

TOWARDS A SUSTAINABLE ENERGY ERA

Presentation to the petroleum Association of Japan, February 2008

Ladies and gentlemen, good morning.

My name is Richard Sykes and I am the Executive secretary of IPIECA – the International Petroleum Industry Environmental Conservation Association. Let me start by saying by saying two things:

- Firstly what an honour it is to be invited to Tokyo to give this key note address by the Petroleum Association of Japan.
- Secondly to apologize. My expertise does not lie in the area of oil spill response, so I prefer to talk about progress towards a sustainable energy era. However I will refer to the work of IPIECA's Oil Spill Working Group and work going on here in East Asia.

My presentation will have three parts:

- About IPIECA
- Some marine and oil spill issues
- A Journey towards a sustainable energy era.

ABOUT IPIECA

IPIECA is the single global association representing both the upstream and downstream oil and gas industry on key environmental and social issues.

The Association was founded in 1974 following the establishment of the United Nations Environment Programme – UNEP, and provides a principal channel of communication with the UN.

We comprise 29 Corporate members which include the super-majors – BP, Chevron, ConocoPhillips, ExxonMobil, Shell and Total; as well as leading national Oil Companies such as Petronas, Petrobras and Saudi Aramco.

In addition we have 11 Association members. As well as PAJ, we have the American Petroleum Institute – API and in Latin America ARPEL.

One of the main challenges for IPIECA is to identify the emerging issues that could affect the oil and gas industry in the years ahead. Let me share 3 examples with you.

- Firstly, it is increasing difficult for companies to gain access to new business opportunities. With oil prices at \$100/bbl, Governments are increasingly seeking to keep control of their resources and National Oil Companies are likely to play an increasingly important role in the future. You will have read about the challenges in respect to Shell's project in Sakhalin and

some of BP's Russian assets. Alleged non-compliance with environmental regulations is often part of these discussions.

- Secondly the future energy challenge. Concerns about remaining reserves of oil and gas (the 'peak oil' debate), security of supply, high prices and the consequences of a carbon-constrained world combine to fuel a strong debate about the future direction of energy. I will return to this topic in the third part of my presentation.
- Another concern is that in some parts of the world of oil and gas is perceived as a 'sunset' industry with an aging infrastructure and an aging workforce. This gives rise to concerns about safety, asset integrity (including oil spills) and the challenge of attracting and retaining new graduates.

Looking forward, IPIECA's Vision is of an oil and gas industry that successfully improves its operations and products to meet society's expectations.

How do we aim to work towards that Vision? Four main ways:

- Developing, sharing and promoting sound practices and solutions – the Oil Spill Report Series, our guidance on public reporting and our Greenhouse Gas Monitoring and Reporting Guide are all excellent examples;
- Enhancing and communicating knowledge and understanding;
- Engaging members and others in industry, and
- Working in partnership with key stakeholders. Here let me mention the Partnership for Clean Fuels and Vehicles with UNEP. We have now eliminated lead in fuels in sub-Saharan Africa and we will complete the global phase-out by the end of 2008.

For major issues we set up member-led Working Groups supported by the Secretariat. At present we have 6 such groups on biodiversity, climate change, oil spill response, operations/fuels/products and social responsibility.

OIL SPILLS/MARINE ISSUES

Please allow me a few words on our oil spill activities and some of the marine issues we face as an industry.

I believe that oil spills is one of the biggest risks we face in the oil industry. History is littered with a series of environmental disasters that linger in the public memory. The need for a professional response capability was illustrated in December 2007 by the accident in South Korea in which more than 10,000 tonnes of crude oil was washed up onto beaches.

The IPIECA approach to oil spills comprises 4 key concepts:

- Implementation of relevant international conventions
- Cooperation between industry and government at national, regional and international levels
- Application of the tiered response concept, and

- Application of scientifically-based risk analysis.

We have published the Oil Spill Report Series – 17 volumes of high quality information on contingency planning, biological impacts, the international compensation regime and international oil spill resources.

This global point of reference has been translated into Arabic, Chinese, French, Spanish and Russian.

