

2 May 2022

### Novel PV system design for green rooftops from France

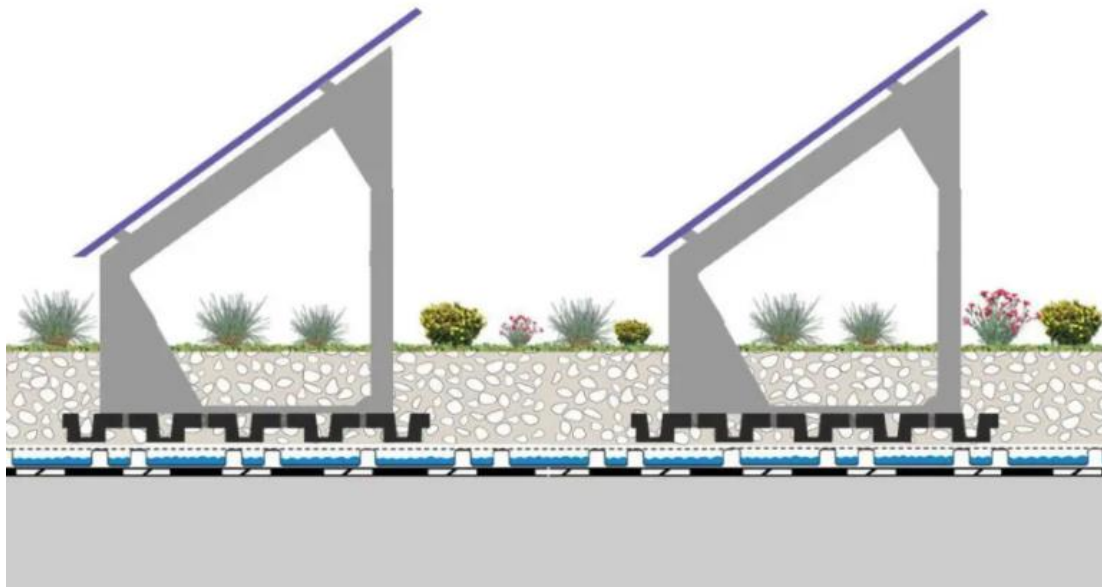
France's Ecovégétal has released Héliovert, a PV system for green rooftops that combines solar power generation and urban gardening.

"The idea of exploiting the synergy between these two technologies came from a study currently being carried out by Cerema, a French public agency for developing public expertise in the fields of urban planning, in Nancy," Pierre Georgel, the CEO and founder of the green roof specialist, told pv magazine France. The new system is the result of several years of research under the PROOF project, which aims to assess the energy contribution of a green rooftop to the electrical efficiency of a solar panel.

"The first results show an increase in electricity production yields of 8 to 10% thanks to the presence of vegetation which acts as a thermal regulator under the photovoltaic panels," said Georgel. "But it goes much further than putting lawn on a roof. It is indeed the vegetation that serves as ballast for the solar panel fixing system."

In the proposed system configuration, drains known as XD20, DK20, or equivalent are laid over the entire surface of the roof and serve as an anti-root sealing system and for the retention of rainwater at a rate of 7 liters per square meter. A recycled plastic slab is installed on top. "This slab will serve both as a water drainage basin and as fixing support for the aluminum frames inclined at 15 degrees on which the photovoltaic panels are installed," Georgel said. "It is therefore not necessary to drill into the roof structure."

A substrate known as Saxalis 1.1, which is non-flammable and is based on mineral aggregates enriched with organic matter, is then spread over the roof. Finally, the company plants flowering meadow-type vegetation that can change color with the seasons. The plants are chosen for their high evapotranspiration, which lowers the temperature on the roof by several degrees, especially in hot weather.



According to Georgel, the presence of certain plants on a flat rooftop can even serve as a bulwark against the risk of fire. "Finally, we are witnessing the return of biodiversity to the urban environment. Local fauna such as birds and pollinating insects and the reintroduction of flora adapted and resistant to its environment," he said. Ecovégétal chooses solar modules and its partners according to customer preferences. The panels can be oriented south or east-west, depending on the geographical area and the biodiversity.

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Beforehand, the thickness and the dry weight of the substrate – that is to say, the weight of the earth and the vegetation in the event of severe drought – is the subject of a study to ensure the resistance of the solar panels to the wind. The Broue-based company's first projects include the roofing of Bosch's offices in Saint-Ouen, coordinated by Metropolis Architectes Associes. An area of 990 square meters will be planted and 790 square meters will be covered with 395 solar modules.

*[pv-magazine](http://www.pv-magazine.com/)*

*<http://www.pv-magazine.com/>*

**2 May 2022**

## **Maoneng reveals plans for 950 MW solar-battery project in Australia**

Sydney-based renewables developer Maoneng said that the proposed Merriwa Energy Hub, to be built in New South Wales (NSW), will be one of the largest renewable energy hubs in Australia, with a 550 MW solar farm and a 400 MW/1,600 MWh battery energy storage system (BESS). Maoneng CEO Morris Zhou said that the AUD 1.6 billion (\$1.1 billion) energy hub has been designed to address the regional energy supply and grid stability needs of the National Electricity Market (NEM).

