

Energy storage for resilience qatar

Doha, Qatar: A new research that aims to store renewable energy produced by solar and wind using an electrolyser could prove groundbreaking for Qatar in the country's mission to cut greenhouse emissions by 2030.

The research, presented by Ebrima L Darboe, a visiting research assistant at Qatar University Centre for Advanced Materials (QUCAM) from the University of Gambia, aims to transfer excess renewable energy through the electrolyser to make hydrogen, which can be put into a fuel cell for energy supply. Electrolysers use electricity to split water into hydrogen and oxygen and are essential for producing low-emission hydrogen from renewable electricity.

"The country aims to achieve carbon zero footprint by 2050. It would be a good option for them to explore (this research) because it will help them reduce carbon emissions. Secondly, it will also help supply power to remote areas without electricity. There are some challenges in taking energy to remote areas because the longer the transmission line, the more expensive it becomes. So, it means that renewable energy with this kind of system is key," Darboe said.

He stressed that the research tries to mitigate fossil fuel emissions of greenhouse gases. Implementation of projects like this, there will be zero carbon emissions and reduced greenhouse gas emissions, which is the leading cause of climate change, Darboe added. The research will also help provide adequate energy for a standalone household energy supply, facilitate transmission to remote areas, and eliminate energy dumping.

According to him, Qatar and countries with abundant sunlight and relatively good wind speed can exploit the research. Qatar's Al Kharsaah Solar PV Power Plant (KSPP) is an example of the country taking advantage of the abundant sunlight.

"When you implement this kind of project, there will be no power interruption at any given time by incorporating the electrolyser system with the batteries. This means that as energy is coming, once the batteries cannot store all the energy, it would be diverted to the electrolyser, which will produce it as hydrogen, and that can be later fed into the fuel cell and then continue the flow of energy."

Qatar's General Electricity and Water Corporation, known as Kahramaa, has unveiled the Qatar National Renewable Energy Strategy (QNRES) in collaboration with 22 key energy stakeholders in the country. This initiative reflects Kahramaa's commitment to advancing renewable energy practices and developing related policies and strategies to support Qatar's sustainable future as outlined in Qatar National Vision 2030 and the Third Qatar National Development Strategy 2024-2030.

The QNRES aims to boost the utilization and diversification of renewable energy sources, particularly solar



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energy, in Qatar's energy mix, leveraging the country's abundant solar resources. It sets a target to increase large-scale renewable power generation to approximately 4 GW by 2030, along with recommending the installation of distributed solar generation of up to 200 MW by the same year. This distributed capacity will enable localized power generation, reducing strain on the centralized grid infrastructure and enhancing energy resilience.

The strategy launch marks a significant step forward, promising economic benefits, environmental improvements, and enhanced energy security for the future. By implementing sustainable policies, such as reducing CO2 emissions, Qatar aims to enhance environmental sustainability and air quality. It is estimated that the recommended power mix will reduce 10 percent of Qatar's total annual CO2 emissions from the power sector and decrease the carbon intensity in Qatar's annual carbon dioxide intensity by 27 percent for each unit of electricity produced.

In terms of economic advantages, the strategy anticipates a 15 percent reduction in the average cost of electricity generation by 2030 through cost-competitive solutions. Diversifying generation sources will also promote energy security and stability in the energy sector. To ensure a reliable transition to renewable energy, the strategy adopts a balanced approach combining large-scale renewable energy installations with high-efficiency thermal generation powered by natural gas.

Kahramaa plays a pivotal role in the implementation of QNRES by regulating and defining renewable energy regulations, executing deployment programs, managing stakeholder interaction, and supporting research and innovation initiatives.

In preparation for the distributed renewable energy program, Kahramaa has commenced the acceptance of applications for accredited solar panels and inverters from distributors and manufacturers. Net-billing will be implemented for distributed renewable energy generation, allowing prosumers to sell surplus power to the grid at a fixed price, thereby lowering electricity bills and encouraging investments in solar PV.

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Web: <https://www.sumthingtasty.co.za/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

