



Role of innovation in nation building – the Shell perspective

Shell Malaysia Innovation Summit 2013
“Innovation Driving Development”

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Appointed the Executive Vice President of Shell Integrated Gas on 1 January 2013 and based in Singapore, Maarten is accountable for Shell's global Liquefied Natural Gas (LNG) and Gas-To-Liquid (GTL) businesses.

Joining Shell Downstream in 1995, Maarten has worked in Europe, Brazil and Africa where he became Vice President of Finance & Information Technology (IT).

He then moved to Upstream. He was Vice President Finance in the Middle East, and Vice President Finance and Commercial for Russia/CIS. In 2009 he became Executive Vice President Finance, Upstream International.

Maarten is Dutch with an Economics degree from Groningen University and a post-doctorate degree in Controlling from VU University Amsterdam.

Maarten is married with three children. In addition to spending time with his family and friends, Maarten likes reading, music, arts, football, sailing and golf.

Innovation plays a vital role for national governments and industry in balancing the challenges of economic development, energy security and the environment. In this speech to the Shell Malaysia Innovation Summit, Maarten Wetselaar, Executive Vice President of Shell Integrated Gas, says that as energy demand in Asia grows, natural gas can become part of a secure, competitive, affordable and sustainable energy future that addresses those challenges.

Thank you Iain

Distinguished Guests, ladies and Gentlemen,

Good morning!

I am very pleased to have the opportunity to speak to you about the role of energy and innovation in nation building as we open the Innovation Summit in Malaysia, a country that is very important to Shell and the energy industry.

Before I start, I'd like to ensure you understand that any future projections I may give are just estimates...

Shell and Malaysia have a long history together dating back to 1891. Today, Shell's presence in Malaysia has expanded to the full energy value chain, the Upstream, Downstream, Projects & Technology, and in Shared Services.

We are honoured to be part of the nation's growth agenda and our long history is marked by many significant achievements here.

This includes many firsts for the industry globally and in the region, such as the world's first Gas-to-Liquids (GTL) plant built in Bintulu, and we are now working together with Petronas on Asia's floating production platform located in deepwater off the coast of Sabah. These are good examples of innovation in the energy industry.

Malaysia is also host to the Shell Eco-Marathon (SEM) Asia since 2010 – an innovation event that challenges teams of science, engineering and technology students around the world to design,

build and drive the most fuel-efficient vehicle possible.

SEM Asia has been a truly regional event since it was first launched in Malaysia in 2010. Every year, students from all over Asia come to KL for an exciting 3 days to put their creativity and innovation to the test at the racing track in Sepang International Circuit. We are truly grateful to the support and help from Malaysian government to make SEM a reality in Asia.

As a leading economy in ASEAN, the Malaysian Government announced its Economic Transformation Programme (ETP), which seeks to progress the nation to a new height by developing key sectors and increasing skills.

Similarly, Shell aims to be the most competitive and innovative energy company in the world. I see innovation as key to both us in the energy industry and Malaysia that aspires to grow in a sustainable manner.

Let me share with you our perspective of the energy challenges before I talk about the role of innovation.

The world's population is growing by 200,000 people a day, and by 2050 will reach 9 billion (from 7 billion today).

The greatest growth in urban population will be here in Asia where urbanisation is occurring at the fastest pace.

Asia has experienced a historic transformation as its countries have moved from rural to urban societies. The urban population is expected to increase by 1.4 billion by 2050 (UN data).

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In Southeast Asia the urban population has almost doubled in the past two decades: some 44 per cent of the population now lives in urban areas and it is expected that this proportion will rise by two-thirds by 2050.

There will be strong growth in energy consumption in cities – they currently consume 75% of the world's total energy and this will increase to nearly 80% by 2040.

Asia's growing cities will demand more energy as the emerging middle class buy their first air conditioners, televisions and computers.

