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## China's installed capacity grew by 7.6% in 2017 to nearly 1800 GW

According to the Chinese National Bureau of Statistics, the Chinese installed power capacity rose by 7.6% to more than 1,770 GW in 2017. Over 60% of this capacity was thermal, as fossil-fired power capacity rose by 4.3% to over 1,100 GW. CO<sub>2</sub>-free power capacities also grew significantly in 2017: hydropower capacity reached 341 GW (+2.7%), nuclear capacity 35.8 GW (+6.5%), wind capacity 164 GW (+10.5%) and solar power capacity 130 GW (+69%) according to the NBS.

Power generation grew by 5.9% to 6,495 TWh, thanks to a 5.1% increase in thermal power generation (4,663 TWh); hydropower generation only grew by 0.5% to 1,190 TWh, while nuclear generation soared by 16% to 248 TWh. Coal production grew by 3.3% during the year, while gas production rose by 8.2% to 148 bcm and crude oil production dipped by 4.1% to 191.5 Mt.

According to the NBS, China's total energy consumption rose by 2.9% to 4.49 Gtce, which is still below the 2020 target of 5 Gtce. Coal consumption increased by 0.4%, as crude oil (+5.2%), natural gas (+15%) and power consumption (+6.6%). Coal accounted for 60.4% of the total domestic energy consumption (-1.6 percentage point on 2016), while the consumption of other energies (including natural gas, hydropower, nuclear power and wind power) accounted for 20.8% (+1.3 percentage point). The domestic carbon intensity (CO<sub>2</sub> emissions per unit of GDP) dropped by 5.1% in 2017.

*Enerdata*

<http://www.enerdata.net>

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## The TAP interconnection project moves forward

The governments of Turkmenistan, Afghanistan and Pakistan have signed a framework agreement for the proposed 4,000 MW Turkmenistan-Afghanistan-Pakistan (TAP) Power Interconnection project. The Asian Development Bank (ADB) will play a pivotal role and will support the project, in particular regarding the coordination of the project planning and the provision of financing.

The interconnection project will involve the construction of 500 km of 500-kV transmission lines between the three countries and will be divided in two concurrent phases. The first phase, due by 2021, will use the existing infrastructure under the ADB-financed Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan (TUTAP) power interconnection project. The second phase will be finished by 2022 and will enable the transfer of power from Turkmenistan through the border of Serhetabad (Turkmenistan) and Torghundy into Herat, Kandahar, and Spin Boldak (Afghanistan) and export to Chaman and Quetta (Pakistan).

*Enerdata*

<http://www.enerdata.net>

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## Rosatom plans to build 1st fast breeder reactor in the 2020s

The Russian nuclear company Rosatom plans to build its first BN-1200 sodium-cooled fast breeder reactor (FBR) project in Russia in the 2020s. Expected to have an



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installed capacity of 1,200 MW, it will be based on the BN-600 and BN-800 projects and will use larger fuel elements than the BN-600 and BN-800. The reactor is scheduled to have a simplified refueling procedure.

The main feature of fast breeder reactors is their capability to produce more nuclear fuel than they consume themselves. Plans for FBR construction were announced in 2012 but have been repeatedly scaled back. The BN-1200 power unit is also planned to be built at Beloyarsk nuclear power plant.

*Enerdata*

<http://www.enerdata.net>

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## **New England power grid operator budgets soaring**

Revenue for the nonprofit operator of New England's power grid rose by more than 30 percent between 2011 and 2016, according to federal records, far faster than revenue for similar "independent system operators" across the nation.

ISO-New England's income, like those of other grid operators, ultimately is derived from regional ratepayers. New England consumers pay some of the highest rates in the U.S. for electricity and other forms of energy, and a portion of the income from those rates ends up financing ISO-New England.

The New York ISO saw its revenue increase during the 2011-2016 period by 13.4 percent. The California ISO's income rose by 11.6 percent and the Midcontinent ISO revenue increase for those five years was just 5.4 percent, according to available federal tax records.

ISO-New England's ratepayer-funded income was \$181.6 million in 2016, and the portion of that revenue devoted to the regional grid operator's executive pay was also significantly higher than for similar ISO's across the nation.

*Hartford Courant*

<http://www.courant.com>

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## **Capacity market loophole allows batteries to skirt revenue cuts**

A loophole in the capacity market rules has enabled battery storage to avoid revenue cuts by disguising itself as demand-side response (DSR), an industry expert has warned. Ahead of the latest auctions, the government slashed the de-rating factor for most batteries, drastically reducing the amount of money they can earn. By bidding as DSR, battery developers are able to receive a higher de-rating factor and therefore higher revenues.

