



The future is gas?

Jeroen van der Veer

Chief Executive
Royal Dutch Shell plc

based on a speech at the 23rd World Gas Conference, Amsterdam
June 6th, 2006



Jeroen van der Veer is Chief Executive of Royal Dutch Shell plc. He was a Managing Director of Royal Dutch Petroleum from 1997 until the unification under Royal Dutch Shell in July 2005.

He joined Shell in 1971 and worked in manufacturing and marketing in the Netherlands, Curaçao and the United Kingdom. In 1984, he returned to Shell Nederland as manager of Corporate Planning, and then of Pernis Refinery. After an assignment in Shell International, looking after Africa and Canada, he became a managing director of Shell Nederland in 1992. Four years later he became president and chief executive of the Shell Chemical Company in the United States.

He was born in Utrecht in the Netherlands, and is married with three daughters. He has two degrees – one in mechanical engineering from Delft University and another in economics from Rotterdam University. In 2005 he was awarded an honorary doctorate from the University of Port Harcourt in Nigeria.

He is a non-executive director of Unilever, serving as a member of the Nomination and Remuneration Committees.

Natural gas – with its economic, efficiency and environmental advantages, relative abundance and expanding infrastructure – has the potential to play a vital role in meeting the world’s expanding energy needs, while helping to cut greenhouse gas emissions. Global gas consumption is expected to grow strongly. Most countries will become increasingly dependent on imports and inter-regional gas flows could expand nearly threefold. But significant economic, technological, commercial and political challenges need to be overcome if this potential is to be realised. Success will depend on harnessing knowledge – technologies, organisational capabilities, and individual skills and qualities – and building relationships. Strong partnerships have always been a feature of the gas industry, because of the scale of the challenges and the need for global links. They work best when companies invest as partners. But this requires a transparent, predictable and secure framework that allows suppliers to invest and customers to make commitments.

It is a particular pleasure to be addressing the World Gas Conference here in Amsterdam.

Natural gas has been part of the fabric of the Dutch economy since the discovery of the massive Groningen field in 1959. By the early 1970s almost all Dutch homes – as well power stations and factories – were using this gas. And we were exporting large amounts to our European neighbours.

These exports drove the development of the European gas transmission network, boosting European prosperity and helping to bind us together.

But it is not just Groningen’s huge reserves that matter. It is also the way the field has been managed as a balancing supplier, supporting the development of other supplies.

Together with underground gas storage facilities, the Groningen system has the capacity to deliver nearly half a billion cubic metres of gas a day to meet peak demand.

A €2 billion upgrade programme will enable Groningen to maintain its key role in providing flexibility and security to the northwest European gas market. This will be even more important as the continent becomes increasingly dependent on more distant gas supplies.

The remarkable success of Groningen has rested on twin pillars.

First, a strong and enduring public/private partnership able to apply the skills, technology and investment necessary to develop and manage the complex system.

Second, a clear, predictable and

commercial policy that has underpinned this investment while responding to market changes.

I believe such conditions are of continuing and much wider relevance to the future of this industry.

Today I will

- look at the potential and future for gas,
- then at the economic, technological, commercial and political challenges,
- and finally at two key requirements for success – harnessing knowledge and building relationships.

The potential for gas

Natural gas – with its economic, efficiency and environmental advantages, relative abundance and expanding infrastructure – should play a vital role in meeting the world’s developing energy needs.

Global gas consumption could grow by more than two percent a year over the next quarter century, mostly for power.

Much more of this gas will have to cross borders, as most countries become increasingly dependent on imports. Here in the EU, we could be importing 80% of our gas by 2030.

Inter-regional gas flows could grow nearly threefold. Most of the additional gas is likely to come from the Middle East, Russia, the Caspian and North Africa – but other suppliers will also achieve significant growth. Qatar, Nigeria and Australia will account for a

“A €2 billion upgrade programme will enable Groningen to maintain its key role in providing flexibility and security to the northwest European gas market.”

major share of the expansion in liquefied natural gas (LNG) supplies.