Power generation is expected to account for more than two-thirds of Asia's incremental energy demand through 2030, with coal projected by industry analysts to account for 70% of the new power generation capacity. Given the air pollution challenge faced by Asian cities, gas should be a better choice for power generation, as gas is cleaner burning than coal.

Globally, this means a doubling of energy consumption (from 2000 levels) by 2050.

Where will this energy come from?

Shell's scenario planners think that renewable energy sources could supply up to 30% of the world's energy by 2050 – up from 13% today.

The course and speed of the transition will depend in large part on government policies and how companies and individuals respond.

The focus should be on practical, cost-effective solutions that produce results, but let's remember that new energy sources take decades to develop.

So if renewables could meet 30% of the world's energy by 2050 – and this would be a tremendous achievement – the IEA expects that fossil fuels will provide 60%,

with the rest coming from nuclear. At Shell we expect hydrocarbons to continue to meet around 65% of global energy demand by mid-century.

A more sustainable energy system is one that has more sustainable hydrocarbons at its core.

So governments looking to supply the increasing energy demand of people will need to be able to balance 3 major policy objectives: guarantee a reliable supply of energy; ensure energy sources are as competitive and affordable as possible; tackle climate change and improve local air quality.

We believe that natural gas is uniquely positioned to address the challenges faced by policy makers in Asia as part of a secure, competitive, cleaner energy future.

We see demand growth being driven in Asia as well as the Middle East and the Americas, primarily in the power and industrial sectors.

And when you consider that air pollution is among the top risk factors in the world today with the greatest impacts among people in the developing countries of Asia, this underscores the need for effective action to reduce exposure¹.

We expect to see global gas demand growing by over 60% from 2010 to 2030 – and this presents a major opportunity for the industry and Shell. And as the cleanest burning fossil fuel this is good news for the global community.

Natural gas is poised to play a more important role in the global energy picture.

Jobs

For countries with large domestic gas resources – like Malaysia – the impact of developing and bringing substantial additional volumes of gas on-stream can be transformational.

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In 2012 the United States "unconventional revolution in oil and gas" added \$62 billion to federal and state government revenues, a number that could rise to about \$113 billion by 2020.

New reserves of tight and shale gas are helping the United States rebuild its economy and become more competitive as well as significantly improving its outlook for energy security.

Lower CO₂ / Environmental acceptability / Coal

From production through to use in generating electricity, natural gas produces around half the Greenhouse Gas Emissions compared to coal.

Gas-fired power is the natural complement to renewables. By rapidly ramping up and down in response to fluctuations in wind and solar power, natural gas enables the efficient integration of renewables into the power grid and can help meet CO₂ emissions reduction goals at a lower cost than stand-alone renewable plants.

Coal is responsible for as much as 44% of energy-related CO₂ emissions and met almost half of the increase in global energy demand over the last decade.

But it's not just about Greenhouse Gases. More sustainable energy also means fewer emissions of fine particulates, mercury, sulphur oxide and nitrogen oxide that are detrimental to the environment and physical wellbeing.

Around the world, fine particulate matter causes about 8% of lung cancer deaths, 5% of cardiopulmonary deaths and 3% of respiratory infection deaths.

To put that into perspective, one person dies every 10 seconds from air-quality related diseases¹.

Well documented studies by academia and the World Bank have shown that air pollution easily costs up to 4% of a nation's GDP. To put that into perspective, air pollution in Asia would consume 20 cents to every dollar of government revenue raised.

And more efficient, liveable cities deliver benefits beyond just reducing demand for energy. They are healthier, safer, and more attractive to talented workers.

Governments must now explicitly recognise the impact of coal and introduce strong policy action to stem the growth of emissions from coal-fired power generation.

Smarter Planning / Infrastructure

As populations congregate in cities, governments must provide the right infrastructure to encourage smarter planning and the use of cleaner energy.

Cities are already responsible for some 70% of global greenhouse-gas emissions and countries with high urbanisation rates emit more CO₂ per capita.

