

Interview Jeroen van der Veer
ex-CEO Shell

**“Moving away
from fossil fuels
presents great
opportunities for
oil companies”**



Photo ING Group

“The energy transition presents great opportunities for oil and gas companies to develop new forms of energy and gradually move away from fossil fuels”, says Jeroen van der Veer, former CEO and Chairman of Shell and Chairman of the project team of the World Energy Council's Financing Resilient Energy Infrastructure project, in an interview with World Energy Focus. Van der Veer adds that a stable CO₂ price is “essential” for the private sector to be able to invest in low-carbon options. He calls on policymakers to set up a Central European Bank for CO₂ allowances to create a stable CO₂-market work. “I am convinced that investment will follow.”

As Chief Executive from 2004-2009, Jeroen van der Veer (68) successfully led Royal Dutch Shell through turbulent

times, overseeing the integration of the Dutch and British arms of the multinational into one company.

Since his retirement in 2009, Van der Veer is, among many other things, Chairman of ING Group, one of the largest Dutch financial institutions. With his wide experience in both the energy and financial sectors (he was also Supervisory Board Member of the Dutch Central Bank), Van der Veer is acutely aware of the huge investment challenges facing the energy sector today, to meet the needs of a growing global population on the one hand and reduce greenhouse gas emissions on the other. But he is convinced those challenges can be met.

“Some people say there is not enough money, but I don't agree. Investments can be spread out over many years. What is more, investment also means more business, jobs. And when I look at interest rates, I can only conclude that there is enough money available. The bottleneck is not the amount of money that's needed, but to have enough commercial projects that companies can profitably invest in.”

According to Van der Veer, the main factor holding back investors is volatility in the market, in particular the instability of CO₂ prices. “Companies are willing to invest, but if you have no idea what the CO₂ price will be over the next 20 years, while this is essential for the profitability of the project, you will not commit your capital to it. Energy investments are highly capital-intensive, so it is essential to have some certainty about this from the outset.”

CENTRAL BANK

In Europe, Van der Veer would like to see the EU to set up a “Central Bank” to run the EU Emission Trading Scheme (ETS). Set up in 2007, the EU ETS, the first largescale emission trading scheme in the world, has suffered from permanently low CO₂-prices. As a result, the prestigious project has failed to provide incentives to energy and industrial companies to invest in carbon reduction technologies. A central bank for emission allowances could maintain a “price corridor”, says Van der Veer, reducing the number of allowances if prices become too low, and increasing them if prices become too high. “If this is done, I am convinced investment will follow.”

Industrial sectors such as steel or chemicals that could find their international competitiveness undermined, could be assisted with money from the ETS system. The rest of the world, Van der Veer adds, might follow the European example if it is successful.

ROAD TO RESILIENCE

Van der Veer's background made it logical for the World Energy Council to ask the Dutchman to chair one of the Council's most important current projects, on Financing Resilient Energy Infrastructure, a crucial topic in the light of the climate change challenge. The project consists of three research reports, one on financing extreme weather risk [<http://bit.ly/1kcDqTH>], which appeared > see page 2

FEATURE

Injecting energy into the agenda of trade negotiators

Barriers to trade and investment in energy goods and services, long neglected, start being addressed by trade negotiators in the World Trade Organisation and outside of it. The process of integrating the energy dimension to trade policy is however still in its infancy. A World Energy Council report aims to offer trade officials a policy agenda

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last year, one on the Energy-Water-Food-Nexus, which is currently being prepared, and the first findings of which were presented [<http://bit.ly/1pJyx78>] was presented on 17 March in New Zealand, and one on cybersecurity.

The first findings of the Energy-Water-Food Nexus report show that the availability of water is a key issue in energy production – and this will only become urgent in the future. It shows that the energy sector needs to reduce its overall water footprint. It also makes it clear that some energy production technologies do better than others when it comes to water stress. Wind, solar PV and gas tend to score better than coal, biofuels, nuclear power or CCS.

