

Global energy brief

On the right track: low-emissions pathways

By the end of 2016, 121 countries had ratified the previous year's UN's COP21 Paris Agreement. Its aim: "to strengthen the global response to the threat of climate change" by limiting the global average temperature to an increase well below 2.0 degrees C above pre-industrial levels.



At the COP22 meeting in Marrakesh, in November, governments focused on fleshing out details of the Paris Agreement, including rules and procedures for their Nationally Determined Contributions (NDCs). These are the means by which they would individually achieve the collective global goal of the Paris Agreement.

As is becoming evident, good intentions are morphing into hard graft, with the world trying to meet its climate commitment as well as other, equally important objectives set out in the UN Sustainable Development Goals for 2030. These include the enduring need for affordable, reliable and sustainable energy for all, as well as economic growth.

In light of the Paris Agreement, IPIECA, the industry's global association for environmental and social issues, developed *Exploring low-emissions pathways*, a publication providing a perspective on the common elements and enablers of pathways to meet a low-emissions future.

Oil & gas: part of the solution

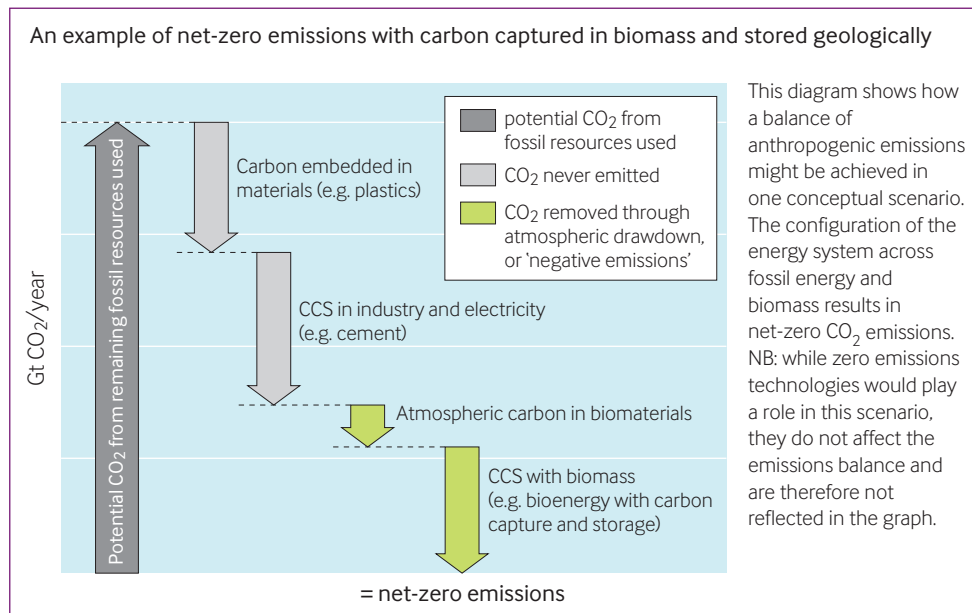
The oil and gas industry was at COP22, alongside other business and civil society stakeholders. There, IPIECA presented its low-emissions pathways (LEPs) document. It is based on the premise that every person on earth needs approximately 100 gigajoules every year to ensure a good quality of life – defined as adequate food, clean water, shelter, power and transport. For billions of people, that remains an aspiration.

As the world's population grows, primary energy demand will also increase – and that includes energy from oil and gas. According to the International Energy Agency, oil and gas will be needed to meet 45-50% of energy demand by 2040 – much as they do today.

But significant changes will occur as well. To live up to the Paris Agreement, the world will have to transform its energy system between now and the end of the century. The question is how.

