

### Finance, tech and consumers

These are the new drivers of energy efficiency, according to the Council's latest report.

"The present price of fossil fuels on the international markets is not incentivizing energy efficiency," says the report's author, François Moisan.

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## US Energy Independence Day Dawns



*Barry Worthington, Executive Director of the US Energy Association. Photo USEA*

to the proposed streamlining of the permitting process," says Worthington.

"Currently, under existing law and regulation, if the export destination is under a Free Trade Agreement, such as is the case for Korea, then permits for construction are almost automatic. If the export destination is not under a free trade agreement, then the process is considerably more complicated, including stipulations that the Department of Energy must evidence that the export is in the national interest. So, with the new Act, we're expecting significant increases in LNG exports, especially to Japan and China. Strategically, this could lower European import dependency on Russian gas – especially for Spain, Portugal and Italy," explains Worthington.

In November 2016, the US became for the first time a net exporter of natural gas [<http://bit.ly/2fkqyZ7>]. Platts recently reported that its proprietary data showed U.S. natural gas exports exceeding imports in early November, with the country's gas balance netting an outflow of 1 billion cubic feet per day.

### BOOST FOR EFFICIENCY AND RENEWABLES

Sustainable energy is not entirely neglected in the new > [see page 2](#)

**The most significant US energy policy update in a decade, the Energy Policy Modernization Act 2016, will be introduced into the new Congress in January 2017. With provisions for accelerated permitting for oil and gas drilling, construction of export LNG terminals, as well as energy efficiency standards and grid-integration of renewables, the outlook for US energy security is bright, according to Barry Worthington, Executive Director of the US Energy Association (USEA). He predicts that business, not policy, will be the major driver of decarbonisation.**

One of the first pieces of business for the new US administration will be to sign into law a wide-ranging piece of energy legislation, the Energy Policy Modernization Act 2016. The nearly 800-page bill tackles everything

from the security of the electrical grid to exports of natural gas and is considered the first significant broad-based change in the nation's energy laws in nearly a decade.

Executive Director of the US Energy Association (USEA), Barry Worthington says: "This is set to provide a big boost for badly needed energy infrastructure. There is also a strong energy efficiency component, which is long overdue. The Act has bipartisan support so it is likely to move fairly quickly – and become law in April or May 2017."

Most prominent are the provisions on how best to speed the export of domestically produced natural gas. "We're anticipating a boost in construction of LNG terminals, due

legislation: substantial provisions are made for renewable energy and energy efficiency.

“I believe that America will continue down the path of decarbonisation.”

The bill will promote renewable energy by requiring operators of electricity lines, transformers, and other parts of the electrical grid to upgrade the system, with a focus on the creation of large-scale storage systems for electricity to accommodate the expanding production of wind and solar power.

Worthington also notes, that under the new administration: “I would expect other support for renewable energy projects, for example in expediting the permitting process and allowing windfarm development on federal property.”

In addition, the bill's provisions to improve energy efficiency by reauthorising state energy programs and promoting investment in improved technologies such as smart buildings

and smart grids have been welcomed by the American Council for an Energy Efficient Economy (ACEEE). According to the ACEEE, this could enable a market opportunity for the US to become a world leader in “smart” technologies including smart buildings, manufacturing, transportation, cities, and the grid.

Worthington comments: “In terms of energy efficiency gains, we’re more than halfway now towards our targets. Much has been done to introduce standards in buildings and in transport.”

Significant gains in energy efficiency were made under the outgoing administration. In 2015, President Obama signed into law the Energy Efficiency Improvement Act, which includes the Tenant Star program with the potential to cut utility bills for landlords and tenants by an estimated 2 billion dollars by 2030 and reduce carbon emissions by nearly 12 million metric tons. Introduced in 2015, efficiency rules for appliances and federal buildings, along with new standards from the Department of Energy (for new rooftop air conditioners, heat pumps, and furnaces) representing the largest gains of any energy-saving rule since the standards program began in 1987, are estimated to save the same amount of energy as all the coal burned in the U.S. to generate electricity in a year.

### BUSINESS TO DRIVE DECARBONISATION

Although the president-elect Donald Trump has made clear his support for US domestic energy projects in many respects – such as the intention to remove barriers to fossil fuel production – Worthington believes that the US will continue to decarbonise its energy system. However, he anticipates that policy will not be the primary driver of low carbon energy. “I believe that America will continue down the path of decarbonisation. Fuel-switching from coal-fired to natural gas will continue, with or without the Environmental Protection Agency,

“This could enable a market opportunity for the US to become a world leader in ‘smart’ technologies.”

the Clean Power Plan or the Paris agreement,” he says. “Our corporations are majorly motivated to reduce greenhouse gas emissions, and this is due to pressure from shareholders.”

