A world in transition, and moved by China

Four large-scale upheavals in global energy set the scene for the new *Outlook*:

- The **United States** is turning into the undisputed global leader for oil & gas
- Solar PV is on track to be the cheapest source of new electricity in many countries
- China’s new drive to “make the skies blue again” is recasting its role in energy
- The future is **electrifying**, spurred by cooling, electric vehicles & digitalisation

China’s drive for “blue skies” has domestic and global implications:

- New era of development & economic shift towards light industries & services change structure of energy use
- Energy demand growth slowing; predominance of coal under challenge
- Leadership for China in a range of **clean energy technologies**, increasing role in gas markets
- Environmental considerations to the fore, notably **air quality**
A world in motion..

Change in world energy demand by fuel

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>1990-2016</th>
<th>2016-40</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coal</strong> (Mtce)</td>
<td>500</td>
<td>1 000</td>
</tr>
<tr>
<td><strong>Oil</strong> (mb/d)</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td><strong>Gas</strong> (bcm)</td>
<td>400</td>
<td>800</td>
</tr>
<tr>
<td><strong>Low-carbon</strong> (Mtoe)</td>
<td>400</td>
<td>800</td>
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</tbody>
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Low-carbon sources & natural gas meet 85% of the increase in global demand:
Low-carbon sources & natural gas meet 85% of the increase in global demand: China’s switch to a new economic model & a cleaner energy mix drives global trends.
India adds the equivalent of today’s European Union to its electricity generation by 2040, while China adds the equivalent of today’s United States.
China turns away from coal while confirming its position as the global leader in clean energy, leading the way on solar PV, wind power, hydropower and nuclear.
China becomes the world’s largest oil importer by around 2020; air quality policies could lead to a plateau or peak in oil demand, but oil security remains a challenge.
706 bcm in 2016

39% shipped by LNG

1 230 bcm in 2040

59% shipped by LNG

LNG ushers in a new global gas order
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Gas exporters

706 bcm in 2016

- Russia & Caspian
- Australia
- US & Canada
- Middle East
- Africa

1 230 bcm in 2040

- Russia & Caspian
- Middle East
- Australia
- US & Canada
- Africa

Other
Asia’s growing gas import requirements are largely met by LNG, with exports from the US accelerating a shift towards a more flexible, liquid global market.
China is the leading global investor in power generation and end-use sectors; its emphasis on clean energy investment is a driver of the global clean energy transition.
Conclusions

- Structural shifts in the economy and the clean energy transition change quantity & quality of energy demand growth; China moves global energy markets – once again

- China is set first to become the world’s largest oil importer, and then the largest oil consumer; future oil security hinges on supply- and demand-side policies

- Natural gas helps to replace coal in the energy mix and soon makes China the world’s largest gas importer, with strong implications for global LNG markets

- China remains the world’s largest investor in clean energy; its success in delivering on a clean energy transition is critical for its own as well as global environmental goals

- As China joined the IEA family in 2015 and partnership grows, the WEO-2017 China Outlook sheds light on China’s energy challenges & opportunities in a global context