency.

Stand GH2 **Divigas:** Invented a robust hydrogen separation membrane that resists acidic gases, allowing for the recovery of hydrogen from harsh industrial waste streams that would otherwise be flared.

Stand GH11 **Ossus Biorenewables:** Uses autonomous bioreactors to generate hydrogen from industrial wastewater, turning a cost center into a fuel source through biological processes. **Location:** The Greenhouse

Stand G25 **Nium:** Uses nano-catalysts to synthesise clean ammonia at lower pressures and temperatures than the traditional Haber-Bosch process, decentralising fertiliser and fuel production. **Location:** The Greenhouse

Stand GH8 **Electric Aviation Group (EAG):** Developing lightweight electric propulsion systems integrated with hydrogen fuel cells, targeting the decarbonisation of the hard-to-abate aviation sector. **Location:** The Greenhouse

Stand 8104 **Clean Power Hydrogen Plc:** Innovators in membrane-free electrolyser technology, focusing on simple, robust, and cost-effective hydrogen production solutions for renewable integration.

Stand 3323 **Agastya Hydrogen Private Limited:** Dedicated to advancing the hydrogen economy through the development of reliable hydrogen generation technologies and infrastructure support.

Stand 8308 **DirectH2, Inc.:** Focuses on technologies that streamline the hydrogen supply chain, potentially offering solutions for direct hydrogen generation or usage.

Stand 7420 **Zhejiang Provincial Hydrogen Equipment Manufacturing Innovation Center:** A hub for advanced manufacturing of hydrogen equipment, representing the supply chain maturity needed to lower CAPEX globally.

Stand 4004 **H2ESK:** A specialised player in the hydrogen ecosystem, contributing to the broader adoption of hydrogen technologies through equipment or service innovations.

Stand A320 **Masdar:** A global clean energy powerhouse actively developing utility-scale green hydrogen projects to decarbonise hard-to-abate sectors like steel and shipping.

4. Circular Economy: The Hard-to-Abate

This theme focuses on turning "impossible" waste streams-tires, sludge, and captured CO2-into high-value feedstocks like battery graphite, Sustainable Aviation Fuel (SAF), and construction minerals. It represents a shift from "waste management" to "**molecular regeneration**."

Circular economy concepts have roots in the 1970s environmental movements, but largely focused on mechanical recycling (paper, glass, PET). For decades, complex waste streams like tires and industrial sludge were landfilled or incinerated due to technical limitations. "Carbon Capture" has existed since the 1970s for enhanced oil recovery, but using CO2 as a feedstock for mineralisation or products is a development that has only gained commercial traction in the last 5-7 years.

This sector changes the narrative from "minimising harm" to "creating value." By creating domestic supply chains for critical materials (like graphite from tires or construction aggregates from waste), nations can reduce reliance on volatile global mining markets. Furthermore, technologies like carbon mineralisation offer a permanent, non-reversible carbon removal solution, which is essential for meeting Net Zero targets that emission reductions alone cannot achieve.

Featured Technology:

