



# Wanted! Oil and Gas

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Jeroen van der Veer joined Shell in 1971 and worked in manufacturing and marketing in the Netherlands, Curaçao and the United Kingdom. In 1992, he became a Managing Director of Shell Nederland. Three years later he became President and Chief Executive of the Shell Chemical Company in the United States. He was appointed a Group Managing Director in 1997.

Jeroen was born 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.

He is a Non-executive Director of Unilever.

**In this speech, Royal Dutch Shell's Chief Executive, Jeroen van der Veer, explains why International Oil&Gas companies (IOCs) like Shell are part of a growth industry. The demand for hydrocarbons is growing. A company like Shell possesses the skills to open up new energy frontiers and help keep up the supplies of oil and gas that the world needs for economic development. At the same time, Shell wants to contribute to the gradual transition from a high-carbon to a low-carbon energy system. Shell is actively engaged in developing second-generation biofuels, is a large player in wind energy and invests in thin-film solar technology and hydrogen demonstration projects. And we believe that Carbon Capture and Storage is an indispensable element of an effective CO2 mitigation effort, but will require government support to take off.**

Thank you, it's a pleasure to be here. The question I would like to address is whether the international oil & gas industry is a growth industry or a sunset industry.

My short answer is: it's a growth industry and an indispensable industry – oil and gas are still wanted. And Shell is making certain that in this growth industry we operate responsibly.

And here is my long answer. The oil & gas industry is a growth industry,

- in terms of the world-wide demand for fossil fuels;
- in terms of world oil expenditures as part of global GDP, which have more than doubled since 1998.
- in terms of the value of our product and the capital intensity of our projects;
- in terms of the number of energy-options we are creating for the future;
- in terms of the social and environmental sustainability challenges we face - which we at Shell have taken seriously for years.
- it is also an industry with growing geopolitical relevance as the world is increasingly concerned about energy security and climate change. Energy really is the lifeblood of human civilisation. There is nothing to replace it.

In newspaper articles I come across two sets of arguments about our industry:

First, there are some who believe that the future of *International Oil Companies* is at risk because *National Oil Companies* control most fossil reserves.

Second, there are those who feel that *International Oil Companies (IOCs)* should phase out fossil fuels and make a bold dash into alternative energy.

Both viewpoints are understandable but too simplistic.

Of course there are challenges. Of course *IOCs* have to work hard to gain access to reserves. And of course we will have to play a role in the growth of renewables.

### ***Three hard truths***

To understand the challenges and opportunities of the international oil & gas industry, one has to put them in the context of the global energy challenge. At Shell, we see the energy challenge as a set of hard truths.

The *first* hard truth is the acceleration of global energy demand. By 2050, the world could be using double or more the amount of energy we use today. The main reasons are population growth and fast economic development in Asia.

The *second* hard truth is that we cannot rely on “easy oil” supplies to meet that demand. By “easy oil” I mean oil and gas that are relatively easy to extract.

Many of the world's future resources are located in the Arctic, or offshore in deep water. And much is in the form of oil shale and oil sands – so-called “unconventional” oil. All of these require special skills to develop.

The *third* hard truth is that CO2 emissions are rising even faster than demand for energy. And, unless we take quick action, the concentration of CO2 and other greenhouse gases in the atmosphere could surpass levels that scientists consider still manageable.

To meet this challenge the world needs to create new energy options and keep open existing ones. This requires innovation and investment.

### **Role of IOCs**

To meet the energy challenge the world must adopt an “all hands on deck” mentality. All IOCs and NOCs will have to invest their money and brainpower into supplying the energy that helps to keep the world’s economies humming.

NOCs have controlled most of the world’s conventional reserves since the 1970s. So nothing new there.

What *is* new – or relatively new - is the increased technological sophistication of some of the larger NOCs. They can produce large quantities of conventional oil and natural gas very efficiently.

Shell has responded to this development by turning to our traditional key strengths: technology and learning, operational capabilities, value-chain integration and management skills.

These skills allow us to open up new frontiers. In the past we opened up the North Sea for exploration, now we are exploring and producing in even more difficult geography including the Arctic, Oil Sands and Deep Water. And we created markets for Liquefied Natural Gas and Gas to Liquids.

This ability to open up new frontiers remains a key differentiator for IOCs – it adds to the strategic value of IOCs. So technology too remains a key differentiator.