On the ground, IPIECA and the International Maritime Organisation – IMO – have established a partnership which is called the Global Initiative. The aim of GI is to improve and sustain the capacity of developing countries to protect their coastal resources at risk from an oil spill. The methodology that is applied is for IMO to leverage governments and IPIECA to leverage industry; to utilise the IPIECA Report Series and hold joint workshops and training sessions.

These GI regional collaborations have been established in the Mediterranean, West and Central Africa, the Black Sea/Caspian Region and the Caribbean.

Following regional workshops in Australia and China, several IPIECA member companies have agreed to fund the first phase of a GI programme in East Asia. This involves reviewing work done to date and preparing a long term Action Plan due to be completed in September 2008.

Let quickly refer to some of the other issues related to the marine environment that affect our industry. The first three on this list are managed by our colleagues in the International Association of Oil and Gas Producers – OGP:

- **Decommissioning** refers to the removal of pipelines and platforms at the end of their economic life. This is an issue in mature offshore oil and gas provinces and the risk was first highlighted by Shell's Brent Spar facility in 1995.
- **Access** to new business opportunities will be constrained by governments introducing Marine Protected Areas to protect endangered biodiversity
- Non-governmental organisations have also expressed concern at the impact of **noise** from seismic survey vessels on marine mammals. OGP has set up a Joint Industry Project and will spend \$20 million on research over 3 years.
- **Ballast water** discharge and the introduction of alien invasive species are two other issues that can also impact biodiversity
- Shipping emissions have been in the news this month as the IMO's Bulk Liquids and Gases Subcommittee – BLG - considers an industry paper on the reduction of **sulphur** in marine fuels. We have sought to counter the proposal by Intertanko for a global move from heavy fuel oil to distillates, which we believe is unnecessary on environmental grounds and could cost the refining sector over \$100 billion to upgrade facilities as well as distorting the land-based fuel markets. IPIECA's proposal is to reduce the global sulphur cap from to 3.5% and sulphur limits in Sulphur Emission Control Areas (SECAs) to 1% in a timeframe to be agreed with the IMO.

TOWARDS A SUSTAINABLE ENERGY ERA

And so to the third part of my presentation.

I want to take you on a journey towards a sustainable energy era. I will ask a number of questions about what needs to be done, and offer some suggestions as to how the oil and gas industry might evolve in the coming years.

- What is the current state of the world? How is it changing? What does society expect of us as an industry?
- What do we mean by sustainable energy? What are our objectives? What are we trying to achieve?
- How will we get 'there'? What can we do ourselves and where do we need to work together with others?

THE WORLD WE LIVE IN

Let's start by looking at the state of the world and how it's changing. Why? Because it's our business environment and these changes drive society's views and their expectations of us.

I was born in 1949. Frankly, the changes that have occurred during my lifetime are amazing:

- The world's population has more than doubled to over 6 billion people
- The number of megacities has increased from 2 to 25
- Greenhouse gas emissions have increased 5-fold to 7 billion tonnes of carbon
- Annual water use has tripled. Acute shortages are beginning to emerge.
- The annual fish catch is now 100 million tonnes. The Grand Banks of Newfoundland and the North Sea are now virtually exhausted
- The world has lost one third of its tropical rainforests, together with the plants and animals that once lived there.

Questions are being increasingly asked if these changes are sustainable.

Looking forward, how do the scenario planners envisage the world in 2050?

- A world of 9 billion people
- A world that is 4-5 times richer, with most of the extra wealth coming from rapidly industrialising developing countries
- A world using double the amount of energy, twice as efficiently. In other words using half the amount of energy to produce each dollar of wealth, and
- A world using 10 times more energy from renewable sources.

SOCIETIES CHANGING EXPECTATIONS

As the world changes, so do society's expectations of us as an industry.

Today's world is a connected world, with:

- Connections between people, planet and profits – failure by business to address environmental and social concerns will damage our bottom line, and
- Connections between Government, Business and Civil Society.

Each of these players has roles and responsibilities.