“This project will support the NSW government’s large-scale solar generation and battery storage strategies as the state moves towards increasing use of clean energy,” he said. “The Merriwa Energy Hub would be one of the largest renewable energy hubs in the country and, while it’s still early days, we expect the construction process to support hundreds of direct and indirect jobs, as well as significant investment into communities experiencing a shift away from fossil fuel.” Maoneng said the solar farm will comprise about 1.3 million bifacial solar panels mounted on single-axis trackers installed across 780 hectares. The project will also involve the construction of a new substation which will connect to the NEM via TransGrid’s existing 500 kV transmission line that runs along the south of the site.

“We have deliberately chosen the site based upon its robust connection to the existing grid, making efficient use of the infrastructure that exists today,” Zhou said, adding the solar farm and battery will each have a connection into the substation. “We wanted to make the battery flexible, so it can operate independently of the solar farm. The best value for money is a battery directly connected to the network, where it can still do arbitrage but also all the other functions that the network needs.”

Maoneng said a development application for the Merriwa Energy Hub is expected to be lodged with the NSW Department of Planning, Industry and Environment in the coming weeks. It aims to achieve financial close by December 2023, with completion of the project expected in 2025. Construction of the solar farm and battery is expected to take 18 months. Zhou said the project has already attracted interest from infrastructure investors and construction groups. Both the solar farm and battery energy storage system will be backed by power purchase agreements.

The proposed Merriwa Energy Hub is the latest addition to Maoneng’s pipeline of renewable energy projects. The company, which retains an interest in the 200MW Sunraysia Solar Farm being developed in southwest New South Wales, is also developing the 240MW/480MWh Mornington battery project in Victoria and the 225MW/450MWh Gould Creek storage project in near Adelaide in South Australia. It also has three other standalone battery projects on the go, with 450MW/900MWh of energy storage spread between sites at Lismore, Tamworth and Armidale in regional New South Wales.

*[pv-magazine](http://www.pv-magazine.com/)*

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## **GE Renewable Energy signs contract for largest technological upgrade of the Itaipu hydropower plant in Brazil and Paraguay**

GE Renewable Energy's Hydro and Grid Solutions businesses have jointly signed a contract to technologically upgrade the Itaipu hydropower plant in Brazil and Paraguay, the second largest in the world\*. A consortium led by GE Hydro Solutions will be responsible for the upgrade of the power plant, which has an installed capacity of 14 GW and is located on the Paraná River between Brazil and Paraguay.

The project, considered the largest technological upgrade of the hydropower plant since its inauguration nearly 40 years ago, is expected to take 14 years and is primarily aimed at updating Itaipu's technology. The upgrade includes equipment and systems of all 20 power generating units as well as the improvement of the hydropower plant's measurement, protection, control, regulation and monitoring systems. In total, Itaipu Binacional covers an average 8.4% of Brazilian and 85.6% of Paraguayan electricity consumption.

The implementation of the project is scheduled to last 14 years and is supported by the Paraguayan partner companies CIE and Tecnoedil (responsible for the assembly and supply of general materials, respectively). In addition to the modernization of the 20 power generating units, GE's general scope of supply includes the supply of medium voltage cubicles, energy management systems, automation technology as well as the delivery of protection, control and supervision systems for the generating units, GIS substation and the existing 500 kV transmission lines, in addition to two new compact GIS substations to increase the reliability of the plant's electrical auxiliary services.

Itaipu's executive technical director, David Krug, points out that the upgrade of the plant is the result of extensive planning that began in the early 2000s and went through several phases. According to Krug, the investment is necessary because many assets are still analog or technologically outdated and have been in operation for almost 40 years. In some cases, the manufacturer no longer exists, making it impossible to replace parts. "If we upgrade the plant technologically, the problem of spare parts is eliminated", he said, adding, "the big advantage is this - we are upgrading the plant to a new state of the art facility and, in doing so, improving the efficiency of the operation and maintenance processes."

Itaipu Binacional is the single plant that has produced the most energy in history: more than 2.8 billion Gigawatts-hour since 1984. Furthermore, with 14 GW, the plant is the second largest hydropower plant in the world in terms of installed capacity. Each of the 20 generating units has the capacity to power a city of 1.8 million inhabitants. The dam reaches a height of nearly 200 meters and is eight kilometers long. GE's involvement in a project of this magnitude underscores the company's commitment to providing technologies and expertise that contribute to the resilience, efficiency and reliability of the power grid. Together with its customers, GE is contributing to the energy transition, not only with solutions for generation, but also for transmission and distribution of energy around the world.

**GE**

<http://www.ge.com/>

**4 May 2022**

## **Hongyanhe 6 starts supplying power to the grid**

Unit 6 of the Hongyanhe nuclear power plant in China's Liaoning province has been connected to the grid, China General Nuclear (CGN) announced. The unit - the second of

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two ACPR-1000 reactors built as Phase II of the plant - is scheduled to enter commercial operation later this year.

"At 1.42pm on 2 May, with the issuance of the grid-connecting order, Hongyanhe Nuclear Power Station unit 6 was successfully connected to the grid for the first time," CGN said. "This marks that unit 6 of the Hongyanhe Nuclear Power Station has the power generation capacity, and has taken another key step towards the goal of commercial operation." Construction of Phase I (units 1-4) of the plant, comprising four CPR-1000 pressurised water reactors, began in August 2009. Units 1 and 2 have been in commercial operation since June 2013 and May 2014, respectively, while unit 3 entered commercial operation in August 2015 and unit 4 in September 2016.