Tom Palmer, principal consultant at Cornwall Insight, told Utility Week at least one storage project has secured a capacity agreement in this way – the 6MW Leighton Buzzard facility. The site is owned by UK Power Networks and operated on its behalf by Limejump. It was built with the help of a £13.2 million grant from Ofgem's Low Carbon Network Fund. "That actually got classed as a DSR project, so it's got a higher de-rating factor," said Palmer. "It's a battery storage project that's connected directly to the substation. There's no customers involved, so it's not demand-side response in the true sense."



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Participants in the capacity market make bids and are paid according to their de-rated capacity. There are different de-rating factors for different technologies and, up until last year, all batteries received a de-rating factor of 96 per cent.

Then in July, the Department for Business, Energy and Industrial Strategy (BEIS) revealed plans to reduce the de-rating factor for most batteries due to concerns they were being overcompensated and may not be able to fulfil their obligations during stress events. They would be divided into eight different classes based on their discharge duration, each with its own de-rating factor. In December, BEIS announced the new de-rating factors for the eight classes. All but the longest-range batteries (four hours plus) were assigned a lower de-rating factor, with the shortest-range batteries (30 minutes plus) receiving a de-rating factor of less than 18 per cent in the four-year-ahead (T-4) auction.

The changes have made it advantageous for some projects to enter auctions as DSR which has a de-rating factor of 86 per cent.

To receive capacity payments, DSR providers must demonstrate the ability to reduce metered consumption against a baseline level during three separate settlement periods. As settlement periods last just 30 minutes, even the shortest-range batteries can pass this test.

The baseline can also be set to zero. “You can export from your battery and deduct megawatts from zero and still be classed as DSR,” Palmer explained. “The way the rules are written, they are too vague for National Grid, the EMR delivery body, to be able to give a firm no”. He said the penalties for failing to meet a capacity market stress event are not sufficient to deter battery developers from listing their projects as DSR as “you can never lose more than you’ve gained”. However, they would lose their eligibility to bid for 15-year new build contracts. As an existing facility, this would not have been a concern for Leighton Buzzard. According to Palmer, there may be other projects which have secured capacity agreements under the guise of DSR, but it is difficult to tell because of the limited details listed in the capacity market register. “There’s definitely one and there could be more,” he remarked.

Palmer said he raised the issue during the consultation on the reduced de-rating factors for batteries, but it was not resolved in time for the latest auctions.

A spokeswoman for BEIS said: “Batteries and demand-side response can both play an important role in the capacity market and contribute to security of supply. “After every capacity market auction, we reflect with our delivery partners on lessons that can be learnt for future auctions and we are working with National Grid to look into this claim.”

A spokesman for Limejump added: “Limejump ensures that for all of our customers we comply with the relevant rules and regulations of the capacity market. “Any unproven sites listed on the capacity market register are not confirmed until DSR testing begins and there have been no changes to the rules regarding DSR for this year’s auction process.”

*Utility Week*  
<http://www.utilityweek.co.uk>

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## **Bangladesh signs MoU for Rooppur nuclear project with India and Russia**

The governments of Bangladesh and India have signed a Memorandum of Understanding (MoU) with the Russian state-held nuclear group Rosatom to cooperate on the construction of the 2,400 MW Rooppur nuclear power project in Bangladesh. Under



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the framework of the agreement, Indian companies will be in charge of construction and installation works for non-critical categories of the project.

The total project cost is expected to reach US\$12,650m and Russia will provide a US\$11,380m credit facility to cover up 90% of the costs. The Rooppur project will comprise two 1,200 MW reactors. Construction started in December 2017 on the first one, and the two reactors should be commissioned in 2023 and 2024, respectively.

The project is projected to generate 10% of Bangladesh's power generation upon completion, and will be crucial in improving the country's power supply security. Bangladesh is currently reliant on hydropower, coal and natural gas for power generation.

*Enerdata*

<http://www.enerdata.net>

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## **First 600 MW of 2 GW Shakti Sthala solar park come on-stream**

The Karnataka Solar Power Development Corporation (KSPDCL) has commissioned the first phase (600 MW) of the 2,000 MW Shakti Sthala solar park in the Pavagada region of Karnataka (India). The RUP 16,500 crore (approximately US\$2.53bn) facility has been built in a record time of two years. The plant's remaining phases (1,400 MW) are expected to be commissioned by the end of 2018.

Karnataka has emerged as the third largest producer of renewable energy in India and has set itself the target of meeting up 20% of its power requirements with renewable energy sources. As of January 2018, its overall installed power capacity stood at 23,739 MW.