This is further evidenced by an open letter to the president-elect published on November 16 and signed by more

than 300 big businesses including IKEA, Starbucks Coffee, Gap Inc., General Mills, Hewlett-Packard Enterprise, Hilton, Kellogg Co., L’Oreal, Levi Strauss & Co., Virgin and Patagonia. The letter urges Trump to keep the Paris Climate Agreement, and requests support in building a clean and green economy.

Worthington reckons a generational shift in mindset will make an impact: “The energy industry’s workforce is also changing – we’re undergoing a significant replacement wave in our industry, as the 65 year olds are leaving and being replaced with 25 year olds. The younger generation has a very different outlook.”

Worthington describes himself as “impressed with the individuals that are advising the president-elect” and is looking forward to working with the new administration. He is upbeat and enthusiastic about the USA’s energy outlook: “In energy terms, we’re in a completely different world now than we were just a few years ago. In 1985, we thought we had a 30-year supply of natural gas and we were making plans for gas importation up to 2008. But the development of fracking technology and the shale gas revolution has changed all that – now we reckon we have at least a 100-year supply of natural gas, even likely that it’s a 200-year supply.”

“So we have the confidence of a huge supply base combined with low prices.

“In November 2016, the US became for the first time a net exporter of natural gas.”

And don’t forget, it’s not just shale gas, it’s shale oil too. With new policies in place to remove barriers to exploration, we see the pathway towards the US becoming a major energy exporter. This could happen within a few years, if not by 2020, certainly by 2025.” ●

The USEA is the U.S. Member Committee of the World Energy Council. It is an association of public and private energy-related organizations, corporations, and government agencies, and represents the broad interests of the U.S. energy sector.

## Incentivizing energy efficiency to accelerate global progress on energy efficiency



**Published in November 2016 at COP22 the Council's recent report *Energy Efficiency: Trends and Policies at World Level* is the most comprehensive global publication on energy efficiency policies. In past years, rising energy prices and the urgency of action on climate change have brought energy efficiency into renewed focus. Now finance is getting increasingly interested in energy efficiency: however, smart meters, digital infrastructure and the changing role of the energy consumer will be the new drivers of progress, according to the report's Executive Chair, François Moisan.**

Since 1992, the World Energy Council together with ADEME has produced a series of triennial reports on the different approaches to energy efficiency policies adopted in more than 95 countries around the world. François Moisan, Executive Director of Strategy, Research and International,

and Scientific Director of ADEME, has been involved in the research since the project's inception.

"In the 1990s, energy efficiency was not on the top agenda of priorities. Energy prices dropped at the end of the 1980s, Europe was undergoing

deregulation in the energy sector, and climate change was not yet a leading issue," says Moisan.

This notwithstanding, partly as a legacy of the oil crises of the 1970s, some, mainly OECD, countries implemented structural energy efficiency policies at the beginning of the 1980s. Policies included setting up agencies dedicated to energy efficiency, introducing standards for building construction, and labels and minimum efficiency performance standards for appliances. Emerging economies followed this lead: the report series cites successful practices in China, Tunisia, India, Ghana, and Brazil, among others.

*Half of the required GHG reductions necessary to deliver a 2 degree pathway must come from energy efficiency.*

*Photo iStock.*

"At the end of 1990s the climate change issue came to the fore, and in the first decade of the 21st century, the increase of energy prices on international markets made energy efficiency a higher priority. We saw more and more governments designing energy efficiency programs and measures. For industry it's also a strong motivation for competitiveness and greenhouse gases reduction," says Moisan.

In most regions, annual improvement rate of energy efficiency has slowed down from 1.6% between 2000 and 2008 to 1.3% in the following years, according to the report.

"However it seems that in 2015, due to the economic recovery, the slight energy price increase and the public policies, the pace of energy intensity improvement accelerated again," adds Moisan.

### CLIMATE DRIVERS

On the foot of the recently ratified Paris Agreement, it is estimated that around half of the required greenhouse gas (GHG) reductions necessary to deliver a 2 degree pathway must come from energy efficiency.

