IPIECA

The Paris Puzzle

The pathway to a low-emissions future

The UNFCCC negotiations have the potential to instigate a significant increase in the level of ambition, both for governments and for the private sector, in the global effort to reduce greenhouse gas (GHG) emissions and manage the risks of climate change.

Representing over 60% of international and national oil and gas production, IPIECA brings together industry leaders to work collectively towards progress on environmental and social performance.

Over the past two decades, IPIECA has actively participated in UN climate negotiations from Rio through to Lima. Ahead of, during and after the 21st Conference of Parties (COP-21) to be held in Paris in December 2015, IPIECA renews its efforts to engage with stakeholders and governments in the United Nations Framework Convention for Climate Change (UNFCCC) process.

KEY MESSAGES

- IPIECA recognises that addressing the risks of climate change is a challenge for our generation and will be for those to come. Meeting the challenge will require actions from all parts of society. Significant policy action, technology development and business response will be needed over many decades. The oil and gas industry can play a key role in helping society to meet the challenge.
- IPIECA supports and encourages governments in their efforts to reach an effective and clear international agreement to reduce greenhouse gas emissions and to manage the risks of climate change.
- IPIECA believes it is possible to address climate change risks while also meeting growing global energy demand and supporting economic development. As an industry we are already taking a range of actions across our own operations and products to support these goals.

The challenge: Transitioning the energy system

Over the past two centuries, oil and gas have become central pillars of the global energy system and the main drivers of economic development.

Today, oil production alone keeps one billion cars on the road, some 20,000 commercial jet airliners in the air and at least 50,000 trading vessels at sea. Natural gas provides almost 40% of residential space heating[1], 22% of electricity generation[2] globally and provides heat and motive power to a significant portion of the world's industrial base. Both oil and gas are essential feed-stocks for many manufacturing processes. Together, they currently provide over 50% of global primary energy supply[3]. The widespread use of these two resources arises from their many important benefits, including energy density, storability, transportability, flexibility of use and affordability.

Demand for oil and gas continues to rise in tandem with population increase and the industrialization of developing economies. Given the primary role of energy in raising living standards, access to energy is widely recognized as a fundamental priority. As such, the UN has listed "access to affordable, reliable, sustainable and modern energy for all" as goal #7 in the draft UN Sustainable Development Goals.

While enabling over 200 years of industrialization and development, the use of coal, oil and gas have contributed substantially to the rise in atmospheric carbon dioxide (CO_2) from 275 ppm in 1750 to 400 ppm today. This, in turn, has contributed to a warming of the climate system. Non-energy sectors such as cement calcination, agriculture, farming, forestry and land-use change are also major contributors to GHG emissions, and are equally or more difficult to mitigate. In order to stabilize atmospheric GHG concentrations and global temperature, the world will need to transition to a lower-carbon energy system.

UNFCCC GOAL

Using scientific findings, including those of the Intergovernmental Panel on Climate Change (IPCC), policy makers at COP-16 in Cancun reached political consensus on a global goal of limiting temperature rise to 2°C above pre-industrial levels, to prevent the worst impacts of climate change. They also recognized that deep cuts in global emissions are required and that Parties should take urgent action to meet this goal.

The IPCC 5th Assessment Report found that warming is proportional to the cumulative release of CO_2 into the atmosphere over time. The report noted that the cumulative release of some one trillion tonnes of carbon (or 3.7 trillion tonnes of CO_2) will likely result in warming of the climate system by approximately 2°C, with roughly half a trillion tonnes already emitted. The International Energy Agency in its World Energy Outlook 2014, projects in its central scenario that a 2°C carbon budget could be used-up by 2040.

Footnotes

1. IEA Energy Technology Perspectives
2. IEA WEO 2014
3. IEA WEO 2014

A pathway to a low-emissions future

IPIECA recognises that a low-emissions global energy system would look significantly different from today and that such a transformation would be a major challenge to accomplish.

Today, global CO_2 emissions from all anthropogenic sources stand at some 40 billion tonnes per annum. Energy use and CO_2 emissions occur far beyond the power generation and transport sectors, and are associated with the manufacturing or provision of almost everything we use, buy, wear, eat and do.

Recently, the concept of net-zero or near-zero CO_2 emissions has been put forward by stakeholders and proposed as a possible long-term goal under the UNFCCC. Net-zero CO_2 emissions means the sum of all emissions, including those from fossil fuels and various land-use sources, would match the emissions removed by carbon capture and storage and sinks including land and forestry. The achievement of a net-zero emissions goal would be extremely challenging.