- Government sets the rules. In addition, politicians are increasingly worried about security of supply. America imports 60% of its oil. Europe is increasingly dependent on supplies of Russian gas.
- Civil society reflects people's broader concerns on a range of issues. Climate change, biodiversity and human rights are just some of those that affect the oil and gas industry.
- The prime role of business is to provide products that meet customer's needs. But it must also comply with the rules and respond to society's concerns.

Some leading companies have chosen to respond by making a commitment to contribute towards sustainable development. For a company like Shell [refer earlier to career] this means:

- **Integration.** Environmental and social considerations can be some of the biggest risks a company faces – they should be fully integrated into all aspects of business planning and implementation. People, Planet *and* profits
- **Balance.** Financial analysts focus on the next quarterly results, but climate change is a 100 year + issue. There needs to be a balance between shorter and longer term priorities. It's also about the sustainability of companies. How many of the leading companies in 1949 are still in existence today?
- **Inclusivity.** The recognition that as an industry we don't have all the answers. We need to engage those stakeholders who will be impacted by our operations and seek their opinions. All of them have a voice, some have a vote, a few have a veto.
- **Accountability.** Companies need to be open and transparent about their performance. Public reporting is now an expectation. IPIECA has developed voluntary industry guidance on sustainability reporting.

Sustainable development **is** about making better business decisions by being well-informed about stakeholder's views, open communication and working in line with a company's values.

Sustainable development is not about the abrogation of decision-making to stakeholders, soft PR and advertising – what NGOs would call greenwash – or social philanthropy.

There are benefits for a company in adopting a sustainable development mindset. Value can be created in a number of ways – reducing risks, creating opportunities and attracting human and financial resources:

- Reducing costs by using less energy and fewer materials, generating less waste for disposal
- Identifying new business opportunities and developing innovative product offerings to customers becoming more concerned about environmental and social issues
- Reducing project delivery risk by thorough impact assessment and meaningful stakeholder dialogue, and
- Enhancing reputation such that a company becomes a partner of choice for governments, a preferred employer for graduates and earns the trust of society.

This quick look at our changing world suggests that moving towards sustainable energy requires us to address three areas:

- Meet growing energy demand,
- Address energy security concerns, and
- Reduce environmental and social impacts, and

SOME ELEMENTS OF THE JOURNEY

Let's put our industry into perspective. We have already seen a number of energy and transportation 'eras'. They have lasted on average about 50 years. New eras need new infrastructure and this takes time to put in place. Coal-fired power plants being built today without state-of-the-art technology will continue to emit large amounts of CO₂ well into the future.

Having established what society expects from us. Let's set off on our journey and see what practical actions we can take to show how responsible companies are working to meet the global energy challenge.

Values and principles

The starting point of the journey is for leaders to decide on the values and principles that will guide the way a company conducts its business. The Chief Executive and his/her Leadership Team must say publicly what they stand for, and be seen to do what they say they will do. This includes:

- Working with stakeholders to understand the biggest environmental and social issues you face. The challenge is that social engagement is not among the skill sets of most engineers, who are incentivised to deliver oil and gas projects on time and on budget. Stakeholder engagement is not just a box to be ticked. Stakeholders must be treated respectfully – they expect and deserve a response.
- Identifying areas where others can help and develop partnerships, and
- Publicly account for performance.

Operational excellence

- One way to progress on this journey is operational excellence , continually improving our performance, making the most of what we've already got. Extending the economic lives of existing oil and gas fields.
- The industry has an excellent track record on improving oil and gas field development. Deviated and horizontal wells mean less casing, fewer chemicals, less discharges to sea, less land take and greater productivity. These changes have been driven by economics, but deliver significant environmental benefits.
- The industry has been less successful in managing asset integrity. There have been a number of major incidents recently such as the Texas City refinery explosion in the United States and the Buncefield depot fire in the UK.
- As oil and gas fields come to the end of their economic lives, a number of sustainability issues arise:
 - Companies will need to exercise care in asset sales to specialist end-of-life firms which may focus on business rather than environmental considerations. Beware the threat of liabilities for former owners.
 - Plans to dump the Brent Spar in the deep water of the Atlantic Ocean revealed NGO sensitivities about decommissioning. Companies need to consider all recycling and re-use options.
 - Thirdly, as long established land-based ventures draw to a close, there is an expectation that companies will play an active role in developing alternative employment opportunities for local communities.
- Reducing greenhouse gas emissions makes good sense for business and addresses society's concerns about climate change. We must utilise our engineering skills to find economically viable solutions:
 - Reducing gas flaring and venting. Gas venting of should not be permitted. It is wasteful and methane has a warming potential 21 times greater than CO₂. Major business opportunities are available from utilizing rather than flaring associated gas. In Nigeria, gas is now used in Liquefied Natural Gas export plants and to back out fuel oil at power stations.

