



storage (CCUS). Source: McKinsey, September, 2024 McKinsey's Global Energy Perspective 2024 explores a 1.5°C pathway and three bottom-up energy transition scenarios. McKinsey & Company Global greenhouse gas emissions, GtCO<sub>2</sub>e equivalent per annum Projected global temperature increase by 2050, °C Faster Speed of energy transition Slower



2 The new rules of competition in energy storage Energy-storage companies, get ready. Even with continued declines in storage-system costs, the decade ahead could be more difficult than you think. The outlook should be encouraging in certain respects. As our colleagues have written, some commercial uses for energy storage are already economical.



Some of the regions with the heaviest use of energy have extra incentives for pursuing alternatives to traditional energy. In Europe, the incentive stems from an energy crisis. In the United States, it comes courtesy of the Inflation Reduction Act, a 2022 law that allocates \$370 billion to clean-energy investments.

# MARTINIQUE MCKINSEY ENERGY STORAGE INSIGHTS



The energy transition requires massive investments in infrastructure, including power generation, transmission, distribution networks, and energy storage. McKinsey's report estimates that achieving net-zero emissions by 2050 will ???



What is energy storage? Energy storage absorbs and then releases power so it can be generated at one time and used at another. Major forms of energy storage include lithium-ion, lead-acid, and molten-salt batteries, as well as flow cells. There are four major benefits to energy storage. First, it can be used to smooth



Wind can do amazing things: carve canyons, move boats across oceans, power machines that grind grain, and???when channeled correctly???create electricity to run our appliances and gadgets. People have been harnessing the power of the wind since the windmill was invented in eighth-century Persia. The vertical windmill exploded in popularity in medieval ???



Estos desarrollos est?n impulsando el mercado de los sistemas de almacenamiento de energ?a en bater?as (battery energy storage systems, o BESS).El almacenamiento en bater?as es un habilitador esencial de la ???



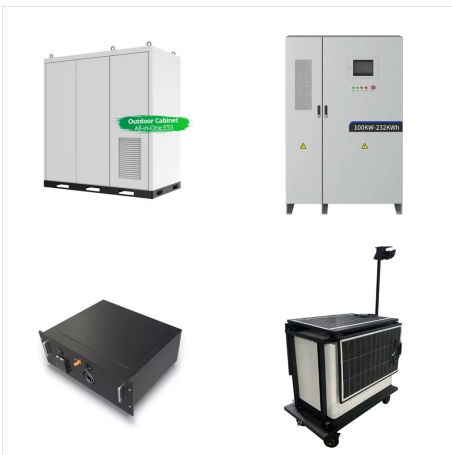
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Energy. November 14, 2024 While significant progress has been made in the nine years since the landmark Paris Agreement, the global energy transition has entered a new phase, marked by rising costs, growing complexity, and increased demands on system security and resilience. Global energy demand is projected to continue to increase???between 11 and 18 percent???to ???



Defining Long Duration Energy Storage. Long duration energy storage (LDES) generally refers to systems that store energy for eight hours or more. LDES Council report by McKinsey. We've seen companies pitching the potential for LDES to meet data center energy needs when paired with wind and solar. While this works in theory, going entirely



Increased energy demand and the continued role of fossil fuels in the energy system mean emissions could continue rising through 2025???35. Emissions have not yet peaked, and global CO 2 emissions from combustion ???



The Global Energy Perspective 2023 offers a detailed demand outlook for 68 sectors, 78 fuels, and 146 geographies across a 1.5° pathway, as well as four bottom-up energy transition scenarios with outcomes ranging in a warming of 1.6°C to 2.9°C by 2100.. As the world accelerates on the path toward net-zero, achieving a successful energy transition may require ???





As the world considers how to establish a path toward limiting the rise in global temperatures by curbing emissions of greenhouse gases, it is widely recognized that the power-generation sector has a central role to play. Responsible for one-third of total global carbon emissions, the sector's role is, in fact, doubly crucial, since decarbonizing the rest of the ???

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Many people see affordable storage as the missing link between intermittent renewable power, such as solar and wind, and 24/7 reliability. Utilities are intrigued by the potential for storage to meet other needs such as relieving congestion and smoothing out the variations in power that occur independent of renewable-energy generation.



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# MARTINIQUE MCKINSEY ENERGY STORAGE INSIGHTS



These decarbonization technologies (alongside many others, such as nuclear, long-term duration energy storage, battery energy storage systems, and energy efficiency investments) are the cornerstone of efforts to reduce greenhouse gas (GHG) emissions in all McKinsey energy scenarios, indicating a high risk for project fall-through. 15



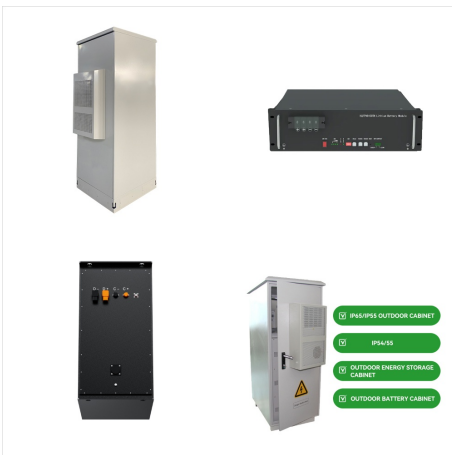
These developments are propelling the market for battery energy storage systems (BESS). Battery storage is an essential enabler of renewable-energy generation, helping alternatives make a steady contribution to the world's energy needs despite the inherently intermittent character of the underlying sources.