KSPDCL is a joint venture set up in March 2015 between the Solar Energy Corporation of India (SECI) and Karnataka Renewable Energy Development (KREDL).

*Enerdata*

<http://www.enerdata.net>

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## **Continuing frequency deviation in the Continental European Power System originating in Serbia/Kosovo**

*Continuing frequency deviation in the Continental European Power System originating in Serbia/Kosovo: Political solution urgently needed in addition to technical*

The Continental European (CE) Power System – a large synchronized area stretching from Spain to Turkey and from Poland to Netherlands; encompassing 25 countries – is experiencing a continuous system frequency deviation from the mean value of 50 Hz, and this since mid of January 2018.

The power deviations are originating from the control area called Serbia, Macedonia, Montenegro (SMM block) and specifically Kosovo and Serbia.

The power deviations have led to a slight decrease in the electric frequency average.

This average frequency deviation, that has never happened in any similar way in the CE Power system, must cease. The missing energy amounts currently to 113 GWh. The question of who will compensate for this loss has to be answered.



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The decrease in frequency average is affecting also those electric clocks that are steered by the frequency of the power system and not by a quartz crystal: they show currently a delay of close to six minutes.

ENTSO-E, the association of the European TSOs, is exploring all technical options to address the deviation issue with the concerned TSOs.

As there is also a political dimension with impact on the functioning of the electricity system, ENTSO-E is urging European and national governments and policy makers to take swift action. These actions need to address the political side of this issue, supporting ENTSO-E's and the TSOs' actions to deliver a technical solution.

**ENTSO-E**

<http://www.entsoe.eu>

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## **Deviations affecting frequency in Continental Europe have ceased**

ENTSO-E has now confirmed with the Serbian and Kosovar TSOs, respectively EMS and KOSTT, that the deviations which affected the average frequency in the synchronous area of Continental Europe have ceased.

This is a first step in the resolution of the issue. The second step is now to develop a plan for returning the missing energy to the system and putting the situation back to normal.

ENTSO-E, in close interaction with the European Commission, is trying to identify a sustainable long term solution that will avoid that this happens again.

The situation experienced is unprecedented in the Continental European Power System. The European transmission system operators interact constantly, across the borders and through ENTSO-E, to ensure that security of supply is maintained in one of the world's largest synchronous area.

**ENTSO-E**

<http://www.entsoe.eu>

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## **Lithuania urges Baltics to accelerate grid synchronisation with Continental Europe**

Lithuania's government is urging the Baltic States and Poland to accelerate the project for synchronising their power systems with Continental Europe.

In Russia, two new 300 MW gas-powered and heat power plants were opened in Sovetsk and Gusev last week. As reported, two more heat and power plants are under construction in the region. According to the Lithuanian government, increased electricity production in the Kaliningrad region of Russia would be left without electricity transmission lines outside its territory. The region currently has links with Lithuania only.

The increased electricity production in the Kaliningrad region was part of Moscow's preparations for the planned disconnection of the Baltic countries from the Russian BRELL system — a Soviet-designed energy ring linking Belarus, Russia, Estonia, Latvia, and Lithuania — to connect with the Western European network for synchronous operation.

Lithuanian officials are presently worried as the increase in electricity production in Kaliningrad raises the risks of Russia deciding to disconnect the Baltic States from BRELL



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before the countries are able to operate in sync with the European networks. The country is expecting the three Baltic States (Estonia, Latvia and Lithuania) to speed up the discussions, the agreement, and the start of work.

*Global Transmission*

<http://www.globaltransmission.info>

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## **Agreement on future Nordic balancing**

The five Nordic TSOs have reached a cooperation agreement on the development of a new Nordic balancing concept.

- We are very happy that an agreement has been reached, and that we can resume the strong Nordic cooperation that is a hallmark for the power sector in the Nordic countries. The agreement is a major step forward for the development of an efficient power market that ensures security of supply, says the CEOs in a joint statement.

The changing power system entails more intermittent renewable power generation and changes in consumption patterns. This means that there is a need for more flexibility and better control of imbalances. The new Nordic balancing model ensures this.

The cooperation agreement outlines the roles and responsibilities of the TSOs. It is committing the five Nordic TSOs to follow a common roadmap for implementation of the new balancing concept and common balancing markets. Furthermore, the agreement outlines the way forward on the development of new market platforms supporting common markets and tasks in the new balancing structure.

- Ensuring value creation and security of supply is paramount to our missions in our respective countries and across the Nordic area. Therefore, this agreement is much needed and welcomed. We are strongly committed to ensuring Nordic cooperation, and are happy that we were able to find solutions that were acceptable to all parties, underlines the TSOs.

