


# An Industry Update: Trends in the Renewable Energy Market





***Backed by robust investment, technological advancements, and favorable policies, the renewable energy sector is poised for a transformative decade of growth and progress.***

The renewable energy sector has set the stage in 2024 for a transformative decade. With strong investment, technological innovation, and policy support, renewable energy is poised for rapid growth in 2025 and beyond. Energy storage, hydrogen, offshore wind, and digitalization will be the key trends shaping the industry's future. Renewable energy will remain at the forefront of climate action as the world moves toward a low-carbon economy, offering a pathway to sustainable and resilient energy systems. This industry update is an overview of the key trends currently shaping the renewable energy landscape and explores what to expect in 2025 and beyond.

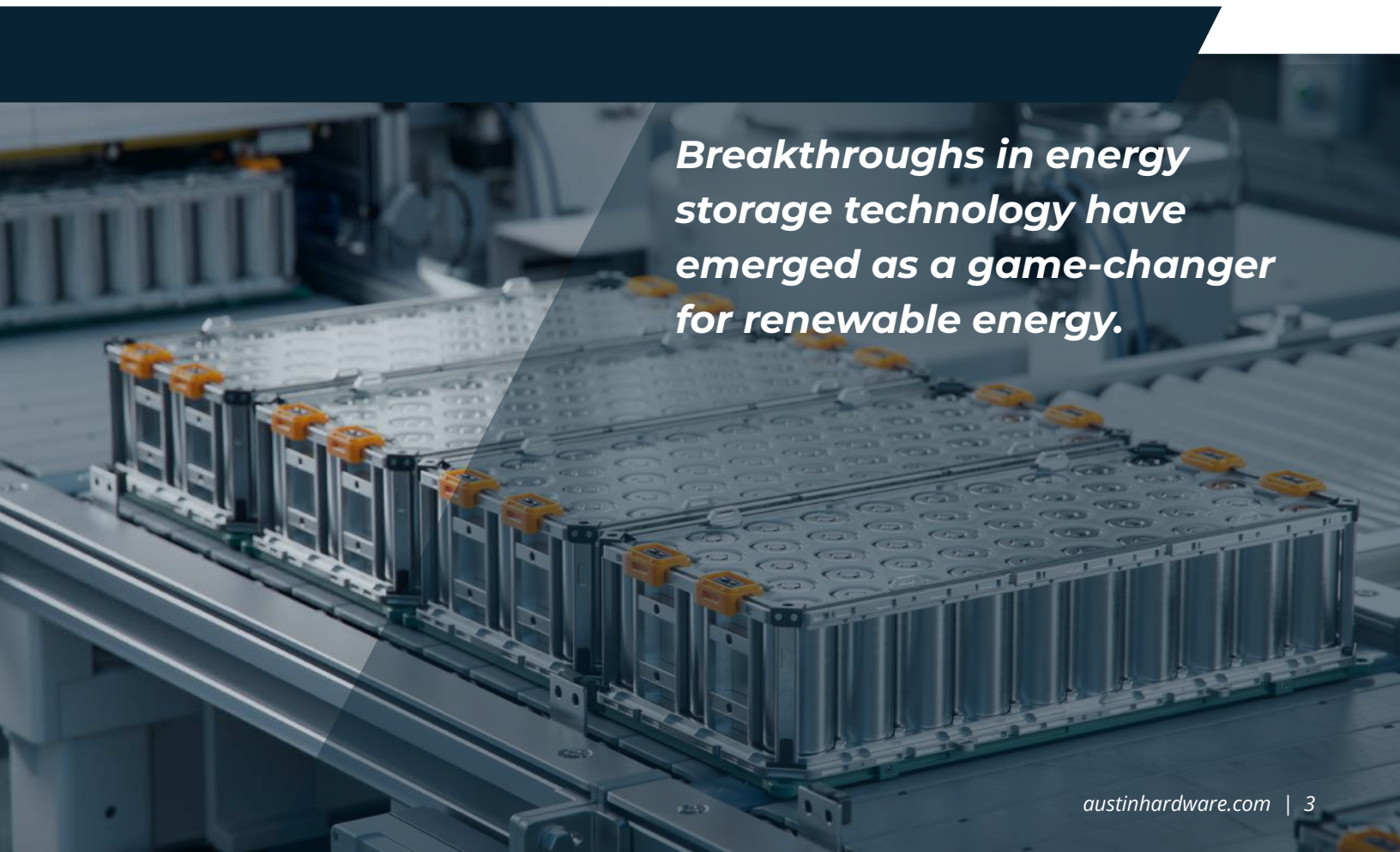
2024 saw record investment and capacity expansion. Unprecedented global investments were made in renewable energy, driven by both private sector commitments and public policies. The International Energy Agency (IEA) estimates that global renewable power capacity grew by 12% in 2024, with solar and wind energy leading the charge. Solar power continues to be the fastest-growing energy source, thanks to lower costs and advancements in photovoltaic technology. Wind energy also saw significant gains, particularly in offshore wind projects, which are becoming increasingly viable with larger turbines and floating platforms.