Phase II of the Hongyanhe plant - units 5 and 6 - comprises two 1080 MWe CGN-designed ACPR-1000 reactors. Construction of unit 5 began in March 2015 and that of unit 6 started in July the same year. Unit 5 achieved first criticality in June last year and entered commercial operation on 31 July. The loading of the fuel into unit 6 began on 25 March this year and was completed on 28 March. The reactor achieved first criticality on 21 April. Unit 6 will enter commercial operation once it has completed a series of commissioning tests, including a test run lasting 168 hours.

The Hongyanhe plant is owned and operated by Liaoning Hongyanhe Nuclear Power Company, a joint venture between CGN and State Power Investment Corporation, each holding a 45% stake, with the Dalian Municipal Construction Investment Co holding the remaining 10%. CGN noted that, with the grid connection of Hongyanhe 6, it now has 26 power reactors generating electricity.

*World Nuclear News*

<http://world-nuclear-news.org/>

**4 May 2022**

## **PJM endorses plan to break its interconnection logjam**

PJM Interconnection members voted to endorse plans to speed up generation interconnection requests, improve project cost certainty, and improve the process by which new and upgraded generation resources are introduced onto the electrical grid in 13 states and the District of Columbia.

The Members Committee voted April 27 in favor of the process and transition plan that could go into effect in the last quarter of 2022 or the first quarter of 2023. The proposals resulted from work over the past year by PJM and stakeholders, including renewable resource developers, transmission owners, state and consumer interests, and others. PJM said plans to file the proposal with the Federal Energy Regulatory Commission in May.

The grid operator said that as a result of the rapid growth in renewable generation development, the number of projects entering the New Services Queue has nearly tripled over the past four years. PJM entered 2022 with nearly 2,500 projects under study, with more than 95% of approximately 225,000 proposed megawatts coming from renewable or storage resources or hybrids of those two. PJM said it studies more projects for interconnection annually than any other grid operator.

The proposal includes a two-year transition to work through the current backlog by prioritizing more than 1,200 projects submitted before 2021. The transition would include a "fast lane," which would prioritize about 450 projects.

Other aspects of the proposed process include:

- Projects would be addressed on a first-ready, first-served basis rather than first come, first served. Improvements to procedures around required permitting and site control will help reduce the current backlog of projects in the queue that may hold up other queued projects.

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- PJM would simplify its analysis of the cost responsibility of individual projects by clustering projects within the same cycle. In addition, improvements have been proposed to reduce the number of restudies for project changes.

- Projects that don't contribute to the need for network upgrades and/or don't need facilities studies would be able to proceed to a final agreement early.

- The proposal was first endorsed by the Markets and Reliability Committee by a sector-weighted vote of 4.37 out of 5.0 (87% equivalent), and then by 4.52 out of 5.0 (90% equivalent) in the Members Committee.

PJM coordinates and directs the operation of the region's transmission grid, which includes over 85,103 miles of transmission lines; administers a competitive wholesale electricity market; and plans regional transmission expansion improvements to maintain grid reliability and relieve congestion.

*Power Grid*

<http://www.power-grid.com/>

**4 May 2022**

## **Construction of the world's largest offshore wind farm has begun**

Offshore construction work has officially started for the UK's Dogger Bank, which will be the world's largest offshore wind farm, with the installation of the first length of HVDC export cable off the Yorkshire coast. Dogger Bank will also be the first HVDC-connected wind farm in the UK.

Dogger Bank Wind Farm, a joint venture between Norwegian energy giant Equinor (40%), British utility SSE Renewables (40%), and Italian energy company Eni Plenitude (20%), will be developed in three phases: A, B, and C. It will become the largest offshore wind farm in the world upon completion, with an installed capacity of 3.6 gigawatts (GW). Each phase will be 1.2 GW.

Denmark-headquartered cable supplier NKT will supply and install the onshore and offshore HVDC cable for all three phases of the project. The company will use its cable-laying vessel NKT Victoria to install the 320kV DC subsea cable system in the North Sea. The campaign will continue during 2022, with work starting on the export cables for Dogger Bank B in East Riding and Dogger Bank C on Teesside in the consecutive years. The wind farm will be capable of powering up to 6 million UK homes once it's completed in 2026 – and there are approximately 28.1 million households in the country. At the beginning of December 2021, SSE and Equinor announced that they had secured financing to proceed with the construction of the \$3.98 billion Dogger Bank C.

GE Renewable Energy will provide 87 units of the enormous Haliade-X 14 MW wind turbines for Dogger Bank C. As Electrek previously reported, "According to GE, one turbine can generate up to 74 GWh of gross annual energy production, saving up to 52,000 metric tons of carbon dioxide – the equivalent of the emissions from 11,000 vehicles in one year."