Stand G1	**44.01:** Pioneers the process of carbon mineralisation by injecting captured CO2 into peridotite rock formations, permanently turning a greenhouse gas into stable stone rather than storing it as a gas.
Stand G26	**T-Phite:** Revolutionises the material lifecycle by transforming end-of-life tires into high-performance hard carbon anodes for EV batteries, solving a critical waste problem while securing a domestic supply chain for energy storage.
Stand G22	**Circa Biotech:** Uses industrial insect farming to upcycle food waste into high-value products, including protein for animal feed and, crucially, Sustainable Aviation Fuel (SAF) feedstocks.
Stand G64	**Terrax:** Processes unsegregated and unwashed mixed waste into durable, high-strength construction materials, providing a scalable alternative to virgin concrete and plastics in the built environment.
Stand G20	**Emvolon:** Converts methane emissions from landfills and industrial sites into transportable green methanol and liquid fuels, turning a potent greenhouse gas into a valuable energy commodity.
Stand G65	**Phlair:** Develops a hydrolyser-based Direct Air Capture (DAC) system that captures CO2 at low energy costs, effectively acting as a "chemical battery" that turns atmospheric carbon into a feedstock.
Stand G49	**Mykor:** Manufactures advanced bio-based insulation materials from industrial residues, providing a carbon-negative alternative to traditional foam and mineral wool.
Stand G47	**Nanoplume:** Innovation in material science delivering scalable Bio-Aerogel insulation that offers superior thermal performance with a fraction of the material footprint of conventional options.
Stand AI21	**Muta Corp:** A digital platform that organises the fragmented recycling supply chain, providing traceability and financing to ensure waste streams actually reach processors and become new products.
Stand G46	**Nada:** Extracts high-value bioactive ingredients from fruit waste (like pomegranate peels) using supercritical CO2, creating premium inputs for the cosmetics industry from agricultural byproducts.
Stand G14	**Mitico:** Specialises in modular carbon capture solutions that integrate with industrial point sources to deliver pure CO2 ready for utilisation or sequestration.
Stand G13	**Neg8 Carbon:** A Direct Air Capture technology designed to remove CO2 from the atmosphere at scale, contributing to the "molecular regeneration" of the air itself.
Stand G59	**Green COP:** Converts biowaste into biofuels using a proprietary pre-treatment and fermentation process, offering a drop-in solution for decarbonising maritime and heavy transport.
Stand G43	**Gross-Wen Technologies (GWT):** Utilises an algae-based wastewater treatment system that recovers nutrients (nitrogen and phosphorus) to produce valuable biomass for fertilisers and bioplastics.
Stand G50	**Innotech:** Automates construction with 3D printing technology that utilises low-carbon concrete formulations, reducing material waste and construction time.
Stand 3115	**Abu Dhabi Waste Management Company (Tadweer):** The custodian of waste management in Abu Dhabi, leading the shift to a circular economy through advanced waste-to-energy projects and material recovery facilities.
Stand 5250	**The Sharjah Environment Co. LLC - Beeah:** A pioneer in sustainability and digitalisation, showcasing end-to-end circular economy solutions from AI-powered waste sorting to waste-to-hydrogen plants.

Stand 4204 **Carbon Clean:** Provides cost-effective, modular carbon capture technology that enables heavy industries to capture CO2 at the source for use in synthetic fuels and chemicals.

Stand 3310 **Lindner Recyclingtech GmbH:** A global leader in industrial shredding technology, providing the heavy-duty machinery required to process tires, waste wood, and plastics into fuel and raw materials.

Stand 2001 **Eldan Recycling A/S:** Specialises in equipment for recycling tires, cables, and WEEE (electronic waste), enabling the recovery of high-purity metals and rubber for re-entry into the supply chain.

Stand 3321 **FORNNAX TECHNOLOGY PVT. LTD:** Manufactures heavy engineering machinery for waste recycling, specifically focusing on turning waste tires into valuable rubber crumb and steel.

Stand 7128 **Sutco Recycling Technik GmbH:** Designs and builds complex treatment plants for waste sorting and recycling, ensuring that municipal solid waste is effectively separated into reusable material streams.

Stand 1009 **Ecyclex International Recycling:** Offers comprehensive recycling services for electronic waste and hazardous materials, ensuring critical minerals are recovered rather than landfilled.

Stand 2007 **IncBio:** Engineering company specialising in ultrasonic biodiesel plants, facilitating the efficient conversion of waste oils and fats into renewable fuels.

5. Clean Baseload & Renewable Generation

As intermittency becomes a bigger challenge with high solar/wind penetration, the focus shifts to Firm Power solutions. This includes 3D solar towers, geothermal cooling, wave energy, and the march toward commercial fusion.

The quest for clean baseload power has been dominated by large-scale hydro and nuclear fission since the mid-20th century. "Alternative" baseloads like geothermal and wave energy have existed on the fringes for decades but struggled with site specificity and high maintenance costs. Fusion has famously been "30 years away" for the last 50 years. However, the last decade has seen a resurgence in these fields due to new materials (superconductors for fusion) and modular designs that allow deployment in previously unviable locations.

These technologies fill the critical gap left by solar and wind: reliability. By providing steady, 24/7 power, they reduce the need for massive battery storage and fossil-fuel peaker plants. Successful deployment of these technologies (especially fusion and advanced geothermal) would fundamentally solve the energy trilemma-providing security, affordability, and sustainability simultaneously.