- Improve energy efficiency. For refinery managers, energy use is the biggest single operating cost, so there is a strong incentive to improve performance.
- Carbon capture and storage, or CCS. This new technique of collecting CO₂ and storing it underground was developed because it was cost effective under the Norwegian government's carbon tax regime. The industry has worked hard to gain public acceptance and persuade governments to amend regulatory frameworks. But costs are high and two North Sea projects have recently been cancelled.
- Replenish human resources. Some of the major oil and gas companies have an ageing workforce. The perception in some parts of the world of the oil and gas industry as dirty and in decline can create a challenge in recruiting the top talent required to drive the industry forward.

Corporate Social Responsibility

Oil and gas companies have social impacts which can be just as important as environmental impacts. It is a newer area and one in which companies have limited expertise and experience. Let me highlight a couple of important issues:

- Good relations with local communities are essential for the sustainability of any long term operation. Early engagement with stakeholders affected by projects in remote and sensitive environments is essential – they will be your neighbours and if you don't get things right at the beginning, they can cause long term problems.

Opportunities for jobs and the procurement of local goods and services need to be balanced with the dangers of a 'boom and bust' cycle following peak construction activity.

- Companies also need to learn to address concerns about human rights. Examples include:
 - The use of armed security to protect people and assets
 - Resettlement of people to make room for new facilities.
 - Working in countries with poor human rights records, which can pose a threat to a company's reputation
- On social investment, sections of civil society see the industry as rich and a target for philanthropy. An oil price of USD100/barrel reinforces this view. Companies have dealt with this challenge in a variety of ways:
 - Best practice is to invest in business-related social issues. Just like any other investment – something that requires a return rather than philanthropy
 - From a philanthropic perspective, some leading companies have endowed foundations, for example to fund and develop sustainable solutions to poverty, energy and environment-related problems, such as addressing indoor air pollution in developing countries.

Developing new hydrocarbon resources, technologies and products

Another way forward is to extend the life of the oil and gas industry by making new hydrocarbon discoveries.

- The development of deepwater oil and gas fields.
- Companies are also seeking to access ever more remote and sensitive areas. However they need to apply rigorous operational standards and be able to demonstrate that they do not have an impact on biodiversity. The mining company Rio Tinto has made a public commitment that there will be no net loss of biodiversity from its operations.
- The industry has also been successful at expanding the use of natural gas:
 - In the past, gas was seen as a waste product in the search for oil. Its volume made transport to market difficult. The LNG process was a major technological breakthrough in the 1970's, and there is now a flourishing Atlantic trade based on Nigeria and Trinidad. However the energy to cool the gas is considerable and it can be difficult to obtain permission to build regasification terminals in Europe and North America.
 - Another recent development is Gas-to-Liquids (GtL), a process which produces high quality fuels. Initial pilot plants are now being scaled up to 100,000 barrels per day.
 - A longer term challenge is to commercialise the huge volumes of gas hydrates lying just below the Arctic sea bed.
- Recent oil prices rises have helped make oil sands commercial. Production in Western Canada is expected to reach several million barrels/day. Oil shales in the western US are also seen as having considerable potential. Both processes are energy intensive, but their location in North America has energy security benefits.
- Fuel quality is another important area with increasing demand for low- and zero sulphur fuels. Oil companies and vehicle manufacturers will need to work together to improve engine and fuel technologies, improve fuel efficiency and reduce emissions.
- One way of looking at the petroleum business is life from a 'wells-to wheels' perspective which includes the emissions from both the production/refining processes and the end use of the products. Most of the emissions come from the end use. The challenge is to reduce the overall level of emissions. Helping customers reduce their own emissions may mean companies increasing their operational emissions because of deeper refining to manufacture cleaner fuels.