*Electrec*

<http://electrek.co/>

**5 May 2022**

## **Spain's Cobra commits investment to 110-MW wind project in Ecuador**

Spanish consortium Cobra Zero-E Villonaco will invest over USD 181 million (EUR 171.3m) in what is set to become the largest wind farm in Ecuador, the Ecuadorean energy and mining ministry has announced. The Spanish group won a 25-year concession to build and operate the 110-MW Villonaco wind farm complex after a lengthy tender process a year and half ago, outbidding a number of international players. The wind project was previously called Villonaco II and III, implying that there would be two sites with a combined capacity

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of 110 MW. Based on the ministry's latest announcement, made on the occasion of signing the investment contract with Cobra, the project is now known as Villonaco III, while the capacity remains unchanged.

Villonaco III represents foreign direct investment, with Ecuador's government expecting some 400 jobs to be created during the construction phase. Cobra Zero-E Villonaco anticipates construction to begin in the third quarter of 2022, the energy ministry added.

*Renewables Now*

<http://renewablesnow.com/>

**5 May 2022**

## **BOEM Completes Environmental Review of Offshore Wind Leasing in Northern California**

As part of the Biden-Harris administration's goal of deploying 30 gigawatts (GW) of offshore wind by 2030, the Bureau of Ocean Energy Management (BOEM) today announced it has completed its environmental review of potential impacts from offshore wind energy leasing activities in the Humboldt Wind Energy Area (WEA), located 20 miles offshore northern California, and based on its analysis has issued a finding of no significant impact (FONSI).

"The completion of this Environmental Assessment represents an important step forward for ensuring that any future renewable energy development – should a lease sale occur -- is done in a responsible manner," said BOEM Director Amanda Lefton. "Working closely with Tribes, state and federal partners and key stakeholders, BOEM remains focused on ensuring that such development is done in a way that avoids or reduces potential impacts to the environment and other ocean users in the region." BOEM's Environmental Assessment (EA) considers potential impacts from the issuance of leases within the WEA that comprises nearly 132,369 acres (206.8 square miles) off the coast of Humboldt County, California. The Humboldt WEA, if developed, could bring up to 1.6 GW of clean energy to the grid, enough to power approximately 560,000 homes.

The EA considers potential environmental consequences of site characterization activities (i.e., biological, archeological, geological, and geophysical surveys and core samples) and site assessment activities (i.e., installation of meteorological buoys). The EA also considers project easements associated with each potential lease and related right-of-way grants for subsea cable corridors in the Humboldt WEA. Should a lease sale occur and before approving the construction of any offshore wind energy facility in the Humboldt WEA, BOEM will develop an Environmental Impact Statement pursuant to the National Environmental Policy Act to analyze the project-specific environmental and socioeconomic consequences, in consultation with Tribes and appropriate federal, state, and local agencies, and with participation by stakeholders and the public.

*BOEM*

<http://www.boem.gov/>

**7 May 2022**

## **Indian power plants are running out of coal**

Electricity has been getting increasingly scarce in India. In a recent survey two-thirds of households said they had been facing regular power cuts. Residents of some rural areas in the northern states report receiving only a few hours of electricity a day. The shortage has even reached posh parts of Delhi, the capital, whose pampered residents are usually insulated from many of the discomforts suffered by their compatriots.

The most immediate reason for the crisis is scorching heat. The past couple of months have been even hotter than usual in South Asia. In north-west and central India

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average temperatures in March and April were the highest since records began 122 years ago (see map). As a result, air-conditioners in homes and offices have been whirring away at levels not usually seen until mid-May. That has come on top of already rising demand after the easing of covid-19 restrictions and an uptick in economic activity.

India no longer lacks capacity. Over the past two decades it has built more coal plants, which generate about 70% of the country's power, and speeded up the expansion of renewables. It has also connected all but a tiny percentage of households to the grid (though not to 24-hour supply).

But in recent weeks coal plants have not been receiving enough coal to operate at capacity. At the start of this month more than 100 of India's 173 thermal plants had critically low stocks. At the end of April, officials in Delhi said the capital could run out of coal in a matter of days, threatening electricity supply to hospitals and the metro system. Power plants have been scrambling for fuel from Coal India, a state-owned company, and paying steep prices for coal at auctions. One reason for the shortage is that coal is cumbersome to move around. Demand for train travel recovered quickly after covid measures eased in March, causing busy tracks. The government has cancelled hundreds of passenger trains over the coming weeks to make way for cargo ones.

But there is a deeper, more long-running reason: electricity producers have no incentive to keep large stocks of coal because they cannot be sure that they will be paid regularly. Billing and payment for electricity is patchy, leaving many distribution companies in the red and unable to pay the power plants, which in turn have a hard time paying the miners. "They have known for two months that coal stocks were declining, but instead of building them up then, we now have a bunch of broke entities scrambling to buy coal and electricity at a premium," says Karthik Ganesan of the Council on Energy, Environment and Water, a think-tank in Delhi.

In the short term, power plants and distributors have little choice but to muddle through. Longer-term, several fixes are possible. One is to ensure existing coal stocks are used by the most efficient plants, which are disadvantaged by long-standing distribution contracts that favour older, more fuel-hungry plants. Doing that could reduce coal consumption by around 6% a year, reckons Mr Ganesan, freeing up stocks for emergencies. And as the government continues to expand renewables the pressure should ease.

Another solution is to convince more users of electricity actually to pay for it. Farmers in many states are entitled to free power. Around 10% of households connected to the grid do not receive regular bills. Theft is rampant. A study in 2019 by pwc, an accountancy firm, estimated that distribution companies lose about a fifth of their revenue to theft, meter-tampering and leaks from faulty power lines.