Transforming the global energy system to be low-carbon would require extensive changes to many parts of society and economies. Significant support for mitigation technologies and approaches would be needed, energy economics and consumption patterns would need to change substantially, and consumers would need to accept these shifts.

Whatever the final destination, society, policymakers, business and civil society should start now in making the long transition.

IPIECA supports and encourages the international community's efforts to address the risks of climate change and believes the oil and gas industry has an essential part to play in this transition, by improving the efficiency of existing technologies and resources and contributing to the development of new ones.

The sustainable energy dilemma

An energy system that powers and moves a modern society, whilst also delivering significant global, economy-wide carbon reductions presents a sustainable energy dilemma. Each energy option has challenges that will need to be addressed to resolve this dilemma.

Oil

can efficiently provide most global energy transport services and some manufacturing and power needs, but products emit CO_2 when used.

Gas

is an affordable, secure option mainly used for industrial and domestic heating, but products emit CO_2 when used (though only half the emissions of coal when used for power generation).

Coal

can provide many global services and is essential for industries such as smelting, but products emit CO_2 when used and give rise to significant air quality issues.

Nuclear

can provide electricity with near-zero carbon emissions during operation, but suffers from high capital, waste disposal and decommissioning costs.

Hydroelectricity

large-scale hydro provides electricity only, but limited deployment and applicability with potentially significant ecological impacts and possible seasonal issues.

Solar

provides hot water heating and electricity, and is a near-zero emission energy source. With electricity output being variable it is currently dependent on legacy backup systems.

Wind

provides electricity only and is a near-zero emission energy source. Its variable output currently requires legacy backup systems.

Biomass and biofuels

could provide a significant offering in terms of services and goods, but scale, cost and land-use are currently issues.

Hydrogen (for storage/delivery)

could extend the reach of electricity-only sources of energy into other domains. Cost is currently an issue.

In general, most energy sources have issues to varying degrees around public acceptability and environmental impact. For fossil fuels, their use can be combined with carbon capture and storage (CCS) to mitigate CO_2 emissions, although significant barriers remain. Renewable resources and technologies have significant long-term potential and are growing fast – but suffer from cost, intermittency and other barriers and are starting from a very low baseline of energy delivered.

The pieces of The Paris Puzzle

The oil and gas industry must be a key part of the climate change solution. The industry's history of innovation, global reach, knowledge and technical expertise uniquely positions it to help develop and provide credible future energy solutions. The industry is already addressing many of the pieces of the puzzle. To this end, IPIECA has created a series of papers intended to address what we see as key components of efforts or 'pieces of the puzzle' to address climate change and demonstrate our commitment to meeting the challenge. These include: *Meeting energy needs*, *Effective policy*, *Managing our emissions*, *Natural gas* and *Carbon capture and storage*. Collectively, these papers highlight the fundamental role and contribution of our industry in addressing the challenge of a transition to a low-emissions future.

You can find each piece of the puzzle explored in more detail at www.ipieca.org

MEETING ENERGY NEEDS: THE UNIQUE ROLE OF OIL AND GAS

- Energy is essential for societal development.
- Oil and gas play an instrumental role in providing energy.
- All energy sources will be needed to meet growing demand, including renewables and oil and gas.

EFFECTIVE POLICY: THE DRIVER OF RESULTS

- IPIECA supports and encourages the international community's efforts to address the risks of climate change and believes the oil and gas industry has an essential part to play in meeting policy objectives.
- The long-term objective of climate policy should be to reduce the risk of serious impact to society and ecosystems, while recognizing the importance of abundant, reliable and accessible energy for the world's growing population.
- Effective policies to manage the risks of climate change will be those that are science-based, extend globally, are market driven and provide policy certainty but flexibility as understanding develops.

MANAGING OUR EMISSIONS: ENERGY CONSERVATION AND BEYOND

- Improving energy efficiency in the production of oil and gas can make a significant contribution to moving the world onto a more sustainable energy path.
- Conserving energy goes beyond traditional energy efficiency measures; it includes flaring reduction, control of methane emissions and other efforts.
- Oil and gas companies support consumers in reducing their energy usage and GHG emissions through efforts, including fuel conservation, alternative fuels and developing CCS technologies.

NATURAL GAS: INTO THE FUTURE

- Natural gas is the cleanest-burning fossil fuel and is increasingly accessible, affordable, abundant and flexible.
- Natural gas will continue to play a pivotal role in a global shift towards a low-carbon economy.
- There is a significant near-term opportunity to reduce global emissions by fuel-switching from coal to natural gas.

