Keynote Speech to The Royal Dutch Gas Association (KVGN)

140th Anniversary Dinner
Groningen, The Netherlands

Peter Voser

CEO, Royal Dutch Shell plc
October 3, 2013

Peter Voser became Chief Executive Officer on July 1, 2009. Before his appointment as CEO, Peter had been Chief Financial Officer (CFO) and an Executive Director of Royal Dutch Shell since 2004. He was CFO of the Royal Dutch/Shell Group of Companies from October 2004 to July 2005.

Peter was CFO and an Executive Committee Member of the Asea Brown Boveri (ABB) Group of Companies, based in Switzerland, from March 2002 until September 2004.

Peter joined Shell in 1982 after graduating in business administration from the University of Applied Sciences, Zürich. He went on to work in a number of finance and business roles in Switzerland, the United Kingdom, Argentina and Chile.

After moving back to London from Chile in early 1997, Peter became the Group Chief Internal Auditor. In 1999 he was appointed CFO of Shell Europe Oil Products.
He became CFO of the Global Oil Products Business in early 2001 and a member of the Oil Products Executive Committee.

From 2004 until April 2006, Peter was a member of the Supervisory Board of Aegon N.V.. He served on the Board of Directors of UBS AG from April 2005 to April 2010. He was a member of the Swiss Federal Auditor Oversight Authority from 2006 until December 2010.

He is chair of the Board of Directors of Catalyst, a non-profit organisation that works to build inclusive environments and expand opportunities for women in business. In March 2011, he was appointed to the Board of Directors of Roche. In July 2011, His Majesty the Sultan of Brunei awarded him the title of Dato Seri Laila Jasa in recognition of his services to the state of Brunei.

Peter is also active in several international and bilateral organisations, including the European Round Table of Industrialists and The Business Council.

A Swiss citizen, Peter was born in 1958. He is married to Daniela and they have three children.

Despite significant investments in a more sustainable energy system, Europe has been struggling to lower its CO_2 emissions. In this speech to the The Royal Dutch Gas Association, Peter Voser says the increasing use of coal-fired power in Europe is offsetting the carbon benefits of subsidised renewables. A new European study warns of alarming consequences if nothing is done to reverse this trend. Peter says the Netherlands is ahead of the game in addressing these challenges and is setting an example for the rest of Europe. He also urges the European Union to introduce measures that combine carbon abatement with a renewed focus on innovation, and sees an important role for natural gas in the long term.

Thank you. It is an honour to speak here on the occasion of this anniversary.

Royal Dutch Shell and the Royal Dutch Gas Association not only share part of our corporate titles – we also share much of our history. A big part of that history is the development and management of the Groningen field – discovered in 1959 and one of the biggest gas finds ever.

Groningen is managed by NAM (Nederlandse Aardolie Maatschappij), a 50-50 exploration and production partnership between Shell and ExxonMobil, which dates back to 1947.

The Groningen discovery opened the door to wider gas exploration, and in 1961, NAM was the first company in Western Europe to drill in the North Sea. Today, NAM is the largest gas producer in the Netherlands.

The world, of course, has changed tremendously since the Groningen discovery. But there is much that Europe can learn from the Groningen story – and in a broader sense, the story of natural gas in the Netherlands – to help us make the right decisions for the future.

History of Groningen

It is hard to overstate the significance of Groningen. In cooperation with the Dutch government, it took 15 years to build the infrastructure to distribute and sell the gas.

Before Groningen, oil and coal were the major sources of electricity and heating in the region.

Today, gas penetration in the residential sector stands at 98%.

Availability of this new source of gas led to a coordinated expansion of the infrastructure from northern Netherlands to north-western Germany, Belgium and France. Over the following four decades, the European gas grid has developed into a large, effective network, facilitating the development of additional sources from the north and east through a transport infrastructure.

In 1974, the Dutch government adopted what became known as the "Small Field Policy".
Groningen was being depleted quickly; the government wanted to unlock smaller fields to safeguard Groningen's capacity and volume for the long term.

Today, we continue to develop and produce gas from many small fields. It's also a major reason why the Netherlands remains at the heart of the European gas market and a major net exporter of gas to Germany, France, Italy, Belgium and the UK. It has helped ensure a secure, reliable supply of energy to the region for decades. This policy has created many benefits for the Netherlands in particular. The investment in the gas network has allowed this country to maintain a relatively high share of gas in its own energy mix. And with multiple suppliers, competition ensures better prices and makes the Netherlands less dependent on any one company.