The challenge for this industry is clear – to produce much more gas, deliver it to many more customers, over much greater distances. We can do this though bigger and longer pipelines, as LNG, or as a liquid fuel.

Long distance pipeline supplies will become increasingly important, particularly for Europe.

When it is finished next year, the 1,200 kilometre Langeled pipeline – to carry 20 billion cubic metres (bcm) a year of gas from Ormen Lange to the UK – will be the world's longest subsea pipeline. The North-East Gas Pipeline is being designed to bring over 27 bcm a year – in due course perhaps twice that – under the Baltic from Russia. And the proposed Nabucco pipeline could bring 25 bcm of gas a year from the Middle East and Caspian region.

The LNG business is growing and globalising very fast. In Shell, we believe that LNG demand could increase by as much as 10% a year through to 2020, when supplies from more than 25 countries could be meeting a fifth of global gas needs.

We're on track to meet our own target of 14% average annual growth in our LNG production capacity from 2004 to 2009, with many opportunities for continued growth.

The expansion of LNG has been driven by its increasing cost competitiveness. For example, the recently completed Qalhat LNG train in Oman was completed at an engineering, procurement and construction (EPC) cost of less than \$150 a tonne of annual capacity, probably the lowest ever.

LNG has become competitive with onshore pipelines in simple terrain over as short as 1,800 kilometres, and is always a better choice beyond 4,000 kilometres. It is competitive with offshore pipelines from 1,500 kilometres.

LNG also has a proved record of reliability. For example, since starting operations in the early 1970s Brunei LNG has not missed a single cargo.

And LNG is becoming increasingly flexible – with diverse suppliers, greater market access, and increasing liquidity. China joined the growing list of importers last month, when the first cargo reached the Guangdong terminal from Australia.

The spot market now accounts for about 10% of LNG sales. But most LNG will continue to be sold under long-term contracts – needed to underpin highly capital-intensive projects and provide security for customers.

This shared need of suppliers and consumers for security – demand and supply are two sides of the same coin – is equally true for long-distance pipelines.

Gas-to-liquids (GTL) is now emerging as a commercial technology. In Shell, we believe strongly in its potential – and have been pursuing this for more than three decades. Our proprietary technology was developed here in Amsterdam, at the Shell laboratory on the IJ River.

With a decade of operational experience at Bintulu in Malaysia, we hope to take a final investment decision on the major Pearl GTL plant in Qatar this year. It is designed to produce 140,000 barrels a day of GTL products, plus more than 100,000 barrels a day of NGLs.

Bintulu has also enabled us to develop markets. We're already selling GTL blends in seven countries.

GTL meets increasing demand for high-quality, clean transport fuels. And has the great advantage that – unlike major gas supply projects – it serves a liquid and unconstrained market. According to the IEA, it could account for 2% of world oil supply by 2030.

And the technology can also be used to produce similar high-quality fuels from coal and biomass.

The potential for natural gas is clear. So should we spend four days congratulating ourselves on our choice of business?

Unfortunately there are many challenges to be overcome – economic, technological, commercial and political. Or, perhaps I should say 'fortunately', as it is in meeting challenges that we find

“The challenge for this industry is clear – to produce much more gas, deliver it to many more customers, over much greater distances.”

“Most LNG will continue to be sold under long-term contracts – needed to underpin highly capital-intensive projects and provide security for customers.”

business opportunities.

Significant challenges

What are the economic challenges?

Unlike oil in transport, natural gas doesn't have a monopoly of its key power market. It has to compete with coal, oil, nuclear and renewable energy.

The many advantages of gas – lower capital costs, efficiency, cleanliness and fewer carbon emissions – have driven rapid expansion in gas fuelled generation. While the scope for fuel switching is limited, very high gas prices could prompt power investors to consider alternative fuels.

Here in Europe the link between oil and gas prices is sometimes questioned. But it provides essential security for investors in the very large infrastructure projects on which long-term supplies depend.

Open and transparent markets are the best way of ensuring that prices reflect the economic fundamentals. Storage and balancing supplies like Groningen help to damp volatility.