Fixing the dysfunctional electricity distribution system will become more urgent as India gets richer. Climate change will make extreme temperatures more common. More Indians will install air-conditioning: currently only one in ten households has it. The International Energy Agency, a forecaster, estimates that to meet electricity demand over the next 20 years, India will have to increase its installed capacity of 400 gigawatts more than threefold, adding another 950gw, or roughly the size of the eu's power market. Muddling through will no longer be an option.

*The Economist*

<http://www.economist.com/>

**9 May 2022**

## **USA: Approximately 858 GWdc of solar and over 1 TWh of batteries are in development**

As the nation's power grid electricity generation project queues continue to grow, its composition is evolving. Solar and batteries are beginning to dominate the nation's energy

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future. The US Department of Energy's Lawrence Berkeley National Laboratory's Electricity Markets and Policy group (EMP) has released their annual power grid queue update. The nation's queue holds over 1 TWac of generation capacity. The new capacity added to the queue this year exceeds 600 GWac and comes from more than 3,000 unique projects.

Solar photovoltaics in the queue totals 676 GWac/~845 GWdc of capacity at the end of 2021. 85% of the new capacity came from solar plus energy storage facilities. Solar coupled with energy storage now totals more than 285 GWac of capacity in the queue. Essentially, the utility scale California solar power market is now a solar-plus-storage market. In total, there is more than 400 GW of energy storage capacity in the queue.

he EMP team notes that the number of hours of energy storage is not available. This author estimates that the average battery has at least two and a half hours of storage capacity, which would put the total hours of capacity beyond one terawatt hour.

80% of the total solar capacity is scheduled to come online before the end of 2024; however, only 13% of all solar projects have a signed interconnection agreement. The report points out that in some markets, interconnection is secured before a project finds an off taker. In these markets, some projects that get approved for interconnection do not get built. This point is brought home when the full sample is shared and we see that almost three times as many projects are withdrawn than are operational:

- 8,133 "active" projects
- 12,585 "withdrawn" projects
- 3,439 "operational" projects
- 229 "suspended" projects

The completion rate of solar, across all regions, is 16% — lower than the national average. And if we're doing analogies, the proof is in PJM's pudding — the grid management group states that they are overwhelmed with solar power and wind applications, and that they propose to shut down all new interconnection applications for the next two years as they reassess their processes.

From 2015 through 2021, the report sees that the time it takes to get from from submission, to interconnection, to approval for interconnecting has increased sharply to greater than 3 years — except in Texas' ERCOT territory. Among all of these challenges, one statistic shines a light. Last year, pv magazine USA reported that the current queue already meets 85% of the estimated 1.1 TWac of capacity needed to clean our power grid. EMP's report, released this year, confirms that number. Additionally, the volume of capacity covered in this document only includes utility scale projects from 85% of national utilities. For instance, the hundreds of megawatts of capacity being deployed in Hawaii, the gigawatts of New York Community distributed solar, and the Massachusetts' behind the meter market, are not counted. At a minimum, 6.6 GW of the capacity deployed in 2021 would not have made the list.

*pv-magazine*  
<http://pv-magazine-usa.com/>

**9 May 2022**

## **Portugal set to start up Europe's largest floating solar park**

Two tugboats have moved a vast array of 12,000 solar panels, the size of four soccer pitches, to their mooring on Portugal's Alqueva reservoir in preparation to start up Europe's largest floating solar park in July.

Built by the country's main utility EDP (EDP.LS) on Western Europe's biggest artificial lake, the shiny floating island is part of Portugal's plan to cut reliance on imported fossil fuels whose prices have surged since Russia's invasion of Ukraine. Blessed by long hours of sunshine and Atlantic winds, Portugal has accelerated its shift to renewables. But even



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though Portugal uses almost no Russian hydrocarbons, its gas-fired power plants still feel the squeeze of rising fuel prices.

Miguel Patena, EDP group director in charge of the solar project, said on Thursday when the tugboats moved the panels into position that electricity produced from the floating park, with installed capacity of 5 megawatts (MW), would cost a third of that produced from a gas-fired plant. The panels on the Alqueva reservoir, which is used to generate hydropower, would produce 7.5 gigawatt-hours (GWh) of electricity a year, and would be complemented by lithium batteries to store 2 GWh. The solar panels will supply 1,500 families with power or a third of the needs of the nearby towns of Moura and Portel. "This project is the biggest floating solar park in a hydro dam in Europe, it is a very good benchmark," Patena said.

Solar panels mounted on pontoons on lakes or at sea have been installed in range of places from California to polluted industrial ponds in China, in the fight to cut CO2 emissions. Floating panels do not require valuable real estate and those on reservoirs used for hydropower are particularly cost effective as they can hook up to existing links to the power grid. Excess power generated on sunny days can pump water up into the lake to be stored for use on cloudy days or at night.

EDP executive board member Ana Paula Marques said the Alqueva project was part of EDP's strategy "to go 100% green by 2030", with hydropower and other renewables now accounting for 78% of EDP's 25.6 GW of installed capacity. In 2017, EDP installed a pilot floating solar project with 840 panels on the Alto Rabagao dam, the first in Europe to test how hydro and solar power could complement each other. EDP already has plans to expand the Alqueva project. It secured the right in April to build a second floating farm with 70 MW installed capacity.