Today, Shell has partnerships with NOCs in around 20 countries. In Brunei, Oman, Nigeria and elsewhere we have worked with state-owned companies for many decades.

More recent examples are:

- Shell’s partnership with Qatargas on building up, managing and operating their large fleet of LNG carriers.
- Shell’s strategic partnership with Russia’s Tatneft. We will jointly study the feasibility of producing and processing heavy oil in Tatarstan.

To keep energy supplies up, heavy and unconventional oil will have to feature ever more prominently in the global energy mix – and Shell has the experience and some of the best technologies to unlock them.

### **Technology**

The energy industry has become much more of a technology and innovation play than a lot of people realise. The world of energy is a world of:

- super computers,
- submarine robots,
- smart wells,
- wind-energy driven monotowers,
- 4-dimensional seismic models,
- a network of 24/7 real-time operating centres to support drilling operations across the globe.

Shell spends more on advancing energy technology than anyone in the industry. In 2006 we spent \$885 million on R&D and our aggregate technology investment was \$1.2 billion.

R&D is about putting a lot of money *into* brainpower. If you stop there, it’s a wasted effort. The key is to earn money *from* brainpower; that’s called innovation.

We currently have a Chief Technology Officer and seven Chief Technologists who can launch new ideas, serve as role models for our younger engineers and are responsible for measuring our technological performance against that of our competitors.

Our increased emphasis on technology is beginning to pay off: Shell is now recognised as having the strongest patent portfolio in the industry by both the US Patent Board and the Intellectual Asset Magazine.

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We apply our technological and other capabilities where they make most difference:

- We prolong the lives of mature basins around the world – this is what I mean by keeping open *existing* options. Imagine: if we increased what we expect to recover from reservoirs globally by just 1% it could perhaps yield 20-30 billion barrels of additional oil. Shell's Smart Field technology has helped increase ultimate recovery by 3-8% in Brunei's Champion West field.
- At the same time we create *new* options by moving into unconventional resources, such as the Canadian oil sands, contaminated gas in Australia and heavy oil.
- And we develop giant integrated gas projects such as the Pearl project in Qatar. This project has everything today's IOC must master: a good working relationship with the host government, size, complexity, integration of upstream and marketing, and, of course, innovation. When the Pearl project goes on stream, the aim is to produce 140,000 barrels a day of Gas to Liquids products.
- We are also actively developing our business in *conventional* hydrocarbons. For instance, there are potential growth opportunities in places as far apart as the Gulf of Mexico, Ukraine and the Atlantic Margin covering Ireland, the UK and Norway.

Clearly, finding more work is not the main challenge for IOCs like Shell. On the contrary: we have plenty of investment opportunities.

It is tempting to end this speech right here, but the energy challenge isn't just a question of supply and demand. It is also about minimising our environmental footprint and cutting CO2 emissions from the use of energy.

### ***Life-spans in the industry***

The climate change challenge is a reason for some people to suggest that the world should

dive straight into alternative energy and that the oil and gas industry should be the first to dive.

Sometimes a bit of historical context helps us to better understand the future. When *oil* and later *natural gas* became dominant fuels in the world's energy system, the world did not stop using *coal* – in fact we use more coal today than the world has ever done.

As the world develops alternative energy, it will not stop using oil and natural gas – it just means that we add new energy types to the global energy mix.

A transition from a high-carbon to a low-carbon world is possible and necessary, but it will not happen overnight.

The pace of change in the global energy system is constrained by the sheer scale and complexity of the energy system we have built.

As I've said before, the energy system is not like a tabletop model railway system, to be taken apart and rebuilt in different patterns whenever the fancy takes.

The energy industry takes huge, multi-billion dollar investments that are made with a life span of 25-35 years in mind. Once you've built your installation, you can replace parts and make efficiency improvements at relatively low cost.

For instance, in the United States, there are around 500 coal-fired power stations with an average age of 35 years, which would seem to make their replacement inevitable and desirable from a CO2 emissions management perspective. However, without a price on CO2 emissions, these power stations are more likely to be patched up than to be replaced early.

If, on the other hand, the United States were to put a price on CO2 emissions, this would stimulate the broader application of coal gasification technology in combination with carbon capture and storage, CCS.

### ***Alternative energy***

In contrast to public perceptions in North America and Europe, fossil fuels will continue to meet most of the world's growing energy needs well into this century.