According to Moisan: "Energy efficiency is the "first fuel" for energy transition toward a decarbonized economy. The

rate of energy efficiency improvement at world level should double from the present situation, to around 2.5 % / year to 2030."

In order to accelerate global progress on energy efficiency, firstly the report recommends that "a price signal on energy taking into account medium and long term issues" – in other words,

*"The right policy mix is country and sector dependent."*

carbon pricing is required. "The present price of fossil fuels on the international markets is not incentivizing energy efficiency," says Moisan. At the recent COP22 in Marrakech, many business groups were advocating for carbon pricing, however, according to Moisan: "even if some economists say that this will only work if there is global agreement on a carbon price, it could be set up at national or regional level first since this will take some time to negotiate at international level."

The report recommends that "innovative financing tools need to be widely introduced > [see page 4](#)





to reduce the public spending on financial and fiscal incentives” for energy efficiency.

Moisan comments: “Innovative financing tools have been developed in many countries. Third party financing involving longer term investors has been implemented, and guarantee funds are also implemented in some situations. Public procurement aiming

“Around half of the required greenhouse gas (GHG) reductions necessary to deliver a 2 degree pathway must come from energy efficiency.”

at decreasing the cost of equipment through large market creation is also an efficient tool as it has been implemented in India. The involvement of financial institutions is crucial as has been demonstrated by the KfW in Germany.”

For the past two years, the G20 Energy Efficiency Finance Task Group (EEFTG) has been working to upscale energy efficiency investment. In 2015, EEFTG launched a voluntary set of Energy Efficiency Investment Principles for G20 participating countries which provide the outline for an “investment grade” policy framework to enhance capital flows to energy efficiency investments.

The subsequent adoption of the G20 Energy Efficiency Leading Programme (EELP) has further strengthened the engagement of the global financial sector. In 2016, 117 banks from 42 countries – including five of the leading banks in China - endorsed an energy efficiency commitment in the framework

*Smart meters improving consumers' ability to monitor and control their electricity and gas use. Photo available at <https://goo.gl/8i01hy> under a Creative Commons Attribution 2.0*

of the EEFTG, and managers of \$4 trillion of assets under management (AUM) have signed the G20 Energy Efficiency Investor Statement to embed energy efficiency in their practices.

In terms of supporting policy, Moisan says: “The most efficient policies implemented are a mix of different measures: market instruments are essential (such as price setting in order to reflect the right cost of energy and its externalities) but information and regulation measures are also needed where prices are not sufficient to drive behaviours. Building codes standards, labels and minimum efficiency standards on equipment proved to be very efficient measures since they are reinforced and regularly updated. However, the right policy mix is country and sector dependent.”

### CONSUMER APPETITE

Moisan observes that the introduction of smart meters, improving consumers' ability to monitor and control their electricity and gas use, is the biggest change in the energy efficiency landscape since the last edition of the report three years ago. During this time, smart meters began to be deployed worldwide. According to the report, China is the leader of the smart metering market with 250 million units,

in Asia plans are underway to reach 70% coverage, and 40% of American households have a smart meter. At European level, Italy and Sweden are the leading examples (close to 90% of consumers have smart meters). Furthermore, the Energy Efficiency Directive requires EU member states to deploy smart meters by 2020.

The report recommends that “consumers need to be better informed” and regards it as necessary to simplify messages on energy efficiency to reach the majority of consumers. Linked to this recommendation, to realise savings, the report notes that “smart meters must be used in conjunction with in-home (or on-line) displays or web applications and well-designed programs that inform, engage and motivate people (feedback meters).”

It is at this juncture of digital infrastructure and consumer engagement that Moisan sees the most potential for a step-change in energy efficiency gains. “More and more countries are deploying innovative smart meters, accompanied by an increasingly sophisticated digital infrastructure,” he says. “I believe that the rise of the ‘prosumer’, combined with placing the consumer at the centre of the energy system will drive major improvements in energy efficiency.” ●

*The full report can be accessed at [www.worldenergy.org/publications](http://www.worldenergy.org/publications)*

## ABOUT WORLD ENERGY FOCUS

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## World Energy Outlook 2016: “broad transformations in the global energy landscape”

**Renewables and natural gas are the big winners in the race to meet energy demand growth until 2040, according to the newly released World Energy Outlook (WEO) 2016, the International Energy Agency (IEA)'s flagship publication.**

Based on an analysis of the pledges made for the Paris Agreement, the WEO finds that the era of fossil fuels appears far from over and highlights the challenge of reaching more ambitious climate goals. However, government policies, as well as cost reductions across the energy sector, enable a doubling of both renewables and of improvements in energy efficiency over the next 25 years. Natural gas

continues to expand its role while the shares of coal and oil fall back.