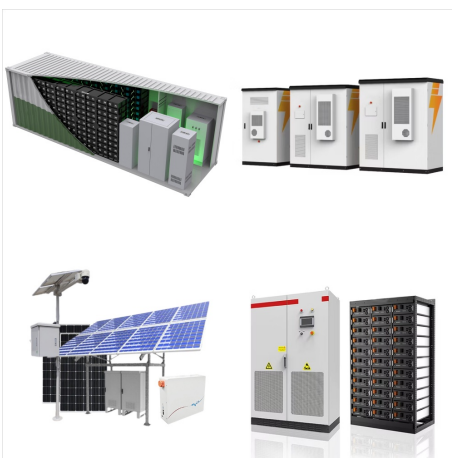
and Germany. Getting to 90 percent decarbonization would require more wind generation and battery storage. Going the final distance to 100 percent decarbonization would likely rely on carbon capture, use, and storage (CCUS), where emissions from fossil-fuel plants are captured and stored.



A new industry report with insights and analysis by McKinsey shows how TES, along with other forms of long-duration energy storage (LDES), can provide "clean" flexibility by storing excess energy (electrical or thermal) at times of peak supply and releasing it as heat when demand requires. It shows that when heat cannot be directly



The cost projections we have described suggest that the market for battery storage will expand. While we are still assessing the potential for energy storage to open a new frontier for renewable power generation, energy storage should become a significant feature of the energy landscape in most geographies and customer segments. As battery



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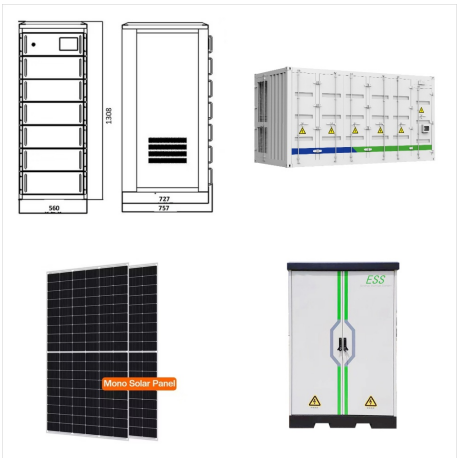




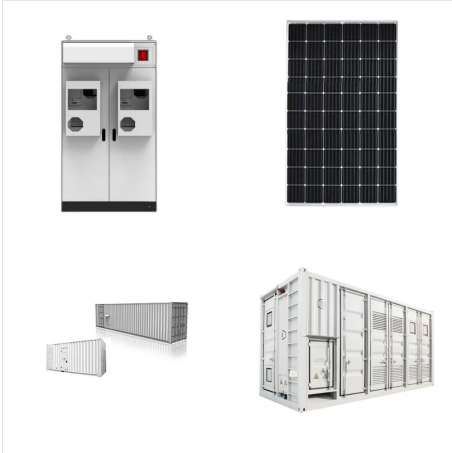
Estos desarrollos est?n impulsando el mercado de los sistemas de almacenamiento de energ?a en bater?as (battery energy storage systems, o BESS).El almacenamiento en bater?as es un habilitador esencial de la generaci?n de energ?a renovable, que ayuda a las alternativas a hacer una contribuci?n constante a las necesidades energ?ticas del mundo a pesar del car?cter ???



These include renewable energy sources (RES), electrification technologies such as electric vehicles (EVs), and heat pumps???as well as comparatively less mature technologies, such as carbon capture, utilization, and storage (CCUS), green and blue hydrogen, and sustainable fuels.



Source: McKinsey Energy Storage Insights BESS market model Battery energy storage system capacity is likely to quintuple between now and 2030. McKinsey & Company Commercial and industrial 100% in GWh = CAGR, 110????140 140????180 175????230 215????290 275????370 350????470 440????580 520????700 2023????30



As efforts to decarbonize the global energy system gain momentum, attention is turning increasingly to the role played by one of the most vital of goods: heat. Heating and cooling???mainly for industry and buildings???accounts for no less than 50 percent of global final energy consumption and about 45 percent of all energy emissions today (excluding power), 1 ???



Las baterías residenciales podrán ser la clave para una red eléctrica más asequible, confiable, resiliente y segura. Para lograrlo, hace falta que los proveedores de baterías, las empresas que abastecen el suministro eléctrico y los entes reguladores resuelvan problemas delicados a nivel comercial, operativo y político.