With increasing flexibility in the LNG trade – and the rapid growth of US demand – the connection between prices in different regions is strengthening. But I don't expect to see a global gas price any time soon.

Let me turn to the technological challenges of finding, developing and delivering the gas to meet this growing demand.

Gas resources may be relatively abundant but that doesn't mean they are easy to develop – as the Sakhalin II development and the planned Shtokman project in Russia graphically illustrate.

We will increasingly have to find and develop supplies

- in harsher conditions – such as Arctic seas and ultra-deep water,
- in more difficult geology – deeper, more complex, tighter formations,
- from gas contaminated with hydrogen sulphide and carbon dioxide,
- and from unconventional sources such as coal and shale.

This means applying better technol-

ogies in larger, more demanding, more integrated projects, often in remote and sensitive locations.

Recognising and responding to social and environmental concerns will be an essential capability. I know from my own experience that resolving these complex issues – involving differing perspectives and interests – will never be easy. We learn from experience how to approach them better.

The cost of equipment, contracting and materials for these projects are increasing rapidly. This reflects the very high activity rates in the industry, as well as more general inflation in areas of rapid economic development.

Developers will look hard for ways of reducing project costs, but may also hold back some projects, as we have said we will probably do.

Gas has now to be delivered competitively over much longer distances.

Bigger LNG trains and ships should continue cutting the cost of doing this. Qatar recently ordered six LNG tankers with 265,000 cubic metre capacity, 75% bigger than the largest operating today.

There are also technological advances in pipeline laying, although big pipelines are particularly affected by very high steel prices.

Gas-to-liquid plants are as complex as a major refinery and we certainly don't underestimate the challenge of progressing to a much larger scale. That's why we are taking our time with preparing Pearl GTL, to make sure we take into account all the lessons learned.

Let me turn to the commercial challenges, which major gas projects face because of their scale and market impact even when demand is growing rapidly. For example, when we gave the go ahead for the Sakhalin LNG project, its capacity was nearly a tenth of Pacific basin demand.

The challenge for developers is to put together the complex chains from reservoir to customer – upstream, liquefaction, shipping, regasification, sales – in dynamic and competitive markets. This requires deep knowledge of the market, the trust of customers,

“... applying better technologies in larger, more demanding, more integrated projects, often in remote and sensitive locations. Recognising and responding to social and environmental concerns will be an essential capability.”

“The challenge for developers is to put together the complex chains from reservoir to customer in dynamic and competitive markets. This requires deep knowledge of the market, the trust of customers, and the courage to invest early in strategic infrastructure.”

and the courage to invest early in strategic infrastructure.

Long-term purchase contracts have now been sold for virtually all the Sakhalin output. As well as deals with traditional Asian customers, we have invested in developing market access to North America.

An important change in the LNG business has been the increasing market role of major companies, with the capabilities to commit to long-term gas purchases for delivery to their own customers. This supports the development of new liquefaction capacity and helps to optimise global trade for the benefit of both customers and producers.

Finally, the rapid growth in the international gas trade presents great political challenges.

There's much concern for security of supply. This is understandable as import dependency increases and energy prices are more volatile. But it should always be seen in the context of security of demand, and of investment.

Resource holders – and those who invest large sums and effort to develop gas projects – need to be as sure about their access to markets as customers must be about the security of their supplies.

The gas business, with its very high capital requirements and limited flexibility, depends on shared interests and mutual trust. And this has worked very well. Russia, for example, has been a very reliable gas supplier to Western Europe for over 40 years, despite the political divide for many years.

Governments have a vital role in ensuring that there is the transparent, predictable and secure framework that allows suppliers to invest and customers to make commitments. And, as our experience here in the Netherlands shows, this doesn't in any way prevent governments from ensuring that natural resources are developed, and markets are operated, for the benefit of their people.

Knowledge and relationships

So, while the role of natural gas is poised

to grow very strongly, we face significant challenges in bringing this about.