“We see clear winners for the next 25 years – natural gas but especially wind and solar – replacing the champion of the previous 25 years, coal,” said Dr Fatih Birol, the IEA's executive director. “But there is no single story about the future of global energy: in practice, government policies will determine where we go from here.”

Global oil demand continues to grow until 2040, mostly because of the lack of easy alternatives to oil in road freight, aviation and petrochemicals, according to the report. However, oil demand from passenger cars declines even as the number of vehicles doubles in the next quarter century, due mainly to improvements in efficiency, but also biofuels and rising ownership of electric cars.

*Dr Fatih Birol, executive director of the International Energy Agency.*

*Photo available at <https://goo.gl/IgJwTJ> under a Creative Commons Attribution 2.0*

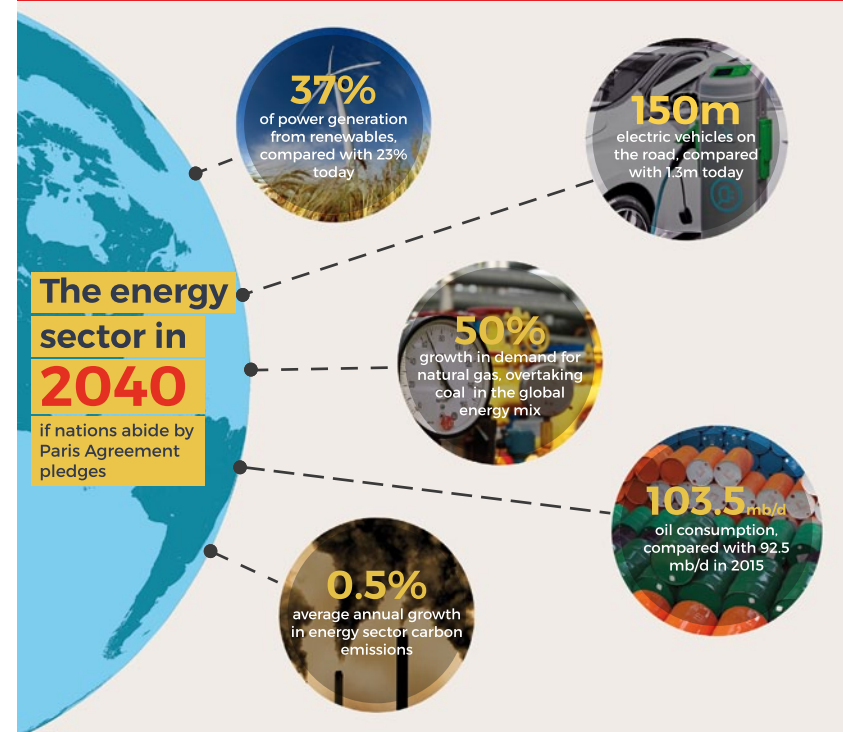
The gas market is also changing, with the share of LNG overtaking pipelines and growing to more than half of the global long-distance gas trade, up from a quarter in 2000. In an already well-supplied market, new LNG from Australia, the United States and elsewhere triggers a shift to more competitive markets and changes in contractual terms and pricing.

Implementing current international agreements will only slow down the projected rise in energy-related carbon emissions from an average of 650 million tonnes per year since 2000 to around 150 million tonnes per year in 2040. This would limit the rise in average global temperatures to 2.7°C by 2100. Policies to accelerate further low carbon technologies and energy efficiency must be put in place across all sectors to ensure a pathway to limit global temperature rise to 2°C.