“We need to develop renewable energies that are much cheaper than they are today”

For Van der Veer, the most important value of the project is that it demonstrates the importance of an integrated approach to energy issues. “Decisions often have unintended consequences that people may not always see”, he says. “Policymakers need to be aware of this, but NGOs, too. They often push only one issue. For example, nuclear power has a very low CO₂ impact, but a fairly high water footprint.”

THREE PILLARS

Van der Veer's own vision of our energy future is based on three pillars: energy savings, natural gas and the increased use of low-carbon or zero-carbon electricity. “First, the world is still not doing enough to save energy. Second, for large parts of the world, natural gas is the best transition fuel, as it is widely available and a lot of infrastructure has been created for it. It's not perfectly clean, but it scores very reasonably on greenhouse gas emissions and on water footprint. Thirdly, as the world is using more and more electricity, we need to develop renewable energies that are much cheaper than they are today. This means we need to develop new technologies first and then build large-scale projects.”

Nuclear power has certain disadvantages now, says Van der Veer, but a move to thorium and other innovations could change that picture. Coal without CCS should be phased out, he says. “The world understands that we cannot continue to build new coal-fired power stations without CCS.”

TWO SCHOOLS

But is all this enough to stay within the 2-degree limit that has been agreed upon at the climate summit in Paris? Van der Veer is aware that most future scenarios of the energy industry lead to outcomes that are not sufficient to prevent dangerous climate change. Within the World Economic Forum, the famous high-level platform for public-private cooperation, he is now part of a working group that is developing

scenarios “that stay within 2 degrees, but that the energy industry can believe in.”

“Most politicians are too optimistic about the speed of the transition. Most businessmen are too pessimistic”

The results, which will be published soon, show a decline of oil in the global energy mix from 31% now to well under 20% in 2050. The share of gas will stay at slightly over 20%, says Van der Veer.

What will be the consequences for incumbent oil companies like Shell of such a scenario? “There are two schools on this topic”, he says. “The first is that as the new global business environment changes, this will offer opportunities for big energy companies to develop new forms of energy. Then you won't produce fossil fuels anymore at some point in the future. The second school says the mission of oil and gas companies is to produce oil and gas, and if this mission ends, then the companies end too. Then you pay out the dividend to the shareholders and stop.” He adds: “I belong to the first school.”

Van der Veer acknowledges that most of the oil majors, including Shell, did make attempts in the past to invest

in alternative energies, with little success. “I think we were too early once or twice. But the time may be ripe now.” Shell in its most recent Annual Report, published in mid-March, said – for the first time in recent years – that it would start looking for new opportunities in wind and solar power, among other things.

STRANDED ASSETS

But the former Shell boss rejects the idea that the oil companies are in danger of ending up with large “stranded assets”, as NGOs and many investors are increasingly concerned about. “I think there are many misconceptions about the idea of stranded assets. That significant amounts of coal will have to stay under the ground, I can understand. And a country like Saudi Arabia, which has more than 100 years of oil in the ground, may also be concerned whether they can exploit all their resources. But the assets on the balance sheets of the international oil companies are resources they will develop over the next 20 years or so.”

Van der Veer believes that the climate conference in Paris may well be a turning point in energy history. “It is the first time that everybody agrees about the problem and has committed to tackle it.” There is no discussion anymore on the direction we need to move in. The big discussion now, he notes, is on the speed of the change. “Most politicians”, he adds, “are too optimistic about that. Most businessmen are too pessimistic.” ●



Jeroen van der Veer is the former Chief Executive (2004-09) of Royal Dutch Shell. He remained a non-executive Director at Shell until 2013. He is a leading authority on energy, leadership and management, and his advice is widely sought by a range of industries.

He has been Vice-Chairman and Senior Independent Director of Unilever. He is now Chairman of ING Group and Chairman of the Supervisory Board of Philips. He has just been elected member of the Board of Statoil.