Finding and developing the required gas – from more difficult resources than those tackled previously – will be a continuing technological challenge.

Executing larger scale, more complex and increasingly demanding projects will take great financial, technological and managerial strengths.

Delivering competitive supplies to customers over longer distances – in volatile and unpredictable global markets – will require superior commercial capabilities.

I believe that the two key requirements for success will be harnessing knowledge and building relationships.

By knowledge I mean the technologies, organisational capabilities, and individual skills and qualities necessary to undertake such challenging work.

There are many sources of technological advance – academia, small companies, other industries, as well as the major energy companies.

But it takes a deep understanding of the operational and business context to recognise and realise their possibilities.

The capabilities to apply these advances effectively – integrated with many other technologies – are best developed by wide experience.

All this depends on attracting, developing, motivating and deploying people with the expertise and judgement to face up to the challenges.

Last year Shell recruited over 2,700 new, high-quality graduates and experienced professionals from all round the world. We need them to seize the opportunities we have ahead of us.

I believe that international companies have a particular role in harnessing the knowledge to meet those challenges – because of our technological depth, our worldwide experience, and the fact that we live or die as businesses by our ability to do so.

Of course, we're not the only ones who can do this. For example, no company has more knowledge of developing and operating long distance gas pipelines than Gazprom.

“The gas business, with its very high capital requirements and limited flexibility, depends on shared interests and mutual trust.”

“International companies have a particular role in harnessing the knowledge to meet those challenges – because of our technological depth, our worldwide experience, and the fact that we live or die as businesses by our ability to do so.”

That's why we need to pool our knowledge in strong partnerships, which have always been a feature of this industry – because of the scale of the challenges and because a global trade requires strong links.

That's why building relationships is so important. And I believe these relationships work best when companies invest as partners, and have a shared interest in harnessing their knowledge to achieve success.

That's why openness to foreign investment is so important, and arbitrary barriers so damaging.

I know that our business in Shell depends on the many strong relationships, with partners and customers, we have built up around the world.

We work constantly to build and sustain such relationships – by demonstrating that we add real value in overcoming challenges and expanding possibilities.

Let me end by coming back to Amsterdam, where we are constantly reminded of the city's long-standing role in international trade.

I believe that open trade remains vital both for the world's continued economic development and for binding us together. Nowhere is this more important than in the gas trade – which can play such a vital role in meeting the world's energy needs while helping to reduce carbon emissions.

Despite all the challenges I have no doubt that the future is gas.

“We need to pool our knowledge in strong partnerships, which have always been a feature of this industry – because of the scale of the challenges and because a global trade requires strong links.”

“I believe that open trade remains vital both for the world's continued economic development and for binding us together. Nowhere is this more important than in the gas trade – which can play such a vital role in meeting the world's energy needs while helping to reduce carbon emissions.”

Recent speeches

Royal Dutch Shell plc 2006 AGM

Aad Jacobs & Jeroen van der Veer



NOCs and IOCs: partners with shared interests

Malcolm Brinded



Driving towards sustainable mobility

Rob Routs



Setting the energy scene

Jeroen van der Veer



Delivering technology—the key role of international energy companies

Jeroen van der Veer



Integration the key to meeting energy challenges

Malcolm Brinded



Shell's strategy to fuel the future

Jeroen van der Veer



Forging strong links—enabling the global expansion of natural gas

Linda Cook



Sustainability of supply?

Jeroen van der Veer



Information about the Royal Dutch Shell plc and the Shell Group, including downloadable versions of speeches and other publications, can be found at:

www.shell.com

© Shell International Limited (SI), 2006 Permission should be sought from SI before any part of this publication is reproduced, stored in a retrieval system, or transmitted by any other means. Agreement will normally be given, provided that the source is acknowledged.

The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate entities. In this publication the expressions “Shell”, “Group” and “Shell Group” are sometimes used for convenience where references are made to Group companies in general. Likewise, the words “we”, “us” and “our” are also used to refer to Group companies in general or those who work for them. These expressions are also used where there is no purpose in identifying specific companies.