The agreement has paved the way for the common consultation on one common Nordic LFC block which was launched Friday.

The five Nordic TSOs in the agreement are: Svenska kraftnät, Kraftnät Åland, Statnett, Fingrid and Energinet.

*Fingrid*

<http://www.fingrid.fi>

*Statnett*

<http://www.statnett.no>

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## **EDF and NPCIL agree on building 6 EPRs in Jaitapur**

The state-run Indian nuclear utility Nuclear Power Corporation of India Limited (NPCIL) and EDF have signed an agreement for the implementation of six European Pressurized Reactors (EPRs) rated 1,600 MW each at the future Jaitapur Nuclear power plant in the Madban village (Ratnagiri district of Maharashtra) in India. The agreement defines the project's industrial framework along with the responsibilities and roles of the two companies. EDF will be in charge of the engineering studies and all component



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procurement activities for the first two reactors. As for the remaining units, purchasing activities might be undertaken by local companies.

The facility will be owned and operated by NPCIL, which shall be responsible for obtaining all the required authorisations and certifications for the project, as well as the construction of the reactors and associated site infrastructures. The next step will be a binding EDF tender, which is expected for the end of 2018.

*Enerdata*

<http://www.enerdata.net>

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## **TenneT, Mobility House and Nissan work together on stabilising the power grid**

13 March 2018. The increase of renewable energies and e-mobility is creating a challenge for security of supply: the key is to coordinate power generation and power consumption and, at the same time, ensure the stability of the power grid. The transmission system operator TenneT, the energy service provider The Mobility House and the automotive manufacturer Nissan have started a joint project to investigate the ways in which electric cars can contribute towards solving this problem. In addition, the project will develop and evaluate suggestions for regulatory guidelines for vehicle-to-grid.

In the project, TenneT, The Mobility House and Nissan are making use of the potential of the batteries in electric vehicles for storing locally produced electricity and to feed it back into the grid to stabilise the grid. "This pilot project complements our block chain projects because it taps new channels for flexibly controlling renewable energy production that is strongly dependent on the weather. We use e-vehicle batteries, which can store electricity as well as to feed it back into the grid, for redispatch, in other words, to dispel transmission bottlenecks in the grid. That takes the strain off the electricity grid and helps us to limit expensive curtailment of wind turbines. This allows the project to supplement the grid expansion and become an important building block for the energy transition," says Lex Hartman, Member of the Board, TenneT TSO GmbH. Nowadays, due to the increasing decentralized infeed of renewable energy sources, transmission bottlenecks are becoming increasingly common in the power grid. To prevent such bottlenecks, TenneT interferes in the production of conventional power stations and renewables (redispatch, grid reserve, wind power curtailment) and thus ensures that electricity transport remains within the limits and capabilities of the grid. In 2017, the costs for this were around a billion euros (TenneT control area). They are ultimately borne by electricity consumers through grid charges. The initial results from the project are expected to be available in the first quarter of 2019.

During the project phase, Nissan electric vehicles are being used as mobile energy storage systems in the TenneT control area in Northern and Southern Germany to directly reduce local overloads in the power supply or power demand. After a successful implementation of the project, Nissan e-vehicles could be used for this purpose right across Germany. The load and energy management software developed by The Mobility House enables automated control of the vehicle charging and discharging process. The key prerequisite for this is the capability for bidirectional charging; i.e. the e-vehicle has the ability not only to draw energy from the grid but also to feed energy back into the grid as required. The result is that e-vehicles can directly provide grid-stabilising energy supplies. "The battery storage cells in e-vehicles provide a significant opportunity for optimizing the grid. They create a decentralised storage option for excess renewable energies. An



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intelligent load control system supports the grid stabilisation and provides significant cost savings for end users,” explains Thomas Raffeiner, CEO and founder of The Mobility House.

The automotive manufacturer Nissan has been working together with The Mobility House on the intelligent integration of e-vehicles in the power grid for several years. Francisco Carranza, Managing Director Nissan Energy, Nissan Europe said: “Nissan electric vehicles can be plugged into the grid and support the transmission and distribution to make the grid more sustainable and more stable. At Nissan, we have been looking at ways to use electric vehicles beyond traditional mobility, turning them into clean mobile energy hubs. Today, our electric vehicles are not just transforming the way we drive, but also the way we live.” The project combines the experience and expertise of the three partners. At the end of this project, further commercial products and services will be available to the owners of e-vehicles.

*TenneT*

<http://www.tennet.eu>