He was a Supervisory Board Member of the Dutch Central Bank, and World President of the Society of Chemical Industry (2002-04). Appointed Vice Chairman of the Executive Committee of World Business Council for Sustainable Development (2006-09), he was also Vice-Chairman of a group of experts who advised on a new strategic concept for NATO (2009-10). In 2012, he was appointed Chairman of New Energy Architecture WEF (World Economic Forum), a Member of the Executive Committee of the Governing Board of the EIT (European Institute of Technology), as well as Chairman of the Rotterdam Climate Initiative.



Barriers to trade and investment in energy goods and services, long neglected, start being addressed by trade negotiators in the World Trade Organisation and outside of it. The process of integrating the energy dimension to trade policy is however still in its infancy. A World Energy Council report aims to offer trade officials a policy agenda.

Energy has long been largely neglected in conventional trade policy in the World Trade Organization (WTO) as well as in bilateral free trade pacts. "Often energy trade tends to fall off the table in the pursuit of broader principles", says Lawrence Herman, of the consultancy Herman & Associates in Canada, who was involved in the World Energy Council report Rules of Trade and Investment: Catalysing the low-carbon economy.

There are various reasons for this. Major oil and gas exporting countries like Iran, Iraq, Azerbaijan and Algeria are not in the WTO. Russia only joined in 2012. At the same time, major importers of oil, gas, coal or uranium have not imposed tariffs on these products, because they are dependent on them.

The energy world is changing, though. The last two decades have brought a tremendous bout of globalisation, with cross-border investment in the energy sector rising significantly. Renewed resource nationalism during the past decade has highlighted the need for predictable rules and open markets. A new renewable energy industry has emerged whose market rules remain in flux after long having been bolstered by government subsidies. Rules are often tweaked in such a way as to favour incumbent firms or certain less efficient domestic producers, leading de facto to protectionism and higher costs.

WINDOW OF OPPORTUNITY

Trade initiatives such as the Transatlantic Trade and Investment Partnership (TTIP), the

Transatlantic Trade and Investment Partnership (TTIP) under discussion between the European Union and the United States, or the Environmental Goods Agreement (EGA) negotiations underway at the WTO are currently offering a window of opportunity to address government policies that hamper investments and trade flows in the energy sector.

The upcoming report from the World Energy Council offers trade officials recommendations on how to improve trading of energy goods and services. This is important, according to the Council, because the elimination of trade barriers helps secure "easier access to energy for developing and emerging economies", reduces "the cost of technology and energy itself, therefore enhancing energy security" and "enables the transition to a low carbon energy system". > see page 4

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Indonesia presents itself at
WTO conference Bali 2013. Photo WTO

The World Energy Council report lists twelve key issues it wants to see tackled, including local content requirements, regulatory standards and technical regulations, government procurement rules and investment restrictions.

Some of these topics are starting to be addressed within the WTO. Local content requirements, i.e. obligations set by governments on foreign investors to source inputs (labour, services, or products) locally regardless of quality or cost, are an example. In 2012, the WTO's dispute settlement body outlawed Canadian local content requirements for investors in renewable energy. In March 2016, it did the same for similar requirements imposed by the Indian government on US investors in the solar power sector.

SMALL PART OF THE STORY

Yet WTO rules are limited in scope. They don't (or only partially) cover issues such as investment protection, barriers to exports of raw materials, public

procurement rules, and competition in the services sector. New trade initiatives are starting to tackle such energy-specific issues. One important initiative, the Environmental Goods Agreement (EGA), which involves 17 WTO members including the EU, the US, and China, has been ongoing since mid 2013. EGA covers goods such as energy efficiency appliances (thermostats, energy-saving light bulbs, etc.) and renewable energies. Suppliers are hoping that import tariffs on such goods will disappear.

However, tariffs on physical products are only a small part of the trade story. A big gain for the energy sector would be freeing up services. These involve for example the act of installing and operating a plant, maintenance, repairs, sales, or distribution. These activities, which often require a government licence, tend to remain very closed to international operators. They frequently depend on public bidding systems that are closed to private and foreign operators and whose bidding processes can be non-transparent.