Developing alternative energy sources

Concerns over climate change and energy security have resulted in a growing interest in alternatives to fossil fuels for transportation and electricity generation.

For transportation there is a strong push by some governments for biofuels. However a number of challenges remain to be solved:

- Rises in prices for agricultural products and land in both Europe and North America have triggered inflation concerns and a more fundamental debate about whether land should be used to grow crops for food or fuel.
- In Europe, Governments may mandate a 10% biofuels requirement. However domestic first generation biofuels technologies can only produce about half of this volume, with imports making up the shortfall. The oil and gas industry has a reputational exposure here. Will rainforests be cut down to create land to grow biofuels? IPIECA hopes to work with others in developing international standards for sustainable biofuels, and appropriate certification schemes.

Second generation biofuels based on the use of agricultural wastes may be available within 5-10 years

- Hydrogen is a much longer term option that could be sourced from various feedstocks, including hydrocarbons. But it will require additional infrastructure to distribute it and modified engines to use it. The government of Iceland is developing the world's first hydrogen economy.

Wind and solar are the favoured options for electricity generation:

- Wind is the most economic, especially offshore where winds are stronger, larger turbines can be used and there is less visual disturbance.
- Solar, like biofuels, is developing second generation technology to drive costs down to enable competition with fossil fuels. The use of Copper Indium Diselenide (CIS) thin-film technology uses 100 times less raw materials than today's silicon crystalline models.

Working together in partnerships with others

The oil and gas industry cannot do everything itself. Some companies will choose to work some issues individually for competitive advantage, whilst others will be worked through industry groups such as IPIECA and yet others they will choose to partner with external organisations.

Working in partnership is a challenge. Often partners have very different mindsets and companies need to build trust to be able to work towards common objectives.

Here are a few examples from a report by IPIECA:

- Climate change is a global issue which needs a global response from all players. Through IPIECA, the oil and gas industry interfaces with the United Nations to bring business experience to the debates about science, policy and the need for carbon markets. A

specific example in the Global Gas Flaring Reduction initiative sponsored by a range of governments and many IPIECA member companies.

- Oil and gas companies have limited knowledge about biodiversity. One IPIECA member and the World Conservation Union, IUCN have been working together for 6 years to address operational challenges, share best business practices within the Union and assess the potential for biodiversity markets.
- IPIECA works with the United Nations Environment Programme, UNEP, to phase out lead in fuels. Sub-Saharan Africa is already lead-free and this will soon be the case globally.

CONCLUSIONS

Moving towards sustainable energy requires us to address three areas:

- Meet growing energy demand;
- Address energy security concerns, and
- Reduce environmental and social impacts, and

We can draw a number of conclusions about the journey ahead:

All energy sources will have to be used

- Oil and gas will be the predominant sources of energy over the next 20-30 years, but the industry will need to make the most of what it's got, develop new technologies, operate responsibly in sensitive environments and remain an attractive employer.
- There is plenty of coal in China, India, Russia and the United States and it's going to be used.
- The nuclear industry presents a low carbon option and will return to fashion.
- Renewables will make a small but rapidly growing contribution.

Choices will have to be made

- Developing countries will have to choose whether they prioritise climate change, air quality or poverty alleviation.
- Biofuels mean choices between using land for food or fuel
- In considering nuclear energy, governments and society will need to choose between safety and emissions
- In the developed world, people will need to think carefully about their lifestyles in a carbon-constrained world.

Governments need to cooperate

Somehow the strong difference of opinion between Europe, America and the G77 will need to be bridged. This is important for business which will invest trillions of dollars in energy projects and needs to know the cost of carbon after 2012.

In my view, the end result will be evolution not revolution. There will be a series of transitions and trade-offs. But at the end of the day, I believe that the human race will muddle through as it usually does.