Net-zero emissions

There is no single pathway to a low-emissions future. Nor is there a single authority to determine how best to achieve what the Paris Agreement describes as 'a world in which remaining greenhouse gas emissions are offset by a drawdown from the atmosphere (negative emissions) to reach an equilibrium (also referred to as "carbon neutrality" or "net zero")'. One way to achieve this is shown overleaf:



Source: *Exploring low-emissions pathways*, p.4, based on material from Shell International BV (2016). *A better life with a healthy planet; pathways to net-zero emissions.* www.shell.com/energy-and-innovation/the-energy-future/scenarios/a-better-life-with-a-healthy-planet.html

Common goals; common threads

What is needed for this and any other method to achieve Paris Agreement goals is cooperation and collaboration. Among governments, industry, consumers, NGOs, civil society, and businesses...

...including the oil and gas industry.

Work has already begun. Analysis of the proposals put forward to transform the world's energy system shows three common themes:

- Improving efficiency and saving energy
- Reducing emissions from power generation
- Reducing emissions from remaining end-use sectors

The oil and gas industry can contribute to each of these endeavours – within its own operations and by working with others. Initiatives already underway include the involvement in the World Bank Global Gas Flaring Reduction Partnership, the Global Methane Initiative, the Global Fuel Economy Initiative and an active role in the UN Environment Programme Partnership for Clean Fuels and Vehicles. More widely, the switch from coal to cleaner-burning natural gas in electricity generation is already having a positive impact – by reducing reliance on coal and providing back-up to intermittent sources of energy such as solar (when the sun is not shining) and wind (when the wind fails to blow).

And there is another crucial role the oil and gas industry can play. That is in applying its expertise to carbon capture and storage (CCS) on a larger scale than ever before. CCS is a technology fundamental to achieving many of the low emissions pathways proposed.

CCS is a technology that captures carbon dioxide from power stations or major industrial plants and then injects it deep underground – where it originally came from – for long-term storage. The oil and gas industry has safely used a form of this technique for more than 40 years to enhance oil production.

CCS and other ways to reduce emissions

According to the UN's Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report, CCS will be instrumental in helping to control the costs of achieving atmospheric stabilization of carbon dioxide. CCS projects would make de-carbonized oil and gas widely available to be used in power, transport homes and the industrial sector. It also can play a key role in reducing emissions from industrial processes such as cement calcification and holds an almost unique potential for "negative" emissions drawdown.

Of the 15 large-scale CCS projects currently underway, 11 are based on oil and gas activities. But this is only the start. As the IEA says, 'CCS technologies are vital to decarbonizing the power supply and industry' and 'national-level attention is needed to support the widespread adoption of CCS.'

In parallel, the oil and gas industry is involved in its own initiatives. For example, the flaring of gas from oil production facilities (natural gas is mixed in oil when it is brought to the surface) went down 20% between 2005 and 2012. Instead of being wastefully burnt off, some helped to power the production facilities themselves and increasingly, more gas was transported to meet growing consumer demand.

The oil and gas industry is also helping consumers in other areas. Extensive work with motor vehicle manufacturers has created products that help increase engine performance while lowering emissions. The use of liquefied natural gas (LNG) in heavy-duty vehicles and shipping will also help to achieve COP21 objectives. So will oil and gas companies' investments in low-carbon businesses, such as the photovoltaic, battery storage and advanced bio-fuel sectors.

However it is achieved, a successful low-emissions future will depend on governments' ability to create policies that encourage innovation and deployment while creating a level playing field, as well. Also needed are approaches that minimize the overall costs to society by allowing markets to determine the most cost-effective solutions.

LEPs are a new way forward towards a better future for all.

The complete 12-page IPIECA paper, is available here: <http://www.ipieca.org/resources/awareness-briefing/exploring-low-emissions-pathways-advancing-the-paris-puzzle/>

IPIECA

In summary:

The oil and gas industry is working with governments and civil society to be part of the global climate change solution while simultaneously helping to achieve the UN Sustainable Development Goals for 2030.

This means improving efficiency and saving energy, reducing emissions from power generation and end-use sectors.

Carbon capture and storage – a technology successfully used in oil production for over 40 years – will be crucial in helping the world to achieve its aim of decarbonization.

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