Global Energy Trends: Selected Issues

National Conference of State Legislatures

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Total Energy Consumption, by Region

Million toe
14000
12000
10000
8000
6000
4000
2000
0

- Other
- Other Asia-Pacific
- Africa
- India
- China
- US
- EU

Source: BP Statistical Review of World Energy 2017
Total Electricity Consumption

Source: BP Statistical Review of World Energy 2017
Global Energy Consumption, by fuel

Source: BP Statistical Review of World Energy 2017
World Coal Consumption

Source: US EIA

Regulatory Assistance Project (RAP)®
绿盾 PM2.5 口罩
防颗粒、抗菌、舒适、透气
400-1091-990

你还狂‘气’吗？
China Policy Objective #1: Improve Air Quality

2017 targets to reduce PM2.5 pollutants

- Yearly average concentration of PM2.5 reduction (%)
- PM2.5 existing level of in 2013 (mg/m³)
- PM2.5 expected level by 2017 (mg/m³)

Source: South China Morning Post

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China Policy Objective #2: Limit Carbon Emissions

Source: Greenpeace
China Policy Objective #3: Improve Energy Efficiency

Energy intensity

(Downward trend represents improvement in overall energy efficiency)

Source: BP Statistical Review of World Energy 2017
China Policy Objective #4: Increase Non-Fossil Energy Resources and Phase Out Coal

Newly Installed Wind Generation Capacity, 2016

Source: Global Wind Energy Council
Energy Intensity

China Wind Curtailment

Sources: China National Energy Administration, US DOE, ERCOT, and RAP
China Power Sector Reform

- Electricity markets
- Renewable energy integration
- Retirement of excess coal generation capacity
- Coal consumption cap
- Utility revenue regulation
- Demand-side management
- Emissions trading
India: Air Quality An Increasingly Urgent Issue

Source: State of Global Air
European Union: “Efficiency First”

• “Clean Energy for All Europeans” package of legislation

• Prioritizes investments in customer-side efficiency resources

• A new strengthened goal for energy efficiency nearing finalization
About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

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Supplemental Slides
China has undergone tremendous development since the implementation of economic reform and opening. Nearly three quarters of a billion people have over the past 20 years been lifted from extreme poverty into more decent living standards, and the Chinese society is closer than ever to become a "moderately prosperous society" – the goal for 2020.

This development comes with a price. Economic growth has been enabled through enormous growth in energy consumption. From 1978 to 2016, China's total energy consumption soared from 570 Mtce to 4,360 Mtce; the share of fossil fuel in the energy mix has been more than 85%, and coal's share higher than 60-70%. The largely coal-dependent energy consumption has resulted in severe environmental damages. Most visible is the health damaging air pollution affecting most cities in China, but severe water pollution and land degradation have also been the price paid for the growth in energy consumption.

New Pathways for Sustainable Growth

China's economy has entered the "new normal" – with lower growth rates and profound structural changes in the Chinese economic sectors, with the service sector gradually substituting for the industry sector as the main driver for the Chinese economy. The country's GDP per capita is low compared with other countries, and the long-term goal for the development of China is stated in its the second centenary dream proposed by the Chinese government: to "uplift the per capita GDP to the level of moderately developed countries" to fulfil the vision of China becoming a modern socialist country that is "prosperous, strong, democratic, culturally advanced and harmonious" by 2049.

Therefore, stable economic growth is still central to the process of modernising China, and the primary task under the economic "new normal". It is clear that future economic development cannot follow the same pattern as over the past 20 years. Although energy services are still needed to sustain the momentum of growth, the energy consumption and supply must adhere to the ecological boundaries for sustainable development. The concept of an "ecological civilisation" has been designated as a leading development strategy by the Chinese government, and the concept of ecological civilisation has been consolidated into the integrating development of the "five-in-one" approach and the coordinated promotion of the "Four-Pronged Comprehensive Strategy". Meanwhile, green development joins innovation, coordination, openness and inclusiveness as China's five new major development concepts.

China is gradually shouldering an increased active role in promoting multilateral international responsibility for coping with climate change. As a country in the early stage of its energy transition, China used to have a highly coal dependent economy. But as of today, China is already able to display some world-class achievements, including:

- Coal
- Oil
- Natural Gas
- Non-fossil

Figure 2: Development of primary energy demand in China from 1990 to 2016 by fuel type, in absolute value (Mtce) and in percent of the total consumption each year. Only recently the growth trend and the high coal share have decreased.

China Energy Consumption by Fuel Type

- Coal
- Oil
- Gas
- Non-fossils*

Source: BP Statistical Review of World Energy 2017
China 2020 RE Capacity Targets and Scenarios

<table>
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<th>13th FYP</th>
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<td>676 GW</td>
<td>814 GW</td>
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<td>340 GW</td>
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<td>259 GW</td>
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<td>26 GW</td>
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<tr>
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