In addition to generating long-term jobs, Dutch natural gas has been a tremendous source of revenue to benefit the country.

"The Netherlands remains at the heart of the European gas market and a major net exporter of gas to Germany, France, Italy, Belgium and the UK."

And the Dutch "Gasgebouw", the public-private partnership that laid the foundation for development of the Dutch gas industry, has attracted attention from countries around the world that are now developing their own gas industries. Tanzania is one recent example.

A different world

As I mentioned, our world has changed tremendously over the past 54 years. How we look at our energy resources has changed as well.

Shell's scenarios team recently published its latest report assessing how major social, economic and political forces might play out through the 21st century, and how that might affect the energy system. The scenarios underscore the enormity of the growing stresses on our resources and the environment; surging global demand for energy will only increase that pressure.

The shift in economic and political influence from West to East is already having an impact on the energy sector. The developing economies will provide almost all of the increase in global demand over the next two decades, with China and India leading the way. To keep pace, the world needs to increase production of all energy sources, from fossil fuels to nuclear and renewables.

The revolution in North America's oil and gas supplies is helping to relieve some of the pressure in the short term; the U.S. and Canada could soon begin exporting their gas overseas as liquefied natural gas.

At the same time, there has been a lack of agreement globally on how to address climate change, and global CO_2 emissions continue to rise. Earlier this year, it was announced that the atmospheric concentration of CO_2 had reached 400 parts per million. That is getting close to the level of 450 parts per million that climate scientists have identified as the limit to avoid the worst effects of climate change.

This is an area where the increased use of natural gas can help; gas power stations emit half the CO_2 of coal. But the rising use of gas in North America is having some unintended CO_2 consequences here in Europe.

"The rising use of gas in North America is having some unintended CO_2 consequences here in Europe."

As more affordable gas displaces coal for electricity production in North America, that coal is being shipped here to Europe, where it is displacing gas.

Despite decades of success in developing our natural gas resources, Europe today finds itself in this perplexing situation: On the one hand, significant investments continue to be made toward the goal of creating a "greener," more sustainable energy system. CERA estimates the EU will spend 330 billion euros on renewable energy subsidies between 2013 and 2020.

On the other hand Europe has been less successful in actually cleaning its energy emissions: Germany's CO_2 emissions, for example, increased by 2% between 2011 and 2012.

"The world needs to increase production of all energy sources, from fossil fuels to nuclear and renewable."

Lower energy demand during the recession has produced a surplus of carbon trading allowances, slowing the pace of clean energy investment and innovation in Europe. When you combine the subsidy of renewables with ultra-low prices for EU carbon allowances and the flood of cheap coal from the United States, you end up with this strange paradox: Higher coal use, resulting in increased CO_2 emissions, which offsets the carbon benefits of subsidized renewables.

And while coal plants are operating at high capacity, we have highly efficient gas-fired power plants in Germany and the Netherlands being idled.

Unfortunately, this threatens to become a longer-term phenomenon.

Some industry observers suggest the dislocation of gas in Europe is temporary and that higher carbon prices in the future, combined with tougher European air quality legislation, will correct the situation and rebalance the energy mix.

In fact, there is an increasing risk that a "coal and renewables" scenario may become a more entrenched phenomenon. There is ample room for coal plants to ramp up and provide electricity as the economy recovers in the coming years. That coal capacity is already locked in; the longer the situation persists, the more difficult and costly it will be to de-carbonise.

Investment delays in new power generation capacity may lead to a situation where Europe has no alternative but to rely on coal-fired power for much longer than planned. Utilities are reluctant to proceed with new gas-fired capacity due to uncertainty in long-term carbon pricing and fiscal challenges resulting from subsidies to renewables.

Risks related to this emerging coal-and-renewables scenario are not yet well-recognised; the EU roadmap 2050 did not envision it.

A new study commissioned by the European Gas Advocacy Forum warns of alarming consequences should Europe allow this trend to continue unabated. Europe's power system would become increasingly inflexible, more costly and potentially less secure.

