



# Sustainability News Headlines

## MIT Report Analyses Cost Differences Between Hydrogen-Fired Gas Turbines and Lithium-Ion Storage

The Massachusetts Institute of Technology (MIT) have conducted a study comparing the economics of using hydrogen-fired gas plants (HFGTs) to lithium-ion (Li-ion) storage in situations where there is a shortage of immediate generation capacity. This is typically thought of as “what to do when the sun does not shine, or the wind does not blow”. The analysis estimates costs for a California based utility which currently uses Combined Cycle Gas Turbines for this purpose.

This analysis is very broad and contains many assumptions, particularly on prices. According to their findings, published in Applied Energy, HFGTs can currently be built at a cost of \$1,320/kW. Furthermore, the MIT scientists calculated that green hydrogen can currently be produced at a cost ranging between \$3 and \$10 per kilogram, depending on operating conditions, while grey or blue hydrogen can be generated at a cost of \$1 and \$1.50 per kilogram, respectively. As for Li-ion storage, the academics estimated that a 100 MW/400 MWh battery may be built at a cost of \$236.50/MWh.

The study compared the levelized cost of energy of HFGTs and large-scale Li-ion storage in a scenario in which the two sources of energy have to meet the production achieved by natural-gas-fired gas turbines in California in 2019. It was assumed that the lifetime of any installed project is 15 years and the discount rate for any installed project is 10%. “The annual fuel consumption for the HFGT is calculated as the total cost associated with purchasing hydrogen to operate the facility, while the annual fuel consumption for the Li-ion is equal to the total cost of the electric power stored in the system,” it explained. Furthermore, the researchers found that HFGTs powered by blue hydrogen produced with CO<sub>2</sub> capture may be the more cost-competitive substitute for natural-gas-fired gas turbines.

**>\$76**  
**Billion Li-ion battery market**  
 is anticipated to grow at over 15% CAGR in 2026.  
 (GMINSIGHTS)

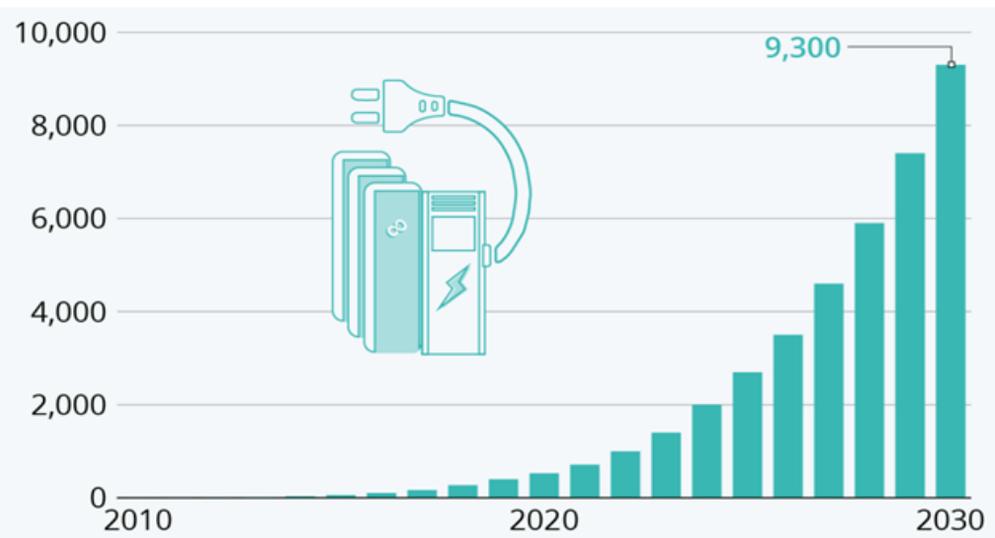
**By 2027**  
**Global Li-ion Battery Market**  
 is projected to exceed \$129 billion.  
 (Bloomberg)

**By 2030**  
**The Worldwide**  
 Lithium-Ion Battery Industry is expected to reach \$116.6 billion by 2030 at a CAGR of 12.3% from 2021.  
 (Research And Markets)



## High Demand for Lithium-Ion Batteries

Cumulative lithium-ion battery demand for electric vehicle/energy storage applications (in GW hours)



(Bloomberg)

## UN Climate Report Increases Urgency for Green Investment Funds

Dire warnings about climate change are a call to action for investors who put their money into helping the environment. But the news also heightens a debate about how to make these strategies effective, financial executives said. A U.N climate report issued recently found that global warming is dangerously close to spiraling out of control. Even the most severe carbon emission cuts are unlikely to prevent global warming of 1.5°C above preindustrial temperatures by 2040, a level that many scientists believe must be achieved to avert catastrophic climate change.

Global warming is dangerously close to spiraling out of control, a U.N. climate panel said in a landmark report, warning the world is already certain to face further climate disruptions for decades, if not centuries, to come. Humans are "unequivocally" to blame, the report from the scientists of the Intergovernmental Panel on Climate Change (IPCC) said. Rapid action to cut greenhouse gas emissions could limit some impacts, but others are now locked in. The deadly heat waves, gargantuan hurricanes and other weather extremes that are already happening will only become more severe.

The U.N. report will further pressure funds to make their climate disclosures more transparent. Green investing has attracted a flood of cash and boosted companies like electric car maker Tesla and clean energy company NextEra Energy that promise to help a transition away from fossil fuels. But sustainable investment managers are confronting a two-sided challenge for ESG, or environmental, social and governance, funds. Globally, sustainable funds hit a record high of \$2.24 trillion in assets in the second quarter, Morningstar data showed, up 12% from the end of March. Just 2% of the money tracked by Morningstar has gone to funds based in Asian countries other than Japan.

**\$2.24**  
**Trillion in Q2**  
 global sustainable fund assets hit record highs, up 12% from the end of March 2021.  
 (Morningstar)

**\$8.9**  
**Billion financial**  
 commitment with respect to Green Climate Fund (GCF)  
 (GCF)

**\$5.8**  
**Billion is the total value**  
 of projects under implementation which represent more than 60% of the total number of projects.  
 (GCF)