The EGA talks do not cover services. Negotiators within the EGA are now aiming to establish a 'working programme' on barriers to trade in goods of a technical nature – 'non-tariff measures', or 'NTMs', in the trade policy jargon. This would still not cover services, but it would expand the scope of the EGA. "We understand the limits in [the EGA] negotiations", notes Lawrence Herman. "We are

encouraged that governments agreed to look at a non-tariff measures working group. The World Energy Council report is an effort to give them an agenda."

ENERGY REFORMS

Outside the WTO, the US-driven Trans-Pacific Partnership (TPP), a trade pact among twelve Asia-Pacific countries signed in October 2015, now awaiting ratification, has been an opportunity for a country like Mexico, which started opening up its oil and electricity sectors to private players in 2013, to 'lock in' the new rules and avoid any future backtracking.

"For the energy sector the most important part of TPP is the investment chapter", Edgar Uddelohde, a veteran trade professional in Mexico, who was involved in the preparations of the World Energy Council report, explains. "It protects foreign investment and helps to consolidate the energy reforms of Mexico."

The EU has developed a specific energy and raw materials agenda in its recent bilateral free trade agreements (FTAs). Its latest FTA signed with Vietnam in December 2015, for example, allows EU energy players to bid with the local electricity monopoly. A special annex on renewable energies obliges Vietnam to adopt international technical standards, to recognise EU standards, and aims to avoid duplicative testing. The agreement also bans export restrictions and export taxes.

Brussels has also set itself the goal to develop a dedicated 'energy chapter' in the TTIP agreement. The EU wants to enshrine the principle of free exports and imports, and to tackle various energy market rules. It wants to offer an example for the world in what it considers to be the right, free market rules for energy governance. One aim is to lock in the US's recent lifting of its crude oil ban and to secure imports of LNG from the US to reduce Europe's dependency on Russian gas.

Washington, however, is not very keen on including a dedicated energy chapter in the TTIP. But according to the negotiators, energy rules are being discussed and negotiated in TTIP and could end up in the final text under one form or another.

If and when TTIP negotiations are concluded, and if they include energy rules, they would certainly bolster global governance of energy trade. But one outcome of TTIP is uncertain: its investment protection chapter. While public attention is on the EU's idea of an international investment court to settle investor disputes with host states, businesses worry whether the EU itself provides sufficient protection for energy investors. The jury is still out on that one. ●

*Written by Iana Dreyer, editor of
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EU trade and investment policy.*

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New Zealand has a 90% renewable energy target, which the energy sector will achieve “without any government interference”, says Mark Binns, the CEO of Meridian Energy, the country’s largest electricity generator, in an interview with World Energy Focus. It also has a major backup challenge, which Binns says “the market will be able to sort out”. Centralised decisions, he adds, tend to turn out badly. But for Australia he does see a need for the government to step in.

“What our challenges are? I am glad to say they are nowhere near as severe as in Europe, the US or Australia!” Mark Binns, Chief Executive since 2012 of New Zealand’s number one electricity generator, Meridian Energy, loses less sleep over the challenges of the energy transition than many of his peers in other countries. He is in the enviable position of leading a company that relies 100% on renewable energy – 90% on hydropower and 10% on wind energy. New Zealand not only has great hydro resources, it also has a fabulous wind regime. “On the outskirts of Wellington we have two wind farms with capacity factors of over 40%. In most geographies you are lucky to get to the mid-20s.”

As a result, levelised costs of electricity (LCOE) from wind power are as low as NZ\$80/MWh in New Zealand, says Binns, some US\$53/MWh.

The country as a whole currently has an 82% renewable electricity share. The (previous) government set a target of 90% for 2025, which Binns says the energy sector will achieve “without subsidies or support schemes. No carrots or sticks at all.” Binns expects the target to be reached mostly with the help of new geothermal and wind power.

Solar power is less attractive in New Zealand, notes Binns. “Utility-scale solar is always going to struggle here.” One reason is a scarcity of flat land.