Featured Technology:

Stand G16 **Helical Fusion:** Aims to build the world's first steady-state fusion reactor, offering a carbon-free, baseload power source that mimics the sun's energy generation without the risks of runaway reactions or long-lived radioactive waste.

Stand G2 **Janta Power:** Deploys patented 3D solar towers that generate 3x more power than traditional flat panels by capturing sunlight from multiple angles, making renewable energy viable in space-constrained urban environments.

Stand G5 **KoalaLifter:** A revolutionary self-climbing crane system for wind turbines that eliminates the need for massive mobile cranes, significantly reducing the cost and downtime associated with wind farm maintenance.

Stand G15 **Wavepiston:** Harvests the abundant energy of ocean waves using a low-tech, modular system to produce both clean electricity and desalinated water, offering a dual-purpose solution for coastal resilience.

Stand 2001 **Eldan Recycling A/S:** Specialises in equipment for recycling tires, cables, and WEEE (electronic waste), enabling the recovery of high-purity metals and rubber for re-entry into the supply chain.

Stand G33 **SolarisKit:** The world's first flat-packed solar thermal collector, designed to be easily transported and assembled in the Global South, providing affordable hot water without relying on complex infrastructure.

Stand G52 **Strataphy:** Delivers "Cooling as a Service" using proprietary geothermal heat exchange technology, cutting energy consumption for cooling by up to 50% in the extreme heat of the Gulf region.

Stand AI17 **Omnipower:** Redefines power distribution with an "all-DC" grid architecture that reduces conversion losses from generation to consumption, unlocking hidden capacity in existing electrical grids.

Stand 4100 **Emirates Nuclear Energy Company (ENEC):** The driving force behind the UAE's peaceful nuclear energy program, demonstrating how nuclear power provides the critical clean baseload necessary to stabilise a grid heavy with renewables.

Stand A320 **Masdar:** A global clean energy powerhouse, actively developing utility-scale renewable projects including solar, wind, and geothermal, and pioneering the commercialisation of clean technologies worldwide.

Stand 7100 **Jinko Solar:** A global leader in N-type TOPCon solar technology, pushing the efficiency limits of photovoltaic modules to maximise energy yield per square meter for utility-scale projects.

Stand 7433 **Adani Solar:** India's largest integrated solar manufacturer, showcasing high-efficiency PV modules and complete solar solutions that support massive-scale renewable deployment.

Stand 5140 **LONGi Solar Technology:** A pioneer in monocrystalline silicon technology, delivering high-efficiency solar modules and hydrogen production equipment to drive the global energy transition.

Stand 8110 **Trinasolar:** A leading provider of smart PV and energy storage solutions, focusing on maximising the lifecycle value of solar assets through advanced module technology.

Conf. Room A **Envision Energy:** A world-leading green technology company, showcasing advanced wind turbines and energy storage systems designed to optimise renewable generation in diverse climates.

Stand 3120 **Shanghai Electric:** A massive equipment manufacturing conglomerate providing comprehensive solutions for wind, solar, and energy storage, representing the industrial scale required for global decarbonisation.

Stand 6220 **Sungrow:** The world's most bankable inverter brand, offering PV inverter solutions and floating solar systems that are critical for converting renewable generation into grid-compliant power.

Stand 7220 **Gaia Turbine SA:** Specialises in hydrokinetic turbines, offering a solution to harvest energy from flowing water in rivers and canals without the need for large dams.

6. Potential Breakthroughs

Identifying the "Leapfrog" technologies that will redefine energy physics.

While 2026 is a year of implementation for many technologies, it is also a "Leapfrog Year" for technologies that will mature by 2028. These innovations address the fundamental physical limits of our current energy and computing systems.

1. The Analog AI Revolution

- **The Challenge:** Digital AI chips are hitting a thermal wall. Training a single large model can consume as much energy as 100 homes use in a year.
- **The Leapfrog: Analog & Neuromorphic Computing.** Unlike digital chips that move data back and forth (creating heat), analogue chips process data in memory, mimicking the human brain's synapses.
- **Why 2026?** This year marks the transition from lab prototypes to commercial pilots for edge devices. By 2028, these chips could reduce AI energy consumption by **100x**.