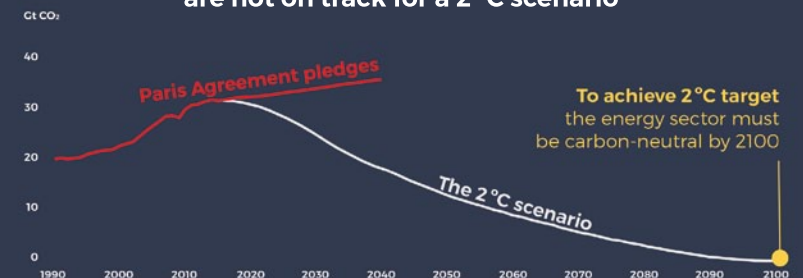
“Renewables make very large strides in coming decades but their gains remain largely confined to electricity generation,” said Dr Birol. “The next frontier for the renewable story is to expand their use in the industrial, building and transportation sectors where enormous potential for growth exists.” ●

### World Energy Outlook 2016

iea.org/WEO 



### But even then, energy sector CO<sub>2</sub> emissions are not on track for a 2°C scenario





## US shale oil boosted by Wolfcamp discovery

On 15 November, the US Geological Survey (USGS) published a press release, [<http://on.doi.gov/2fUJXUc>] announcing “USGS Estimates 20 Billion Barrels of Oil in Texas’ Wolfcamp Shale Formation” – with a subheading saying “This is the largest estimate of continuous oil that USGS has ever assessed in the United States”.

“Continuous oil” refers to “unconventional” oil (shale oil). The 20 billion barrels refers to “undiscovered, technically recoverable” resources. However, according to an estimate of the cost of recovery of the oil published by Forbes [<http://bit.ly/2gxN0C9>], it “would cost more than \$1.4 trillion to generate \$900 billion in revenue resulting in a net loss of \$500 billion” from the Wolfcamp shale formation.

The US has 55 billion barrels of proved reserves. It consumes about 7.3 billion barrels a year or over 19 million barrels per day. The biggest conventional oil field in the US discovered so far is Prudhoe Bay in Alaska, which contained 25 billion barrels of

“technically recoverable oil” when it was discovered in 1968. At the peak of production, Prudhoe Bay produced 1.5 million barrels per day. It is now down to 280,000.

The US Energy Information Administration (EIA) estimates [<http://bit.ly/1O7Sy2c>] that, globally, there are 345 billion barrels of technically recoverable shale oil resources. Total US undiscovered technically recoverable oil resources are around 200 billion barrels. ●

*In areas where shale-drilling/hydraulic fracturing is heavy, a dense web of roads, pipelines and well pads turn continuous forests and grasslands into fragmented islands. Photo Bruce Gordon at EcoFlight*



## Fears of ‘greenwashing’ in exploding green bond market

**Approximately \$42 billion in green bonds were sold in 2015, compared with nearly \$50 billion in the first seven months of 2016. The Climate Bonds Initiative (CBI) has forecast \$100 billion of issuance for 2016.**

Many of the bonds are over-subscribed and largely unregulated, however, creating a market prime for “greenwashing.” There are various initiatives and approaches to certifying the bonds, and more than half of green bonds do go through some type of external review, according to a report by the Climate Bond Initiative commissioned by HSBC. CBI’s Climate Bonds Standard is defining the criteria for green bonds in each sector and is partnered with many of the world’s largest banks.

Now may be the time for banks and governments to set guidance, as the pool of climate-related bonds totals nearly \$700 billion, according to the annual CBI report [<http://bit.ly/2gyqwAU>]. Of those, about \$118 billion worth are labeled green bonds. This compares with the total global bond market valued at about \$90 trillion. According to EY, “renewable energy projects make up the bulk of the green bonds issued for the energy sector, but they are not necessarily financing new renewable projects. Where is the new green infrastructure and renewable kit that [have] been financed with green bonds? Both investors and policymakers need to be aware that the vast majority is

repackaging and refinancing existing projects,” Steve Waygood, chief responsible investment officer at London’s Aviva Investors, told EY. ●

## Chinese green bonds surge

Bloomberg New Energy Finance (BNEF) reports that the global green bond market is drawing an increasing proportion of its activity in China, which has accounted for \$21.9 billion of the \$61.1 billion in global green bond sales so far this year, data compiled by Bloomberg show. Last year China sold less than \$1 billion in green bonds.

Vincent Duhamel, head of Asia in Hong Kong at Lombard Odier Darier Hentsch & Cie, estimates that within three years green bonds will account for 20% of the \$700 billion annual investment needed under the Paris Agreement. The New Development Bank, the so-called BRICS bank, set up by China, earlier this year sold 3 billion yuan (\$443 million) of green bonds in China. It is now considering issuing notes in Indian rupees or other local currencies, including Russian rubles, as it gears up to expand its support for sustainable projects. ●

## Norway moves ahead with CCS

On 30 September 2016, the Norwegian Ministry for Petroleum and Energy confirmed the government’s decision to proceed with three CO<sub>2</sub> capture projects. The projects are in different industries: Yara, the world’s largest ammonia production company, Norcem, Norway’s sole cement producer, and Oslo’s waste management and energy recovery CCS project Klemetsrud. Together, these industrial facilities produce 5% of Norway’s CO<sub>2</sub> emissions.