Another is low insolation rates. “We did some comparisons and found solar costs around NZ\$240/MWh. The economics are better in Australia with an abundance of cheap land with better solar insolation levels.”

COST OVERRUNS

Although Meridian Energy is 51% owned by the State (49% of the company was privatised in 2013), Binns is convinced that the market is able to “sort things out”. “When you make decisions centrally they tend to turn into disasters. You get overbuilt power stations with cost overruns. We are firm believers that the market has delivered good results. We have had no power crises in New Zealand and we like to keep it that way.”

Australia, however, where Meridian has two wind farms and a retail operation, is a different story. “That country relies heavily on coal. Places like Victoria get 88-89% of their electricity from brown coal. To change that, to get off fossil fuels, the government needs to take action.”

Unfortunately, when it comes to investing in renewables, “nobody is making a move” in Australia at the moment, says Binns. Although, “after 18 months of political inertia”, a political accord has now been reached on renewable energy targets for 2030, “there is great uncertainty over whether the accord will hold and what will happen beyond 2030. Until that uncertainty is resolved, it is highly unlikely we will invest in new generation in Australia.”

FEET TO THE FIRE

Binns believes the Paris Climate Agreement will give a strong impetus to investment in renewables around the world. “It is going to put governments to account.” Australia, he notes, has been criticised by other OECD countries for being slow in moving away from fossil fuels. “Their Paris commitment is going to hold their feet to the fire.”

In New Zealand he expects “to see some changes that will see the price of carbon go up. That will be the main thing coming from Paris.” In addition, he is expecting the government to take some action to make electric cars more attractive.

All may seem plain sailing then for Binns as CEO of Meridian Energy. However, the company does face some serious challenges. These are mainly related to the need for backup systems. As a result of the success of renewable energy, thermal power is increasingly being pushed out of the market in New Zealand. The question is what will happen if serious drought puts the hydropower stations out of action. Binns: “We don’t have many droughts, but they do occur sometimes. We had the worst drought in 83 years in 2012 in my first year as CEO. We have to have insurance in case our lakes go dry.”

Currently, Meridian has a contract (a “swaption”) with a competitor to use power from gas-fired and partly coal-fired stations in case of drought, but that expires at the end of 2018. “Unless

we can renegotiate a deal, New Zealand would need another player to build some gas peakers.” But Binns is convinced the problem can be solved – without the government stepping in. “The negotiation about backup is going to be a significant discussion, but we believe the market can sort it.”

The resilience of energy infrastructure is crucial to any country, Binns knows. “This is never far from the political debate. As an energy sector you want to keep politics out, so you need to ensure resilient infrastructure. Which means ongoing investment in the energy system.” ●

UNCERTAINTY OVER ALUMINIUM SMELTER

Currently the biggest uncertainty of all for Meridian Energy is the future of the huge aluminium smelter on the Tiwai Peninsula, owned by Rio Tinto Alcan, which is powered by Meridian’s Manapouri Power Station, and accounts for 13-14% of the country’s entire electricity demand. The smelter and the 840 MW Manapouri hydro station were actually built as a joint project in 1971. Rio Tinto has a termination right starting on the first of January next year. “The outlook is uncertain, with commodity prices being as low as they are”, says Binns. “Where the smelter goes will have a major impact on the New Zealand economy, but I am reasonably confident, although I am clearly not a party to the decision, that they will decide to stay at this point.”

The global LNG market takes off

One of the world's largest energy projects has started operations. On 21 March, the \$54 billion Gorgon project off Australia's northwest coast produced the first shipment of LNG bound for Chubu Electric Power in Japan.

The plant is largely owned by Chevron (47%), ExxonMobil (25%) and Shell (25%). The western oil majors are investing tens of billions in developing a global gas market based on LNG. They are faced with difficult market circumstances: a more than 60 percent drop in oil prices over the past two years is hurting LNG projects that have long-term contracts tied to crude. Prices at the US Henry Hub gas spot market last year were the lowest since 1999.