*Reuters*

<http://www.reuters.com/>

**10 May 2022**

## **Biden Administration Launches \$2.5 Billion Fund to Modernize and Expand Capacity of America's Power Grid**

The U.S. Department of Energy today issued a Request for Information (RFI) seeking public input on the structure of the \$2.5 billion Transmission Facilitation Program (TFP), which President Biden's Bipartisan Infrastructure Law created to help build out critical new transmission lines across the country. The launch of this new program, the largest infrastructure law investment in solely transmission, is one of the first down payments on over \$20 billion of investments under DOE's new Building a Better Grid Initiative. The TFP is an innovative revolving fund program that will provide Federal support to overcome the financial hurdles to large-scale new transmission lines and upgrade existing transmission as well as the connection of microgrids in select States and U.S. territories. Expanding and modernizing the electric grid will create good-paying jobs to deliver clean, affordable, and reliable energy to everyone, everywhere, anytime. A reliable, resilient electric grid is critical for withstanding climate change impacts and to achieving President Biden's goal of a national grid run on 100% clean electricity by 2035.

"With nearly 70% of the nation's grid more than 25 years old, the President's Bipartisan Infrastructure Law is a pivotal catalyst for transmission projects across the nation that will deliver good-paying jobs in the process," said U.S. Secretary of Energy Jennifer M. Granholm.

The current electric grid was not developed with today's electrification needs in mind. Expanding transmission capacity through new and upgraded transmission lines will improve grid reliability, allow new clean power onto the grid, reduce costs, improve energy equity, and drive economic growth and growth in good jobs. As the Biden Administration ramps up

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expansion of new renewable energy sources, additional transmission will be required to carry that energy across regional lines making it available where it is needed most.

Independent estimates indicate that we need to expand electricity transmission systems by 60% by 2030, and may need to triple it by 2050 to meet the country's increase in renewable generation and expanding electrification needs. Rebuilding and improving our nation's aging electric grid is a cornerstone of the Bipartisan Infrastructure Law. More than 70% of the nation's grid transmission lines and power transformers are over 25 years old, creating vulnerability. Power outages from severe weather have doubled over the past two decades across the United States and the frequency and length of power failures reached their highest levels since reliability tracking began in 2013 — with U.S. customers on average experiencing more than eight hours of outages in 2020.

Under the TFP, DOE is authorized to borrow up to \$2.5 billion to assist in the construction of new and upgraded high-capacity transmission lines through three financing tools: loans from DOE; DOE participation in public-private partnerships; and capacity contracts with eligible projects in which DOE would serve as an “anchor customer”. These tools represent an innovative approach that can spur valuable new lines that otherwise would not get built. The first solicitation will be limited to applicants seeking capacity contracts for eligible projects that will begin operation no later than December 31, 2027. The initial solicitation will include a deadline for submissions, but the timing of the determination will be based on the time necessary to conduct due diligence on the proposed project.

Through the capacity contracts under this program, DOE will commit to purchasing up to 50% of the maximum capacity of the transmission line for up to 40 years. By buying up to 50% of the planned capacity of a transmission project, DOE can reduce financial challenges often facing new transmission programs or upgrades to existing transmission lines by encouraging and de-risking additional investment. A goal of this program is for DOE to continue buying capacity until customer demand has increased enough to cover those costs. Then DOE will remarket the capacity, thereby replenishing the fund. DOE expects to issue another Notice of Intent/RFI in early 2023 that will incorporate the loan and public-private partnership financing tools in addition to the capacity contracts.

**DOE**

<http://www.energy.gov/>

**10 May 2022**

## **Energy Vault starts on its first gravity-based storage system in China**

Swiss energy storage innovator Energy Vault says it has begun construction of its first commercial scale gravity-based energy storage system, a 100MWh facility located in Jiangsu Province outside of Shanghai in China. The Energy Vault Resiliency Center will be built next to a wind farm in Rudong and deploy its gravity-based EVx energy storage system to store and provide renewable energy to the State Grid Corporation of China (SGCC), the world's largest utility. While gravity-based storage is not a completely new technology – it is the foundation of pumped hydro storage – Energy Vault is hailing its technology as a potential game-changer.

Instead of using water, Energy Vault proposes custom-made composite blocks – each of which can be made using a range of materials, providing a long-term recycling solution for wind turbines blades or coal combustion residuals (coal ash), mine tailings, and local soil. The 30-tonne composite blocks are elevated (charged) into an elevated position, where they are then stored, and when energy is needed kinetic energy is released back to the grid via a controlled lowering of the bricks under gravitational force.

**IEEFA**

<http://ieefa.org/>

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## **Siemens Gamesa starts to install new generation of wind turbines in Brazil**

Siemens Gamesa has begun installing a new generation of machines for onshore wind power in Brazil, Felipe Ferres, the company's general director in the country told Reuters on Monday. Brazil will be the first country in the world to operate Siemens Gamesa wind turbines with 6.2 megawatts (MW) of power and a 170-meter (558-ft) rotor, the largest available in the world, in onshore wind generation.