In July 2016, Statoil ASA completed feasibility studies of CO<sub>2</sub> storage at three different sites on the Norwegian continental shelf. Lack of suitable storage sites has been a frequently cited challenge regarding CO<sub>2</sub> storage and investment in CCS technology across the EU. The current carbon capture project aims at developing large facilities that can provide CO<sub>2</sub> storage beyond Norway’s needs.

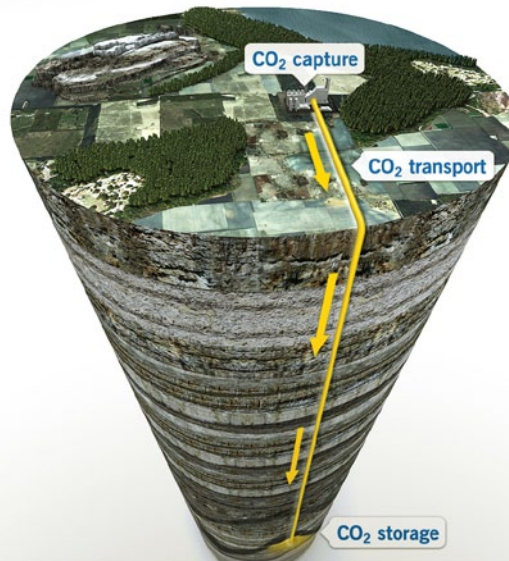
The International Energy Agency has said that by 2040, four billion tonnes of carbon dioxide emissions must be captured to keep global warming at bay, which is 100 times more than the total CCS projects expected to be online in the next 18 months.

There are 15 projects in operation worldwide and seven due to become operational in 2016 and 2017 according to the Global CSS Institute. Norway has previously stated an ambition to realize at least one full-scale CCS demonstration project by 2020. ●

## Accelerated CCS development needed, says the Global CCS Institute

**The pace of carbon capture and storage development must be accelerated if Paris climate change targets are to be met, says the Global CCS Institute. Speaking at a press conference to launch its Global Status of CCS: 2016 Report at the twenty second conference of the parties (COP 22) in Marrakech, Global CCS Institute Chief Executive, Brad Page, said the scale of the challenge to deliver the 'well below' 2°C climate goal should not be underestimated.**

The 2016 report [<http://status.globalccsinstitute.com>] reveals that continued proactive and multi-government support is intrinsic to the ongoing success of CCS.



*Carbon capture and storage process, provided by the Global CCS Institute*

"Widespread deployment of CCS must be based on 'policy parity', particularly the provision of equitable consideration, recognition and support for CCS alongside other low-carbon technologies," said Mr Page.

"For CCS, this means the design and implementation of support measures tailored specifically to the technology and its lifecycle stage. Future efforts need to focus on identifying incentive mechanisms that tackle the complexity of risks and act as economic multipliers to improve the conditions for CCS uptake."

Mr Page said the steady progression of CCS facilities in recent years and the many milestones reached in the past year were proof of CCS' success. He warned, however, that momentum needs to be maintained.

"The technology still depends on more widespread adoption. The vital role attached to CCS in global models

in the transition to a low-carbon economy has not translated broadly enough into policy support at national levels."

"The timeline of forward activities is critical. The number of large-scale CCS facilities must rise substantially to help meet the climate targets and aspirations of the Paris Agreement. The danger is, if the right policy, legal and regulatory preconditions are not put in place over the next five years, Paris will be just a pipe dream."

International advisor to the Global CCS Institute and Chair of the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science, Professor Lord Nicholas Stern, said the pace of deployment of carbon capture and storage is simply too slow and must be given much greater attention by countries around the world.

"If the world is to achieve the target set in the Paris Agreement of holding global warming to well below two Celsius degrees, we are likely to need negative emissions, including those from the use of bioenergy with carbon capture and storage."

