

BP Energy Outlook 2019

14 February 2019

The 2019 edition of BP's Energy Outlook, published today, explores the key uncertainties that could impact the shape of global energy markets out to 2040. The greatest uncertainties over this period involve the need for more energy to support continued global economic growth and rising prosperity, together with the need for a more rapid transition to a lower-carbon future. These scenarios highlight the dual challenge that the world is facing. The Outlook also considers a number of other issues including the possible impact of an escalation in trade disputes and the implications of a significant tightening in the regulation of plastics.

Much of the narrative in the Outlook is based on its evolving transition scenario. This scenario and the others considered in the Outlook are not predictions of what is likely to happen; instead, they explore the possible implications of different judgements and assumptions.

In the 'Evolving Transition' scenario, which assumes that government policies, technologies and societal preferences evolve in a manner and speed similar to the recent past:

- Global energy demand increases by around a third by 2040, driven by improvements in living standards, particularly in India, China and across Asia.
- Energy consumed by industry and buildings accounts for around 75% of this increase in overall energy demand, while growth in energy demand from transport slows sharply relative to the past as gains in vehicle efficiency accelerate.
- The power sector uses around 75% of the increase in primary energy.
- 85% of the growth in energy supply is generated through renewable energy and natural gas, with renewables becoming the largest source of global power generation by 2040.
- The pace at which renewable energy penetrates the global energy system is faster than for any fuel in history.
- Demand for oil grows in the first half of the Outlook period before gradually plateauing, while global coal consumption remains broadly flat. Across all the scenarios considered in the Outlook, significant levels of continued investment in new oil will be required to meet oil demand in 2040.
- Global carbon emissions continue to rise, signalling the need for a comprehensive set of policy measures to achieve a substantial reduction in carbon emissions.

The new Outlook was launched in London today by Spencer Dale, group chief economist, and Bob Dudley, group chief executive.

“The Outlook again brings into sharp focus just how fast the world’s energy systems are changing, and how the dual challenge of more energy with fewer emissions is framing the future. Meeting this challenge will undoubtedly require many forms of energy to play a role,” said Bob Dudley.

“Predicting how this energy transition will evolve is a vast, complex challenge. In BP, we know the outcome that’s needed, but we don’t know the exact path the transition will take. Our strategy offers us the flexibility and agility we need to meet this uncertainty head on.”

“The world of energy is changing,” agrees Spencer Dale. “Renewables and natural gas together account for the great majority of the growth in primary energy. In our evolving transition scenario, 85% of new energy is lower carbon.”

Beyond the evolving transition scenario, the Outlook considers a number of additional scenarios. Some of the key ones are outlined below.

More energy

More energy will be needed to support growth and enable billions of people to move from low to middle incomes; this is explored in the more energy scenario.

There is a strong link between human progress and energy consumption; the UN Human Development Index suggests that increases in energy consumption of up to around 100 gigajoules (GJ) per head are associated with substantial increases in human development and well-being. Today, around 80% of the world’s population live in countries where average energy consumption is less than 100 GJ per head. In order to reduce that number to one-third of the population by 2040, the world would require around 65% more energy than today, or 25% more energy than needed in the evolving transition scenario. The increase in energy required over and above the evolving transition scenario is roughly the equivalent of China’s entire energy consumption in 2017.

Together with the more energy scenario, the Outlook also highlights the need for further action to reduce carbon emissions. This is the dual challenge for the world – to provide more energy with fewer emissions.

Rapid transition

The rapid transition scenario is the combination of analyses throughout the Outlook which brings together in a single scenario the policy measures in separate lower carbon scenarios for industry and buildings, transport and power. Doing so results in around a 45% decline in carbon emissions by 2040 relative to current levels – which is broadly in the middle of a sample of external projections with claim to be consistent with meeting the Paris climate goals.

This fall reflects a combination of: gains in energy efficiency; a switch to lower-carbon fuels; material use of CCUS; and, of particular importance in the power sector, a significant rise in the carbon price.

The power sector is currently the single largest source of carbon emissions from energy use and it is therefore critical that the world continues to seek ways to reduce emissions from this sector.

Reductions in carbon emissions from the transport industry in all scenarios to 2040 is relatively small in comparison.

“Policies aimed at the power sector are central to achieving a material reduction in carbon emissions over the next 20 years...most of the low-hanging fruit in terms of reducing carbon emissions is outside of the transport sector,” said Dale.

Even in the rapid transition scenario, a significant level of carbon emissions remain in 2040. In order to meet the Paris climate goals, in the second half of the century these remaining emissions would need to be greatly reduced and offset with negative emissions. This year’s Outlook considers which technologies and developments may play a central role in this reduction beyond 2040.

A key development would be a near-complete decarbonization of the power sector – requiring greater use of renewables and CCUS in conjunction with natural gas – together with greater electrification of end-use activities (including transport). For those end-uses that cannot be electrified, other forms of low-carbon energy and energy carriers will be crucial, potentially including hydrogen and bioenergy. Additionally, the importance of the circular economy and greater adoption of carbon storage and removal techniques are highlighted.

Less globalization

International trade underpins economic growth and allows countries to diversify their source of energy. In the less globalization scenario the Outlook explores the possible impact that escalating trade disputes could have on the global energy system.

“The message from history is that concerns about energy security can have persistent, scarring effects,” said Dale.

The scenario highlights how a reduction in openness and trade associated with an escalation in trade disputes could reduce worldwide GDP and therefore energy demand. Moreover, increasing concerns about energy security may cause countries to favour domestically-produced energy, leading to a sharp reduction in energy trade. The greatest impact is on net energy exporters, who suffer a material slowdown in the growth of oil and gas exports.

Single-use plastics ban

The single-largest projected source of oil demand growth over the next 20 years is from the non-combusted use of liquid fuels in industry, particularly as a feedstock for petrochemicals, driven by the increasing production of plastics. Growth of non-combusted demand in the evolving transition scenario is, however, slower than in the past, reflecting the assumption that regulations governing the use and recycling of plastics tighten materially over the next 20 years.

Given the heightening environmental concerns regarding single-use plastics, the Outlook also considers a single-use plastics ban scenario, in which the regulation of plastics is tightened even more quickly, culminating in a worldwide ban on the use of all single-use plastics from 2040 onwards.

In this scenario, oil demand rises more slowly than in the evolving transition scenario. However, the Outlook cautions that the full impact on energy growth and the environment will depend on the alternative materials that may be used in place of single-use plastics. A ban on single-use plastics could result in an increase in energy demand and carbon emissions without further advances in alternative materials and the widespread use of collection and reuse systems.

Notes to editors

- The new edition of the BP Energy Outlook will be launched at 1430 GMT on 14 February 2019.
- Go to www.bp.com/energyoutlook to download the Outlook or additional country & regional insights and view other material such as videos or an animation.
- Join the conversation online #bpstats.

Further information

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