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Fossil fuels presently meet about 80% of global energy demand, whereas biofuels, hydro-power, wind and solar energy currently supply no more than 5%, with hydro-energy taking up the lion's share.

The key disadvantage of renewables is that, as yet, the costs are too high for consumers, unless they benefit from government subsidies.

In 2001 Shell published long-term energy scenarios. One of these saw alternative energy growing to around 30% of predicted global energy demand by 2050. Whether you include hydro-electricity or not, the 30% remains a very optimistic scenario. And heroic efforts will be necessary to turn it into a reality.

Societies as a whole, not individual companies or industries, must be willing to invest in the development of alternative energy.

Consumers may have to accept higher energy bills to boost the growth of renewables. Germany is an interesting example: subsidies for solar and wind energy projects are financed by a surcharge on the electricity bills of German households.

The world expects companies like Shell to provide, energy that is not only *clean* and *convenient*, but also *cheap*. We call this the three Cs. Alternative energy currently is not competitive without subsidies.

In countries where the price of energy is relatively high, like Japan, alternative energy can compete more quickly than in countries where energy is relatively cheap, like the United States.

There are promising developments. The cost curve for *wind* energy has come down substantially in recent years. Globally, wind power generation has quadrupled between 2000 and 2006. And Shell is a major player – especially in the United States.

The number of wind turbines may have to grow from around 30,000 today to one million. Their capacity will have to be significantly larger than the ones we have built so far. And we would have to find more efficient ways of storing surplus energy and transporting it from the wind parks to the end-users.

Another possibility is *solar* energy. Theoretically, the sun could provide more

energy than humans would ever need. But it is difficult to tap into the sun's energy in energy-efficient and cost-efficient ways.

Shell has ceased its activities in silicon solar panels. We found out that we don't have a competitive advantage compared to established players in the whole value chain, including the production of silicon wafers.

Instead, we have invested in thin film technology, which requires 100 times less primary resources than silicon-based technology and has the potential to be cheaper.

To put this all in perspective: if you were to equip 20 million roofs in northern Europe with 4 square meters each of silicon solar panels at the current state of technology, you end up with the same amount of electricity as provided by one regular coal-fired power station.

Shell is also investing in hydrogen demonstration projects and developing second-generation biofuels made from non-food crops and plant waste.

Renewables have in common with other new technologies that they take time to mature.

The principle is always the same: new energy technologies have to go through extensive Research & Development and Demonstration before they are ready for Deployment on a commercial scale. You can't speed up this process by throwing billions at a new technology when you are still doing tests in laboratories. At this stage, it is more important to have the right ideas and the right people to take a promising new technology further.

Once alternative energy has been brought down the cost curve – as soon as it is not only clean, but also as convenient and cheap as fossil fuels, Shell will become a player in alternative energy on a scale that befits the size of our company.

But we at Shell have learnt to concentrate on what we do best. And our competitive edge lies in large-scale, integrated fossil fuels projects.

#### **Role of government**

*Governments* can create frameworks that support the development of new energy technologies – by connecting government specialists with

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scientists and industry specialists – by financial incentives, or by mandates.

In particular, governments should throw their collective weight behind technologies that will *only* mature *with* government support.

The best example is Carbon Capture and Storage – CCS. CCS places additional capital costs on investments that we cannot earn back through revenues; it is driven entirely by climate change considerations.

CCS will only take off if governments put a price on carbon and give direct support to CCS pilot and demonstration projects. Plans for two CCS-plans in Norway and the UK were recently shelved because they proved too costly. A positive sign is that the European Commission wants 10 to 12 large-scale CCS demonstration projects to be operational by 2015 and commercially ready by 2020.

In the meantime, to smoothen the transition from a high-carbon to a low-carbon energy

system, we should work to improve energy efficiency in the industrial, transport and residential sectors.

#### **Conclusion**

Fossil energy is more wanted than ever. International Oil&Gas companies like Shell are part of a growth industry. Over time, CO2 solutions will be found and applied.

And we are a growth industry in terms of the investment in new supplies that is required to meet the demand for energy.

We are a growth industry in terms of our ability to open up new hydrocarbon frontiers.

And we are a growth industry in terms of the new energy and environmental technology options that we are creating for the future – so we will be able to help the world make a relatively smooth transition from a high-carbon to a low-carbon world.

*Thank you.*

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