"In addition, carbon capture and storage seems to be the only option for reducing emissions from many industrial activities. We cannot afford to neglect this technology, and we need better policies and more investment to accelerate its development." ●

## First wind-hydro storage project kicks off in Germany

**A new wind, hydropower, and energy storage collaboration between US-based GE and Germany's Max Bögl Wind AG will connect its four wind turbines to the grid next year, with the hydropower component coming online in 2018. The project, based at the Gaildorf wind farm near Münster in Germany, includes four wind turbines with a combined capacity of 13.6 megawatts.**

The Gaildorf project marks a major step forward in balancing power demand and supply fluctuations using renewable energy sources. The combined wind and hydro power plant will provide balancing power for fast-response stabilization of the grid, maintaining a low cost of electricity.

The base of each turbine will double as a water storage reservoir, with a capacity of 1.6 million gallons. These storage units will interact with a nearby lake with a 9 million gallon capacity, and a 16 megawatt hydropower plant. During times of peak demand and high electricity prices, the hydro plant will be in production mode. During times of low electricity demand and lower prices, the hydro plant will be in pump mode, pumping and storing water—and hence energy—in the upper reservoir for later use.

According to GE, Bögl is already anticipating that it will engage in one or two similar projects in Germany annually after the Gaildorf project goes online. ●



*GE's 3.4MW turbines will be the tallest installed and part of a world-first pump storage solution*

## REGIONAL EVENT

**Africa Energy Indaba**  
Johannesburg, South Africa  
21-22 February 2017



The Africa Energy Indaba (AEI) is the foremost African energy event for energy professionals from across the globe. The event gathers international and African experts to share their insights and solutions to Africa's energy crisis, while exploring the vast energy development and investment opportunities in Africa.

The AEI has been designated the World Energy Council's African regional event and is presented by the South African National Energy Association (SANE), the Council's national committee. It is supported by the African Union Commission and the NEPAD Planning and Coordinating Agency.

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## MEMBER COMMITTEE EVENTS

**The new realities of energy**  
Paris, France  
1 December 2016

**In this workshop organised by the French Member Committee of the World Energy Council speakers will discuss the outcomes of the past World Energy Congress in Istanbul, especially focusing on the feedback young energy researchers and PhD students.**

The event introduce participants to the recent World Energy Council studies such as World Energy Scenarios – The Grand Transition, Resources, Energy Efficiency, Resilience: financing resilient energy infrastructures, and the World

Energy Trilemma 2016. Speakers include Sylvain Hercberg, Head of the prospective and technology department, EDF and François Moisan, Executive Director of Strategy, Research & International Affairs and

Scientific Director, ADEME, Didier Sire, Head of Sectoral Programmes, World Energy Council and Jean-Eudes Moncomble, General Secretary, CFE. The discussion will be held in French.

Participation is free of charge, please register via [conference@wec-france.org](mailto:conference@wec-france.org).

**Contact:** Blandine Brunet

**Website:** <http://www.wec-france.org/>

**The Energy Transformation of the North Sea**  
24 January 2017  
The Hague, The Netherlands

**In view of climate change and the unsustainable level of greenhouse gas emissions, as well as the depletion of resources in some parts, the North Sea has come to be described as a sea in decline. How can the energy potential of the North Sea be unlocked? The World Energy Council 2017 North Sea Conference discusses the results of a study published by World Energy Council Netherlands in cooperation with DNV GL, EBN, ECN, Rabobank, PwC, Shell, TenneT and TNO.**

The study shows that the North Sea has a key role to play in unlocking value along all dimensions of the energy trilemma. It presents concrete business opportunities for those willing to harness its potential. The programme includes sessions on decommissioning optimisation, efficient wind energy, re-use of oil and gas assets and maritime

synergies. All interested are invited to take part in and influence this forward-looking discussion that will re-define the energy landscape in the years to come.

The conference will be held in English. Participation is free of charge, but prior registration via the website is necessary.

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## ABOUT THE COUNCIL

The World Energy Council has been at the forefront of the energy debate for nearly a century, guiding thinking and driving action around the world to achieve sustainable and affordable energy for all. It is the UN-accredited energy body and principal impartial network, representing more than 3,000 organisations – public and private – in almost 100 countries.

Independent and inclusive, the Council's work covers all nations and the complete energy spectrum – from fossil fuels to renewable energy sources.

## JOIN OUR NETWORK

Join the debate and help influence the energy agenda to promote affordable, stable and environmentally sensitive energy for all.

As the world's most influential energy network, the World Energy Council offers you and your organisation the opportunity to participate in the global energy leaders' dialogue.

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by visiting our website and contacting our team on: <http://www.worldenergy.org/wec-network>

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