Continuation of this trend would require a massive investment in carbon-neutral technologies like nuclear and offshore wind to offset the impact of additional coal-related CO_2 in the atmosphere.
The study estimates that early action would save the EU about 3.4 billion tonnes of CO_2 between now and 2030. By not acting now, the EU could lock itself into a situation that's irreversible.

The Dutch Energy Agreement

The Netherlands so far is leading the way toward reversing this emerging coal-and-renewables scenario. It is setting an example for the rest of Europe.

"The Netherlands is setting an example for the rest of Europe."

In the national energy agreement finalised in August, the government, industry and other groups with a stake in our energy future proposed a framework toward a more sustainable energy system. The agreement calls for:

- Closing five older coal-fired power plants earlier than scheduled;
- Setting up a special fund to finance energy efficiency improvements in homes and apartments;
- A major boost in wind energy production;
- Government support for greenhouse gas reduction of at least 40% (from 1990 levels) as an EU target for 2030;
- And reform of the European Trading System.

The main intention of this agreement is to bring clarity and stability to Dutch energy and climate policies for the coming decade. Wind, solar and natural gas would form a strong combination toward a cleaner, more flexible and efficient energy system.

The agreement sets an example for Europe both in terms of its content and the way in which it came together. It should encourage Europe to establish a more robust CO_2 price and generate a shift from coal to natural gas to complement a rising share of renewables in the energy system.

"We at Shell strongly support the EU Emissions Trading Scheme as the primary way to develop a low-carbon power system."

We at Shell strongly support the EU Emissions Trading Scheme as the primary way to develop a low-carbon power system.

In the short term, several measures could create a cost-efficient route to decarbonisation to ensure Europe meets its environmental goals, while remaining economically competitive.

Delaying the sale of allowances into the Emissions Trading Scheme, so-called "backloading," is a good first step to address the risk of increased cost to society from the current approach.
This should be complemented by further measures.

First, set a single, stand-alone target for greenhouse gas emissions for the period to 2030.
Having one target would sharpen the focus on the main task of reducing Europe's greenhouse gas emissions.
The EU should consider measures to create an auction "reserve" price in the short term, so that allowances aren't released into the market below a certain price.

In addition, the EU should ensure full and timely implementation of air quality legislation … such as the Industrial Emissions Directive. It should use co-operation mechanisms available under legislation to reduce the costs to society of renewable electricity.

And it should ensure renewable electricity sources are fully integrated into the electricity market when they can compete on a level playing field with conventional sources.

Finally, the EU should ensure implementation of the Energy Efficiency Directive to promote efficient power generation, save energy and reduce greenhouse gas emissions.

If Europe does not begin to address this situation soon, we run the risk of prolonging the ineffective and expensive coal-and-renewables scenario, and Europe will not get any closer to its de-carbonisation goals.

In short, Europe has to start combining cost-efficient carbon abatement with a renewed focus on innovation. Today we pursue high-cost CO_2 policies while not spending enough on innovation.

The future of gas

The reasons why we are bullish on gas for the long term are clear. We see a series of new investment opportunities, such as liquefied natural gas (LNG), and innovative developments such as floating LNG, gas-to-liquid technology, and LNG/compressed natural gas (CNG) in transport.

To meet growing global demand for transportation, a broader range of vehicles and fuel options will be required.
According to our scenarios team, natural gas could account for 10% of road transport fuel by mid-century.

LNG can provide cost and local emissions benefits but requires investment in fuelling infrastructure and vehicles.

Shell is already planning or setting up LNG-for-transport corridors in Canada, the USA and Australia.

And here in the Netherlands, we are leading the way in using cleaner-burning LNG for marine transport. Earlier this year, we christened the first of two tank barges that are fully LNG-powered. Both will operate on the Rhine in the Netherlands, Germany and Switzerland. They will be amongst the most efficient, safest barges in the world.

In Rotterdam, the port city's LNG shipping terminal is being upgraded so it can distribute LNG as a marine and road transport fuel – another indication of the larger role that LNG is poised to play here.

We see tremendous growth potential for LNG as a shipping fuel, both here in Europe and around the world. LNG will help shipping operators meet the tough emissions standards due to take effect in 2015 on Europe's inland waterways, as well as on the Baltic and North seas. In the longer term, stricter emission standards for international waters will also offer opportunities for LNG.