The model grabbed the attention from large wind power investors - since it optimizes wind farms by making them more powerful with fewer machines - and, in the future, could even be applied to "small" offshore developments, Ferres said. The first machines, produced in Bahia state, are being installed in the Tucano wind complex, owned by AES Brasil. Siemens Gamesa, which until a few years ago manufactured 3.5 MW wind turbines, has seen interest in the market for the new model and has already signed supply deals with Essentia and Engie Brasil, according to the executive. Ferres said he still has no doubts that the offshore wind market will develop in Brazil, but he understands that the speed of this process is directly linked to the development of green hydrogen production.

Siemens Gamesa, which dominates the global market for offshore wind turbines, has said wind power could make it possible to produce hydrogen without emitting greenhouse gases as cheaply as is currently feasible with fossil fuel energy by 2030.

"Thinking only about the expansion of wind power just to serve the electric energy market, we are in a 'plateau' of 4 GW installed per year for the entire industry, there is not much prospect of change... Now, when we start producing green hydrogen to meet global energy demand, the scale multiplies, and you need to go to sea..."

Despite the demand for new orders, Ferres said that Siemens Gamesa and other manufacturers have suffered from the breakdown of production chains around the world, due to pressures associated with the COVID-19 pandemic and rising costs with raw materials. In Brazil, the main impact has been on costs, he said, since the Brazilian wind industry is not very dependent on imports.

*Reuters*

<http://www.reuters.com/>

**10 May 2022**

## **Acciona starts building 1,026MW MacIntyre wind farm complex in Australia**

ACCIONA Energía, a subsidiary of Acciona, has commenced the construction of the MacIntyre wind farm complex in Australia, with a total capacity of 1,026MW. The wind farm complex comprises two wind farms, the 923MW MacIntyre and the 103MW Karara, and represents A\$2bn (\$1.4bn) of investment.

The MacIntyre wind farm is owned by ACCIONA Energía and Ark Energy with 70% and 30% stakes respectively, while Karara is owned by Queensland-based public utility CleanCo. The complex is planned to feature 180 of the new-generation Delta 4000 series turbines, with 5.7MW power rating, supplied by the German manufacturer Nordex. ACCIONA Energía aims to complete the construction in 2024, with an ongoing project acceleration plan to mitigate the impact of Covid19 pandemic on the construction. The wind farm complex is anticipated to generate clean electricity that is adequate to power nearly 700,000 homes. Also, it is expected to offset around 3 million tonnes of CO2 emissions per annum, contributing to Queensland's decarbonization goals. Upon completion, the MacIntyre wind farm will be operated by ACCIONA Energía, and the Karara wind farm by CleanCo. According to the company, the MacIntyre wind farm will become its largest wind farm and will triple its renewable production capacity in Australia.

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ACCIONA Energía is a Spanish company engaged in developing renewable energy projects. Earlier this year, the company has started its first project in Peru with the construction of a 131.1MW wind farm in San Juan de Marcona, in the Ica region. The company has placed a turbine order with Nordex for 23 of its Delta4000 series N163/5.X wind turbines for the Peruvian wind farm project. Last year, Acciona Energias has signed an agreement to acquire roughly 850MW of wind projects in Brazil, in order to enter the country's renewable energy market. The company has signed agreements with Brazilian developer Casa dos Ventos, to purchase the Sento Se I and II wind projects, and invest €800m in the development of the two wind farms.

*Smart Energy International*  
<http://www.smart-energy.com/>

**11 May 2022**

## **Siemens deploys AI to Baltics' newest energy-efficient data centre**

Siemens has deployed integrated data centre management software, including the AI-powered WSCO, at an energy-efficient data centre in Tallinn, Estonia. The new 14,500m<sup>2</sup> data centre in Tallinn, Estonia, runs on renewable energy and is the first of three such facilities, contributing to boosting the Baltic region's e-commerce and digital societies.

The building management software (BMS), energy and power management software (EPMS) and White Space Cooling Optimisation (WSCO) aim to help Greenergy Data Centres lower energy usage, ensure thermal protection and manage reliable critical infrastructure operations. Providing the operational technology control platform of the new data centre is Desigo CC, an integrated building management platform from Siemens Smart Infrastructure, which connects and controls critical and non-critical building systems. Desigo CC gives operators at the data centre a single pane of glass from which to visualise, monitor, control and optimise critical building management systems, energy performance and WSCO. Siemens' building automation technologies also control the data centre's ability to distribute excess heat to a district heating company, if required. "This new complex conforms to all of the highest international security standards and aims to operate at 25% higher energy efficiency than the market's average," stated Kert Evert, chief development officer, Greenergy Data Centres.

Thermal optimisation has reportedly improved by combining Desigo CC building management with Siemens' WSCO, which is powered by artificial intelligence (AI). It has increased the building's energy efficiency and contributed to its target Power Usage Effectiveness (PUE) value of 1.2, against an industry average of around 1.6. The software also ensures thermal protection of server rooms by automatically adjusting the operation of the cooling systems. A dense mesh of sensors across the centre's white spaces provides the WSCO software with detailed temperature data. The system then uses an advanced machine-learning model to analyse the effect of cooling on specific areas, creating an influence map to optimise cooling distribution at rack-level, and limiting energy use to only what is necessary. The solution responds automatically to events such as temperature fluctuations, minimising the risk of malfunction, mitigating overconsumption issues and ensuring the availability of equipment without interruption. This solution is implemented in both greenfield and brownfield data centres.