Smarter city planning that incorporates natural gas infrastructure to accommodate distributed natural gas-fired combined heating or cooling with power generation (co-generation) offers not only significant gains in efficiency but also helps to reduce total air pollution and CO₂ emissions.

Shell has started engagements with governments and mayors in the US, Europe, China and other emerging economies of Asia and Latin America to understand how cities develop and their impact on energy supply and demand.

For example in China, Shell entered a two-year agreement with the Central Government's think tank, the Development Research Centre, to jointly study the country's mid-to-long-term energy strategy. An important part of this work is to consider different models for sustainable urban development.

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And in 2012, Shell agreed to work on joint urbanisation studies with Singapore's Centre for Liveable Cities.

Shell's strategy seeks to reinforce our position as a leader in the oil and gas industry while helping to meet global energy demand in a responsible way.

We strive to create competitive returns for shareholders.

Safety, environmental and social responsibilities are at the heart of our activities.

Intense competition exists for access to upstream resources and to new downstream markets. But we believe our technology, project-delivery capability and operational excellence will remain key differentiators for our businesses.

We focus on a series of strategic themes, each requiring distinctive technologies and risk management:

Our upstream and downstream 'engines' are strongly cash generative, mature businesses, which will underpin our financial performance to at least the end of this decade.

Our growth priorities are in three strategic themes, namely integrated gas, deep water and resources plays such as shale oil and gas (Unconventionals). These will provide our medium-term growth, and we expect them to become core engines in the future. Here, we use the advantages of Shell's technological know-how and global scale to unlock highly competitive resource positions.

Our commitment to technology and innovation continues to be at the core of our strategy.

Partnership is core to deliver our strategy, and we seek to develop innovative thinking and approach together with our partners around the world.

For example, Qatar Shell aims to merge our strengths with the aspirations of the Qatari people, and we do so always in partnership with Qatari institutions. In partnership with Qatar Petroleum we cover the value chain of the natural gas business. Gas to liquids (GTL) through Pearl GTL, Liquefied natural gas (LNG) through Qatargas 4, Petrochemicals through the Al Karaana project, and with Qatar Petroleum International in Singapore, exploration, shipping and distribution.

Partnering with China is another example. China is focused on developing a safer, cleaner, secure energy future that can fuel their economic growth and support the needs of nearly a quarter of the world's people.

China knows that will require a team effort. It has reached out in innovative ways to build relationships with global energy companies. So we are developing tight gas resources with China National Petroleum Corporation, helping to expand supplies of this cleaner-burning fuel. Together we are exploring for gas in the Sichuan Province.

At the same time, CNPC is also an equity partner in our Groundbirch gas project in Canada. China gets access to Canada's surplus of energy, CNPC gets access to international technology and growth opportunities, Canada gets access to a vital energy market, and we create value for our shareholders.

By working with China and its energy companies on international projects, we not only create new investment opportunities, but also promote a global energy infrastructure based on shared best practices and smart technologies. Everyone wins.

Here in Malaysia, since Shell became contractor to Petronas in 1976, our partnership has developed over decades and contributed to the nations' development agenda. I am sure we will continue this partnership in an innovative manner to respond to the future energy challenges.

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Since the late 40's, when the first commercially viable offshore oil well was drilled in the Gulf of Mexico, the oil and gas industry has continuously pushed the boundaries into ever more challenging offshore locations.

Technology innovation impacts the natural gas industry and its competitiveness in different ways.

For example, innovation helps bring more gas to the market – this is especially important in a world that needs more energy. Innovation can help counter the ever increasing cost pressure we have to contend with in the oil and gas industry; and innovation can drive down the environmental footprint and impact of the natural gas supply chain.

Proven technological innovation differentiates Shell. We are the world leader in liquefied natural gas (LNG), Floating LNG (FLNG) and Gas-to-Liquids (GTL).