Innovations in energy storage have emerged as a game-changer in 2024, addressing one of the critical challenges of renewable energy: intermittency. Improved battery technologies, such as lithium-ion and solid-state batteries, are driving down storage costs while enhancing efficiency. The IEA projects that energy storage installations will grow by 55% year-over-year. This growth is essential to managing peak demand and ensuring grid stability as the share of renewable energy increases.

Green hydrogen production, using renewable electricity to split water into hydrogen and oxygen, is gaining momentum as a clean fuel option for sectors that are difficult to electrify, such as steelmaking and heavy transport. In 2024, several large-scale hydrogen projects were launched, and electrolyzer costs continued to decline, making hydrogen a more viable option for decarbonization.

The surge in electric vehicles has accelerated, with global electric vehicle sales expected to exceed 15 million units in 2024. This surge has been accompanied by a rapid expansion of EV charging infrastructure, with a growing focus on integrating renewable energy sources like solar and wind into charging stations. As a result, EVs are contributing to the reduction of greenhouse gas emissions in the transportation sector, which accounts for a significant share of global emissions.

Governments around the world have implemented strong policies to support renewable energy development. In the U.S., the Inflation Reduction Act continues to drive investment in clean energy projects. Meanwhile, Europe's Green Deal remains a cornerstone of the region's decarbonization efforts, with ambitious targets for 2030 and beyond. Globally, international cooperation on climate action has strengthened, with major economies increasing their commitments to renewable energy adoption.



***Breakthroughs in energy storage technology have emerged as a game-changer for renewable energy.***



## Expectations for 2025: Trends Shaping the Future

Energy storage and grid flexibility technologies will play an even greater role in integrating renewables into the grid. Advances in battery technology, including next-generation batteries like sodium-ion and flow batteries, are expected to drive costs down further and improve energy density. Grid-scale storage will enable more flexible management of electricity supply and demand, helping to mitigate the intermittency of solar and wind power.

Offshore wind is poised for major growth in 2025. Offshore wind capacity could surpass 50 GW globally, with governments and the private sector investing heavily in these projects. This is especially true in Europe, North America, and Asia. Floating wind farms, which allow turbines to be installed in deeper waters, are expected to unlock new markets and dramatically expand offshore wind potential.

The hydrogen economy is expected to mature significantly by 2025. The cost of green hydrogen is projected to decline by up to 50%, making it more competitive with fossil fuels. Hydrogen will play a crucial role in decarbonizing industrial processes, long-haul transportation, and energy storage. Key projects in Europe, Australia, and the Middle East will demonstrate the scalability of green hydrogen production.

The integration of artificial intelligence and digital technologies into renewable energy systems will accelerate in 2025. AI will help optimize energy production, predict equipment failures, and manage grid operations in real time. Enhanced by digitalization, smart grids will allow for better integration of distributed energy resources like rooftop solar and community wind projects.

As renewable energy deployment accelerates, attention will increasingly focus on the sustainability of supply chains. In 2025, the industry will likely prioritize sourcing critical minerals like lithium, cobalt, and rare earth elements, which are essential for batteries and renewable technologies. The development of recycling technologies and more sustainable mining practices will be key to reducing the environmental impact of the renewable energy supply chain.

Looking beyond 2025, the renewable energy industry will face both opportunities and challenges. While continued innovation and declining costs will drive further adoption, issues like energy equity, land use, and grid infrastructure upgrades will require ongoing attention. Decentralized energy systems, such as microgrids and community energy projects, will become more common, empowering local communities to take control of their energy future.



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References:

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