The supply of LNG is expected to increase strongly over the next few years. Australia has several other LNG plants in the pipeline and is expected to

overtake Qatar as the world's biggest LNG producer by 2020. Oil companies have invested a total of some \$180 billion into the Australian projects.

The US also has ambitious plans to become a global LNG supplier. The continental US started exporting LNG for the first time only weeks before, on 24 February, from Cheniere Energy's Sabine Pass export terminal in Louisiana. This shipment was destined for Brazil. Four other LNG terminals are being built in the US. The country is expected to become a net gas exporter in 2017, for the first time since 1957. ●

Japan's mixed energy future

Five years after the nuclear incident at Fukushima, it is not quite clear yet how the Japanese energy system will develop over the coming years. Both solar and coal power are growing strongly, while demand is declining.

Japan is one of the largest solar markets in the world. Both in 2014 and 2015 Japan installed some 8 GW in new solar capacity at a cost of some \$20 billion per year. Total solar capacity is expected to reach over 50 GW by 2020. At the same time, a record 47 coal-fired power plants are in the pipeline,

which would bring 22.5 GW of new coal-fired capacity in the market over the next decade.

These developments are taking place against the background of steadily declining electricity consumption. Last year Japanese electricity demand decreased by 2.7% compared to 2014. Since 2010, electricity use has declined by 2.3% per year – from 906TWh to 806TWh, despite GDP growth of 0.6% per year.

Nuclear power generated just 2.2% of Japan's power in December 2015. If

East Africa's largest solar project starts in Uganda

In Soroti, Uganda, developers EREN Renewable Energy and Access Power started construction of a \$19 million, 10 MW solar plant, the largest in East Africa, on 17 March.

The plant is expected to be ready in July 2016 and will deliver power to 40,000 homes. It will be built by the Spanish TSK Group and was financed by a mix of debt and equity provided by the Netherlands Development Bank (FMO), the Emerging Africa Infrastructure Fund (EAIF) and the German development bank KfW. More than 80% of households in the region do not have access to the electricity grid. ●

all the country's nuclear reactors are restarted, nuclear could supply 30% of Japan's total electricity in future, but this is not a very likely scenario.

The Japan Photovoltaic Energy Association believes the country could reach 100 GW of solar power by 2030, which could generate 110 TWh or 15% of total demand. This still leaves a wide gap to be filled by coal and gas fired thermal power plants and renewables such as wind. Japan is currently going through a process of market reform [<http://bit.ly/22Hxr9P>] that includes deregulation and unbundling in the electricity and gas markets. ●



▲ From left to right, **Stephane Bontemps**, Board Director of Access Power, the Honourable **Peter Lokeris**, State Minister for Mineral Development Uganda and **Giorgio Borgia**, Director Access Uganda, attend ground-breaking ceremony in Soroti.

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NEWS IN BRIEF

ENERGY-RELATED CO₂ EMISSIONS STABILISE THANKS TO RENEWABLES

Global energy-related CO₂ emissions stayed flat for the third year in a row, the International Energy Agency (IEA) reported in March. The data confirm that greenhouse gas emissions are being decoupled from economic growth. GDP grew 3.4% in 2014 and 3.1% in 2015. China and the US both recorded a decline in energy-related CO₂ emissions. Growth in renewable energy, particularly wind energy, played a critical role: 90% of new electricity generation came from renewables last year, with wind alone producing more than half of all new electricity.

IVANPAH SOLAR POWER PROJECT IN TROUBLE

The \$2.2 billion Ivanpah concentrated solar power (CSP) plant in California is at risk of being shut down. The California Public Utilities Commission has granted a reprieve to the plant in March preventing it from going into default on its contract with Pacific Gas & Electric and Southern California Edison. Ivanpah failed to deliver the amount of power it had guaranteed. The 392 MW CSP project in the Mojave Desert was built by BrightSource, NRG Energy and Google with a \$1.6 billion loan guarantee from the US government.