"As demand for data centre services continues to rise globally, digital tools will play a key role in mitigating the environmental impact of data, while maintaining the high levels of security, resilience and redundancy required of critical infrastructure," stated Dave Hopping, CEO, solutions and services, Siemens Smart Infrastructure. "Greenergy Data Centres' new facility in Tallinn is an excellent example of how digital building technology and services can combine to create a benchmark in smart, energy-efficient data centres."

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To ensure a reliable and safe power supply to the data centre, Siemens provided from concept to delivery, customised power distribution systems natively integrated into Desigo CC for energy performance monitoring from a single pane of glass. This includes low-voltage Sivacon S8 switchgears and Sivacon 8PS busbars, Simosec medium voltage switchgears for the entire data center, and a high-voltage system from Siemens Energy.

*Siemens*

<http://www.siemens.com/>

**12 May 2022**

## **Pakistan: CDWP approves three development projects**

The Central Development Working Party (CDWP) approved three development projects at a cost of Rs4.74 billion and gave a concept clearance proposal to Emergency Plan for Polio Eradication project at a cost of Rs132 billion.

The CDWP met with Deputy Chairman Planning Commission Dr Mohammad Jahanzeb Khan in the chair at P-Block Secretariat of the Ministry of Planning, Development and Special Initiatives on Wednesday. The meeting was attended by Additional Secretary, PD&SI, Secretary Ministry of Water Resources, Secretary Ministry of Health, Secretary Ministry of Petroleum, Chairman National Highway Authority, NHA, Members Planning Commission and other key stakeholders.

Dr Jahanzeb while talking to Business Recorder said that the CDWP discussed a total of six development projects. He said that the CDWP approved three development projects at a cost of Rs4.74 billion while it gave concept clearance to one project; an Emergency Plan for Polio Eradication project at a cost of Rs132 billion. He said that the CDWP also discussed two projects including 300MW floating solar project at Tarbela-Ghazi Barotha complex at a cost of \$341.5 million and Punjab Resilient and Inclusive Agriculture Transformation of cost \$ 300 million. However, he said that the CDWP did not approve these two projects so far due to some objections. He said that these projects would be approved after the clearance of some objections.

According to the sources, the World Bank (WB) has invited Pakistani authorities for negotiation of \$341.5 million loan to set up 300MW floating solar project at Tarbela-Ghazi Barotha complex. They said that the World Bank will also provide \$300 million to the government of Punjab for Punjab Resilient and Inclusive Agriculture Transformation (PRIAT) Project. The CDWP took up the Emergency Plan for Polio Eradication project at a cost of Rs132 billion, Replacement of Obsolete Equipment's and Procurement of new Electro-Medical Equipment for National Institute of Rehabilitation Medicine, Islamabad worth Rs524.690 million, Expansion and Up-gradation of Pakistan Petroleum Corehouse for its sustainable operations to facilitate oil and gas exploration research worth Rs819.102 million, Establishment of Mohtrama Benazir Bhutto Shaheed Medical College Mirpur worth Rs3,400million.

The Emergency Plan for Polio Eradication project for 5-year in line with the current National Emergency Action Plan for Polio Eradication 2021-23 and GPEI strategy 2022-2026 with a focus on eliminating the Wild Polio Virus and CVDPV2 across the country and achieving post-polio certification. The primary goal of the project is to interrupt wild poliovirus type 1 and circulating vaccine-derived poliovirus type 2 transmission as a path to global polio eradication. The program plans to limit circulation to core reservoirs and shared transmission corridors and then interrupt all poliovirus within the reservoirs by 2024.

The Secretary Health informed the forum that the project will be executed for five years to eradicate polio from the country. However, he added that recently two cases of polio were reported in North Waziristan which emerged from neighboring country Afghanistan. He said that due to the porous border polio cases emerged from Afghanistan

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and that matter was discussed with the Afghan government. He said that Pakistan asked the Afghan government to conduct a door-to-door polio campaign and secure the border in order to avoid further polio cases.

The CDWP also approved the Expansion and Up-gradation of Pakistan Petroleum Corehouse for its sustainable operations to facilitate oil and gas exploration research at the cost of Rs819.102 million. The Ministry of Petroleum is the executing agency and the project envisages expansion of Pakistan Petroleum Core house to increase its storage capacity, upgrade its laboratory facilities for analytical services and value addition of well samples archived in it to facilitate oil and gas exploration. The Expansion of PETCORE building with an additional racking system with storage material (standard wood pulp cardboard boxes and vial trays) for well samples and up-gradation of existing lab facilities through procurement of state-of-the-art equipment will provide necessary services to the E&P sector. The scope of work includes expansion of Pakistan Petroleum Corehouse through the construction of new storage capacity (29,064 sq ft), up-gradation of laboratory facilities for analytical services and value addition of well samples. The CDWP approved the Replacement of Obsolete Equipment's and Procurement of new Electro-Medical Equipment for the National Institute of Rehabilitation Medicine, Islamabad at a cost of Rs524.690m. The Ministry of National Health Services, Regulations and Coordination is the executing agency.

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