The key to getting more out of the world's abundant resources of natural gas is innovation. Innovation is helping to bring more gas to the market, through such technologies as floating LNG vessels. Innovation can help offset the increasing

"Europe has to start combining cost-efficient carbon abatement with a renewed focus on innovation."

"The key to getting more out of the world's abundant resources of natural gas is innovation."

cost pressures we have to contend with in our industry. And innovation can help reduce the environmental footprint of gas operations.

Floating LNG is a great example of an innovation that will make a big difference in the decades ahead. We spent more than $1 billion to develop our FLNG technology to the point where we had the confidence to begin construction of the world's first FLNG facility two years ago.

At the other end of the scale is our small-scale LNG concept; although it offers only a quarter-million tonnes in annual capacity, this small plant is cost-competitive. It allows us to utilise small-scale gas resources and create local supplies of LNG for the emerging transport market.

NAM has been innovating in gas, too, with its ultra light land rigs that allow small fields to be developed economically. And tomorrow, NAM will officially open an air separation plant that will provide nitrogen for injection into a gas field for enhanced gas recovery. This is a world first.
Indeed, gas offers Europe a way to remain competitive and to drive innovation throughout the economy by providing a stable, secure source of energy for decades to come.

Thanks to the shale gas revolution, the USA is enjoying a substantial economic stimulus in the form of lower energy prices. That, in turn, is luring manufacturing and chemical companies back to the USA, reversing the trend of the past two decades.

While it is clear that shale gas will not provide Europe with the same cheap energy dividend in the near future, there are things Europe can do to make the industrial sector more competitive.

As I have outlined, clear and supportive policies are essential for a competitive industrial sector.

But while the EU wants a thriving cleaner energy sector to become a powerful driver of economic growth, many of its energy and climate policies were designed for a more prosperous time. As a result, they are producing unintended results.

In addition, as an industry, we need to do a better job of addressing public concerns about the potential impacts of our operations.
As you know, earthquakes related to natural gas extraction have become a significant public concern here in Groningen. NAM is taking this very seriously. Damage claims are being handled, and a research program is underway to better understand the causes and how best to address this issue, both in terms of prevention and in limiting the impact of the tremors.

Both shareholders are providing NAM with all the support it needs to address this issue. It is crucial that the public retains confidence in our ability to extract these resources properly.

In conclusion, gas continues to have enormous potential to help Europe create a more sustainable, cleaner energy system.

We should learn from our own remarkable history with gas to manage and use this resource wisely to complement the increasing role that renewables will play in the decades ahead.
The result will be a more robust economy, lower greenhouse gas emissions and greater investments in the kind of innovations and technology that will help society prosper for generations to come.

One hundred and forty years after the creation of the Royal Dutch Gas Association, 116 years after Marcus Samuel founded the Shell Transport and Trading Company, and a half-century after the Groningen discovery, the Dutch natural gas story is still being written.

I'm confident there will be many more successful chapters to come.

Thank you.

"Gas offers Europe a way to remain competitive and to drive innovation throughout the economy by providing a stable, secure source of energy for decades to come."

"Gas continues to have enormous potential to help Europe create a more sustainable, cleaner energy system."

Recent speeches by Shell's senior leadership

- Investing in the future, *Peter Voser*
- Shell's recommendations for a more competitive EU energy policy by 2030, *Ben van Beurden*
- Not all fields are created equal, *Matthias Bichsel*
- Mexico's energy future: an era of investment, innovation and imagination, *Marvin Odum*
- Conquering new frontiers together, *Andy Brown*
- Sharpening Europe's competitiveness, *Peter Voser*
- Realizing Australia's natural gas potential, *Peter Voser*
- The role of technology, innovation and partnership in meeting global energy demand, *Peter Voser*
- The path to a more sustainable energy future, *Peter Voser*
- Getting the future energy mix right: How the American shale revolution is changing the world, *Peter Voser*
- In-depth innovation for the future, *Matthias Bishsel*
- Managing talent to address energy challenges, *Hugh Mitchell*
- Do the research, *Matthias Bichsel*
- The high road to innovation and technology, *Matthias Bichsel*
- Future of energy: solutions through cooperation, *Marvin Odum*

For information about Shell, including downloadable versions of these speeches and other publications, please visit www.shell.com.