As a pioneer and a leader in the LNG industry; we helped design and build the first commercial onshore LNG plant in 1964 – and have been designing and building such plants ever since.

Gas-to-Liquids

I won't go into too much detail here, as my colleague Ate Visser will cover this tomorrow. But let me share a few key points.

Almost 40 years ago, Shell began researching how to convert natural gas into liquid fuels, lubricants and chemical feedstock.

In 1993, we built the world's first commercial GTL plant in Bintulu, here in Malaysia. Since then, we have continued to build on our expertise and filed over 3,500 patents covering all stages of the GTL process.

The plant produces products such as naphtha, Kerosene, gasoil, drilling fluids, linear paraffins, and both liquid and solid waxes. These are then sold in 50 countries including most of Europe, the US and Asia.

At Shell we often say that SMDS was the oyster that helped produce Pearl - the world's largest GTL plant.

The Pearl GTL plant delivered its 100th cargo end 2012 and produced GTL Jet fuel, the first new aviation fuel to be approved globally in over two decades¹.

Our Pearl GTL plant illustrates our ability to work with national partners to create and operate very large scale projects. Its output of fuels and other liquid products made from natural gas help Qatar diversify its national revenues.

With recent advances unlocking vast new supplies of natural gas across the globe, Shell is exploring additional natural gas-to-liquids opportunities.

LNG for Transport

For example, we are excited about the opportunities we are unlocking for LNG in transport.

As an alternative to diesel, it's another smart way to reduce emissions of sulphur-oxides and particulates.

In Jumping Pound, Canada, we are building our first 0.25 mtpa small-scale LNG plant for supplying trucks with LNG along a busy route: what we're calling the "Canadian Green Corridor".

This business is fast becoming material in size as fleet owners realise the economic and environmental benefit of using LNG over diesel in environmentally sensitive and regulated locations.

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I firmly believe that the most exciting new development in LNG over the last few years has been Shell's FLNG.

FLNG is a current example of a really impactful innovation. It is a great example of how we move quickly to use technology advantage to commercialise resources while successfully meeting broader stakeholder needs.

This innovation will enable the development of gas resources ranging from clusters of smaller more remote fields to potentially larger fields via multiple facilities. In many cases at a lower cost than going onshore. And with a much reduced environmental footprint.

Many of you may have heard about Woodside's decision to use Shell's FLNG technology as the development concept for the Browse resources. We believe our technology is the fastest, most economic and the best technical solution available for Browse.

Making FLNG a reality is no simple feat; Shell is uniquely positioned to make it a success given our commercial capability; our LNG, offshore, deepwater and marine technology; and our proven ability to successfully deliver megaprojects.

Innovation such as Shell FLNG provides the opportunities for nations to unlock additional reserves that otherwise would not be tapped. In turn, it will create jobs, tax revenue and new opportunities for businesses.

Let me conclude.

We are entering into a dynamic energy era. Energy demand is set to double and

the role of natural gas is set to grow in the energy mix.

The growth of Asia's megacities and fast urbanisation, with increased congestion and pollution, presents policymakers with a big challenge and an opportunity: How do you fuel development in an environmentally sustainable way?

We believe that natural gas is uniquely positioned to address the challenges today, tomorrow and as part of a secure, competitive, affordable and sustainable energy future.

Innovation plays a vital role for national government and industry to tackle the challenges arisen from economic development, energy security and environmental pressure.

For countries blessed with natural resources – such as here in Malaysia – the opportunity to continue to develop your resources in a way that enhances your nation building is substantial.

At Shell, we aim to contribute strategically with our partners to help generate measurable social impact and link to our core business strengths including our innovation.

I see fertile ground for further innovation and value creation for both the industry and Malaysia. As a long term investor and partner in Malaysia, Shell is committed to creating a positive legacy – a contribution to the nation that we and our partners can be proud of!

Thank you.

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