A. Satkaliyev, CEO Samruk-Energy
on Kazakhstan's energy transition

“Our strategic goal
is to create a
green economy”



Samruk-Energy, Kazakhstan's largest electricity provider, plays a key role in the country's ambitious plans to move to a sustainable energy system. The biggest challenge, says Almassadam Satkaliyev, CEO of Samruk-Energy, in an exclusive interview with World Energy Focus, is the extremely low price of coal-based electricity in Kazakhstan. But that won't change the direction the country is going, says Satkaliyev. “The strategic goal is to create a green economy.”

“We are in the same position as many other energy companies in the world. We have to become more competitive and create shareholders' value. And we have to achieve sustainable growth. Those are our two main challenges.”

There are few people who know more about the energy transition in Kazakhstan than Almassadam Satkaliyev, who is not only CEO of the country's leading electricity supplier Samruk-Energy, but also, among many other things, a former Vice-Minister of Energy and the former President and Chairman of the Kazakhstan Electricity Grid Operating Company (KEGOC), the country's national transmission system operator.

He is also Chairman of the Kazakhstan National Committee of the World Energy

Council, which has helped him to put Kazakhstan's energy issues in a broad international perspective. “We have profited greatly from the exchange of ideas within the Council. We know we all have similar challenges, though each country has to find its own solutions.”

Samruk-Energy, which delivers 35% of the country's electricity and produces 40% of the coal, is actually going through several transitions – just as Kazakhstan itself. There is the drive towards competition and privatisation. Samruk is still state-owned but preparing to be partly privatised. The domestic market is liberalised and “highly competitive”, says Satkaliyev. “We are in a big transformation process in the company to increase our sales and find new markets.”

At the same time, Kazakhstan has committed to reduce its greenhouse gas emissions 15-25% by 2030 compared to 1990. With the state act on the support of renewables adopted in 2009, and an energy saving act in 2012, it was the first Central Asian country to develop a strategy for the transition to a low-carbon economy. Samruk has been a key player in this transition. “We were the first company to construct an industrial-scale wind farm. We were also pioneers in solar power and energy storage.”

The government has set a goal of 3054 MW of renewable energy capacity by 2020, including 1787 MW in wind power, 714 MW in solar, 539 MW in hydropower and 15 MW in biogas stations. By 2050, 50% of electricity must be derived from alternatives.

VERY CHEAP COAL

The biggest hurdle in this drive towards more renewable energy is the availability of large amounts of very cheap coal, says Satkaliyev. “Thanks to our large domestic reserves of cheap coal, the wholesale price of electricity is 2.2 dollarcents per kWh.” Since renewable energy cannot compete at these low rates, the government is currently studying the possibility of increasing the existing feed-in tariffs for renewables. But Satkaliyev acknowledges that the heavy reliance on coal and the need for economic growth means the transition to a low-carbon economy will be a gradual process in Kazakhstan. “Our current situation will not allow us to change the energy mix rapidly. For two

decades at least coal is projected to remain our largest source of energy.”

Carbon capture and storage (CCS) could be an interesting option for Kazakhstan to live up to its climate pledge while retaining the competitive advantage of coal. Satkaliyev: “CCS may be a gamechanger for us. It could allow coal to be the bridge towards the low-carbon future.”

Kazakhstan has been thoroughly researching the possibilities of CCS, says Satkaliyev. Experts from the country have visited the Boundary Dam project in Saskatchewan, Canada and Kazakhstan has joined the Stanford University 3.0 energy program [<https://se3.stanford.edu>], which includes important CCS research. However, no concrete investments have been made yet. Satkaliyev is expecting investment decisions on CCS within five years depending on the progress in this direction.

According to Satkaliyev coal with mature CCS is a cost-effective to nuclear power in Kazakhstan, even though the country also has substantial uranium reserves. This is because uranium can be profitably exported, whereas the low-grade domestic coal cannot.