Innovator to Watch

Stand 6100 **Huawei** While the industry waits for analog chips to mature, Huawei is pushing the absolute physical limits of digital efficiency. Through their "Digital Power" division, they are integrating AI directly into the power management of data centers and processors, creating the "bridge" technologies that minimise thermal loss until neuromorphic computing fully arrives.

2. Space-Based Energy & Wireless Power

- **The Challenge:** Solar energy is intermittent and limited by the atmosphere.
- **The Leapfrog: Wireless Power Transmission.** Transferring energy from orbit (where the sun never sets) to Earth using microwaves or lasers.
- **Why 2026?** Ground-to-orbit and orbit-to-orbit wireless power tests are scheduled this year, validating the safety and efficiency of "beaming" energy. This paves the way for 24/7 baseload solar in the 2030s.

Innovators to Watch

Stand GH8

Electric Aviation Group (EAG) Wireless power transmission from space requires receiving infrastructure that is exceptionally lightweight and energy-dense. EAG is developing megawatt-scale power systems and hydrogen fuel cell technologies for aviation that push the boundaries of power-to-weight ratios. Their innovations in lightweighting and high-efficiency transmission are the terrestrial proving grounds for the physics required for space-based energy.

Stand A210

Department of Energy (DoE) The realisation of Space-Based Solar Power (SBSP) relies heavily on government validation and funding of "moonshot" pilots. As a key exhibitor, the DoE represents the public sector engine that is currently funding the ground-to-orbit wireless power tests scheduled for 2026, validating the safety and efficiency standards for the industry.

3. Solid-State Batteries

- **The Challenge:** Lithium-ion batteries are heavy, flammable, and slow to charge.
- **The Leapfrog: Solid-State Batteries (SSB).** Replacing liquid electrolytes with solid materials to double range and charge in minutes.
- **Why 2026?** This is the year major automakers and battery giants move SSBs from "concept" to "pilot production lines," targeting mass vehicle integration by 2027-2028.

Innovators to Watch

Stand G26

T-Phite Solid-state batteries require new anode materials to handle higher energy densities without degrading. T-Phite transforms end-of-life tires into high-performance hard carbon anodes. This innovation secures a sustainable, low-cost domestic supply chain for the critical anode materials that next-gen solid-state batteries will demand.

Stand G9

AC Biode AC Biode is challenging the fundamental physics of battery storage by developing the world's first standalone AC-battery systems. While distinct from traditional solid-state chemistry, this "leapfrog" architecture eliminates the need for AC-DC inverters, potentially offering a different path to the same goal: drastically higher efficiency and lower weight for grid and mobility applications.

About the Author

debumishra

Debu Mishra

Debu sits at the intersection of Executive Search and Strategic Advisory. He goes beyond simply "filling a role" to help Boards and CEOs engineer the human infrastructure required to scale, innovate, and survive disruption. His approach is built on pattern recognition, shaped not by theory, but by over 20 years of leadership at the institutions that defined the industry, including Deloitte, PwC, Arthur Andersen, Hewitt Associates, and Hay Group.Having witnessed what works in the world's largest, most structured organisations, Debu understands exactly where corporate governance clashes with startup agility.

Debu helps clients across the Global South and beyond bridge that gap. His work focuses on:

- **Board & CEO Advisory:** Aligning the top of the house for high performance.
- **Executive Search:** Finding the "needle in the haystack" talent that fits a specific culture.
- **Organisational DNA:** Helping legacy companies think like startups, and startups scale like grown-ups.

In an era of AI and rapid transformation, Debu believes the most critical variable in success remains human. He is dedicated to ensuring organisations have the right mix to navigate the future of the energy transition.

About the World Future Energy Summit

Part of ADSW and hosted by Masdar, the World Future Energy Summit continues to be a driving force for innovation, collaboration, and thought leadership in renewable energy and sustainability. Now entering its 18th edition, the Summit has established itself as a vital platform bridging policy with real-world action and business growth.

The 2026 edition, taking place from 13–15 January, will feature more than 800 global brands, the dynamic Greenhouse start-up zone, the Fuse AI cleantech pavilion and the Green Hydrogen Innovation Hub as well numerous other innovation and country pavilions from around the world.

Over three days, attendees will have the opportunity to join conferences led by 350+ industry experts, explore nine exhibition halls showcasing breakthrough products and solutions, and connect with more than 50,000 energy and sustainability professionals from across the globe.