CCS: A KEY TECHNOLOGY FOR DELIVERING A LOW-EMISSIONS WORLD

- Carbon capture and storage (CCS) is a key technology for delivering significant emissions reductions during this century. Without it, deep cuts in emissions are likely to be more costly and, at worst, unachievable.
- CCS comprises a number of technologies that are widely used in the oil and gas industry and are readily available from a range of suppliers, companies and service providers.
- Deployment of CCS on a scale that makes a material contribution to reducing CO_2 emissions requires addressing current barriers, which include: cost, complexity along the value chain, regulatory/policy uncertainty, public acceptance, large-scale storage sites and long-term liability issues.

The importance of open dialogue

IPIECA strives for ongoing transparency and dialogue with stakeholders on the crucial topic of climate change.

IPIECA members have been engaging in UN processes on climate change for over 20 years.

Improving our understanding of the physical science of climate change, potential impacts, and options for mitigation and adaptation provides a solid foundation for decision making. IPIECA continues to partner with a number of academic institutions and projects aimed at improving knowledge, such as the Massachusetts Institute of Technology Joint Program on the Science and Policy of Global Change and the EU Joint Research Centre on the life-cycle analysis of our products. We regularly engage in the IPCC scientific assessment process and have contributed to both the Assessment Reports as well as Special Reports. IPIECA also organizes side-events at the UNFCCC's meetings to further facilitate and encourage active dialogue.

Reporting helps to establish a basis for transparency and facilitates the development of emission mitigation and risk management processes. Many companies within the industry were early adopters and developers of methodologies for accounting and reporting GHG emissions, with IPIECA developing the first sector guidance back in 2004[4]. Understanding the sources and quantity of emissions is essential to achieve the emission reductions that are needed. IPIECA continues to develop guidance for oil and gas companies on GHG reporting, including the IPIECA Sustainability Reporting indicators, and the GHG reduction project guidance series.

Our industry is a central part of the dialogue on the pathway to a low-emissions future. We underscore the importance of partnerships between all sectors and stakeholders to build on existing performance and expertise, improve understanding and ultimately make progress in meeting this complex challenge.

Much more needs to be done to address climate change. With the right policy frameworks and enablers to encourage investment in transforming technology, the public and private sectors and civil society can cooperate to achieve effective solutions. Our hope is that the Paris Puzzle package will help us to achieve positive conversations with stakeholders before, during and after COP-21 in Paris.

Photo description:
IPIECA's 40th Anniversary conference *The Power of Partnerships*. From Left: Christiana Figueres (Executive Secretary, UNFCCC); Rachel Kyte (Vice-President, World Bank); Mark Lewis (former head of energy, Deutsche Bank); Prof. Myles Allen (Oxford University); Rupert Thomas (Shell).

Footnotes

4. IPIECA corporate GHG guidelines, 2004.

THE ROLE OF IPIECA

IPIECA is a unique organization, representing the oil and gas industry on environmental and social issues. With our membership consisting of a diverse group of international oil companies, independents and national oil and gas companies, we strive to achieve a consensus view on climate change.

IPIECA aims to better enable oil and gas companies to meet societal expectations across a range of future climate and energy scenarios, by anticipating issues, informing on industry-relevant topics and promoting a closer dialogue with stakeholders.

In the field of climate change, IPIECA's achievements include developing industry guidelines on GHG reporting and a series of good practices on energy efficiency and GHG management. Additionally, IPIECA has a distinguished record of convening expert workshops to explore key climate-related issues and inform the industry and stakeholders.

IPIECA's role is not to lobby on policy or to define targets or minimum standards, but to:

- Be an enabler of good practice, through guidelines and technical information, thus raising the performance of members and the wider industry
- Make fact based information available globally to help the industry and stakeholders make appropriate decisions
- Use our convening power in getting global industry together with key stakeholders to address climate change and energy issues, thus enhancing knowledge transfer and capacity building
- Provide a forum to bridge regional differences
- Increase industry consensus through building understanding and a common language
- Be a constructive partner in the discussion and resolution of climate-related issues
- Build relationships and explore partnerships with key stakeholders including UN bodies

IPIECA believes there is a need for clear information and education on energy and climate related issues in order to frame the debate in a knowledgeable manner.

IPIECA has experience and scientific knowledge, which it shares through publications and the use of its convening power to host workshops with experts. We will to continue to engage in a broad dialogue with all stakeholders.

Find out more at www.ipieca.org

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June 2015