ASIAN ENERGY MARKET DEVELOPMENT TO 2040

CHINA ENERGY OUTLOOK

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AGENDA

1. Current trends in China
2. Factors contributing to energy consumption in China
3. Energy consumption in the future
4. Internal developments in China
CURRENT TRENDS IN CHINA
FUEL MIX IN CHINA

China’s installed power capacity by source, 2013

- Coal 65%
- Large Hydro 15%
- Clean energy 14%
- Natural gas 3%
- Nuclear 1%
- Oil and diesel 1%
- Other 1%
- Wind 6%
- Small Hydro 6%
- Solar 1%
- Biomass and waste 1%

Source: Bloomberg New Energy Finance
ENERGY CONSUMPTION (1)

Slight uneven distribution of energy consumption by region.

Uneven distribution of energy consumption by sector.

Source: Key China energy statistics 2014 - China Energy Group
ENERGY CONSUMPTION (2)

China's Natural Gas Consumption by Sector (1980-2012)

China's Oil Consumption by Sector (1980-2012)

Source: Key china energy statistics 2014 - China Energy Group
FACTORS CONTRIBUTING TO ENERGY CONSUMPTION IN CHINA
1. ENERGY POLICY OF CHINA

<table>
<thead>
<tr>
<th>Increase</th>
<th>Decrease</th>
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<td>• Non fossil fuel energy consumption to 15% of the energy mix by 2020,</td>
<td>• Cap coal use to 62% by 2020;</td>
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<td>and 20% by 2030;</td>
<td>• Reduce its overall CO2 emissions by at least 40% between 2005 and 2020</td>
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<td>• Natural gas consumption to 10% of the energy mix by 2020.</td>
<td>• Reduce carbon intensity (the amount of carbon used per unit GDP produced) by 60-65%</td>
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2. GROWTH OF CHINESE POPULATION

- Growing population in China
- Growing population in urban areas

Source: Key china energy statistics 2014 - China Energy Group
3. CURRENT LOW ENERGY CONSUMPTION

- China's per capita consumption is still far behind some of the developed countries
- This is because China’s economic model is based on production
- Project a rise in energy consumption per capita

Source: Key china energy statistics 2014 - China Energy Group
ENERGY CONSUMPTION IN THE FUTURE
China predicted to overtake the US as the world’s largest oil consumer around 2030.

Based on the 2015 figures, BP’s prediction on China’s appetite in 2035:

- China’s energy production rises by 47% while consumption grows by 60%.
- China’s share in global energy demand rises from 22% to 26% in 2035.
- Energy consumed in transport grows by 98%. Oil remains the dominant in 2035. Gas’ share increases from 5% to 11%.
- Energy consumed in power generation rises by 81% and while coal remains the dominant fuel source.
FUEL MIX IN CHINA IN 2035

CHINA’S APPETITE IN 2040

- **Oil production**: 5.7 million bbl/d
- **Oil consumption**: 20.0 million bbl/d
- **Installed capacity**: 2,265 GW, propelled by a combination of capacity from coal, nuclear, and renewable sources
- **Coal remains the dominant source of energy?**

![Pie chart: China installed electricity capacity by fuel, 2040](image)

Installed capacity: 2,265 GW

- **Coal**: 52%
- **Hydropower**: 13%
- **Wind**: 12%
- **Nuclear**: 7%
- **Other Renewables**: 3%
- **Natural Gas**: 5%
- **Oil**: 1%
- **Solar**: 2%

INTERNAL DEVELOPMENT IN CHINA
CHINA’S ENERGY MARKET

• China demand will continue to drive world energy (especially LNG/gas)
• China demand puts upward pressure on world natural gas prices
• Physical flows of oil increasingly to Asia, more leverage on terms
• Could lead to Asian hub and more competitive gas markets
• China will invest heavily in non-fossil fuels
• Introducing competition to the energy market in China
• Government committed to reduce CO2 emissions