Satkaliyev also sees opportunities for replacement of coal by gas in the power sector. “This year for the first time we have become self-sufficient in gas. Up to now we had to import gas from Turkmenistan, Uzbekistan and Russia. I believe a combination of

gas-fired power and renewables makes sense as substitution for coal power.”

COMMON MARKET

Another key development is the planned creation of a common electricity market in the Eurasian Economic Union, which includes Belarus, Russia, Armenia and Kyrgyzstan in addition to Kazakhstan. “This will give us new opportunities to export capacity”, says Satkaliyev, “because our electricity is very competitive.”

One of the most important elements in the energy transition in Kazakhstan is to increase energy efficiency. Companies will have to pass energy audits every five years from 2015 onward and are encouraged to develop roadmaps on energy intensity improvement. But in this area too low electricity prices hinder progress, says Satkaliyev. He concludes: “Prices in the domestic market should be high enough to generate adequate profits to suppliers, and to stimulate renewable energy and energy efficiency.” ●

Almassadam Satkaliyev graduated from Kazakh State University in 1992, where he majored in mechanics and applied mathematics. In 2015 he graduated from the Graduate School of Business Executive MBA at Nazarbayev University (joint program with Duke University's Fuqua School of Business) as Doctor of Economics. He is academician of the Kazakhstan Academy of Natural Sciences, a foreign member of the Russian Academy of Natural Sciences.

MEMBER COMMITTEE EVENTS

Renewables Deployment in the EU Power Sector**Washington DC, USA****13 April 2016**

The European Union has decided an ambitious program to transform its energy system and endorsed a binding target of at least 40% domestic reduction in greenhouse gas emissions by 2030. What was the price for this doubling the share of renewables in

total EU power demand within the last ten years? What are the lessons learnt? Dr. Hans-Wilhelm Schiffer, Executive Chair of the World Energy Council's Resources study, analyses the implications of this commitment during his presentation which is open to the broader public.

Contact: Sara Burback**E-mail:** sburback@usea.org**Website:** <http://bit.ly/1VFfUgK>**The most burning global energy issues in 2016****Lyngby, Denmark****19 April 2016**

World Energy Council Denmark presents the 2016 World Energy Issues Monitor report, which provides an actual assessment of the issues impacting the global and regional energy sector based on the views of the Council's energy leadership community. The report identifies key uncertainties while highlighting the areas where action is most required to enable the sustainable supply and use of energy. The presentation of the report will be followed by Danish views, and the programme will conclude with a discussion between the speakers and the audience. Register by 15th April and send an email to kontakt@wec-danmark.dk.

Contact: Leif Soenderberg Petersen**Email:** lepe@dtu.dk**Website:** <http://bit.ly/22FSPwf>**Energy and Geostrategy 2016****Madrid, Spain****12 May 2016**

World Energy Council Spain will present the 2016 issue of the "Energy and Geostrategy" report series, published together with the Spanish Institute for Strategic Studies for the third time after 2014 and 2015. Speakers will discuss currently energy matters such as liquefied natural gas, energy maritime routes, the impact of jihadism on the energy sector, oil prices, world geopolitics and the

water- energy-food nexus from a global geopolitical perspective. These subjects will be examined in a panel discussion formed by the authors and the publication's coordinator. The event is co-organised with the Spanish Ministry of Defense and it is aimed both at the public and private sector, as well as the academia. Registration is possible by 10th May. The 2015 edition is available for download here [<http://bit.ly/1RNllox>].

Contact: Javier Jiménez**E-mail:** jjimenezp@repsol.com**Website:** <http://bit.ly/1UQIQCS>**Energy Dynamics in a Changing World****Tehran, Iran****30 - 31 May 2016**

The 11th International Energy Conference (IEC2016) organised by World Energy Council Iran focuses on energy practice and policies. Sessions and workshops during the forum highlight dynamics in energy finance, structures and institutions, energy technologies as well as in energy and environment and economy. Registration is possible until 20th May.

Contact: Seyed Mohammad**Sadeghzadeh****E-mail:** info@irannec.com**Website:** <http://irannec.com>

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