
**3 Modules**
- Economy Forecast
- Market Analysis
- Insights on Hot Events

**6 Industrial Chains**
- Refinery, C2, C3
- C4, PX, C6

**3 Parts**
- Energy
- Refinery Industry
- Chemical Industry

**Over 40 Products**
- Crude oil, natural gas, refined oil, ethylene, propylene, ethylene glycol, butadiene rubber, acrylic ……
Main content of the 2019 report

Review 2018

Prospect 2019

How many?
Demand & Supply & Price

How much?

How to change?
Pattern of Supply and Demand & Trend of Price

How to impact?
Impacts of Hot Events

International Market

China Market
CONTENTS

1. The Development of China Energy and Petrochemical Industry over the Past 40 Years
3. Market Prediction for 2019
The Development of China Energy and Petrochemical Industry in the Past 40 Years
1. Has been the vital component of China’s and even the world economy

An important role in global energy and petrochemical system

- Crude Oil Import: 19%
- Natural Gas Import: 8%
- Processing Capacity of Crude Oil: 15%
- Ethylene Production Capacity: 14%

- Imported crude oil: 462 Million tons
- Imported natural gas: 123 Billion cubic metres
- 16.8 Million barrels per day
- 25 MTA

A vital position in the development of national economy

- 1978-2017年
- 11.6% of national industrial assets

The main business income of the industry is 2.0 trillion US dollars, increased by 182 times. The number of large and medium-sized enterprises is 10 times more, and large ones is more than 30000.

2. Has Achieved “Leapfrog Development”

Industry development strongly fueled by the reform and opening-up in 1978
- Previous period: self-sufficiency, profitable export
- Dramatic increase of energy demand after 1990
- Refining capacity gradually exceeded crude oil production
- More joint venture and cooperation in refining and petrochemical business

Industry development accelerated after joining WTO in 2001
- The 10-year period of oil price rising started
- Active investment, consumption and trade

- Net importer of crude oil
- 10 million-ton-a-year refinery plants
- Joint Venture Project of Refining and Chemical Industry Integration
- Beginning of the exploration & development of shale gas
- Increasing joint venture projects
- West-to-East Gas Transmission Project
- Introduction of four 300 thousand-tons ethylene projects

Source: BP Statistical Review of World Energy 2017, EDRI
3. Opening and cooperation helps be in line with the global industry system

Overview of overseas business of Chinese oil companies

- Overseas investment enterprises: 34
- Overseas Oil and Gas Projects: 210

Preliminary Exploration Stage (1978-1991)  
Focused on “bringing in”

Go Abroad Stage (1992-1998)  
Started to “going global”

Mutual Integration Stage (1999-2012)  
Combined “bringing in” and “going global”

Upgrading Stage (2013~Now)  
Upgrading international energy cooperation system
4. A number of petroleum and petrochemical international enterprises have emerged.
5. The level of some energy and petrochemical technologies has entered advanced ranks in the world

Oil & Gas exploration and development theory as well as technology highlights characteristics
- Conventional → Unconventional
- Marine Facies → Continental Facies
- Onshore → Offshore

Refining Technology
Overall advanced, some leading

Petrochemical Technology
Reaches or approaches the world’s advanced level
- Complete technology series of megaton ethylene project
- Complete technology series of highly efficient and environmentally friendly aromatic hydrocarbons

Onshore → Offshore
Marine Facies → Continental Facies
Conventional → Unconventional

(Exploration of Shale Gas at Fuling)
( off shore drilling )

Yanbu Aramco Sinopec Refining Company Ltd.

Technology with independent intellectual property
Capacity to design and build ten-million-tons oil refinery
Complete technology series of clean petroleum products production

(Sinopec technology series of highly efficient and environmentally friendly aromatic hydrocarbons)
The New Pattern of long-term Development of Energy and Petrochemical Industry in China
Past—Meet the Demand of Basic Necessities of Life

In the past 40 years, petroleum and petrochemical industry emphasized on satisfying

**quantity and speed requirement**

Future—Meet the Requirement of High-quality Development

In the future, petroleum and petrochemical industry emphasized on satisfying

**quality and efficiency requirement**
1. Steadily growing economy in China will constantly provide a sustained impetus for industrial growth

- China will be able to maintain GDP growth rate at 6-6.5% by 2025. Also, the population will continue to grow and is expected to reach peak at 1.44 billion in 2029.
- China’s Per Capita GDP will increase significantly. Compared to 2018, it will double in 2025, triple in 2035, and seven times in 2050.

Source: The State Information Center · Development Research Center of the State Council · EDRI
The 1st New Driver: New urbanization and the rural vitalization strategy will inspire the potential of China's economic and industrial development

- The rural vitalization strategy will break the urban-rural dual structure and drive economic growth strongly.

- By the free flow of factors, the integration of urban and rural industries could be promoted, level of urbanization could be raised, the synergy of urban development and rural revitalization could be achieved.

The gap between China's urbanization rate and that of developed countries has narrowed rapidly (%)
The 2nd New Driver: The rising middle class has become a strong driver of consumption growth and industrial upgrading

- Urban residents' consumption is upgrading along the path from necessary consumption to improved consumption to high-end consumption.

Consumption Expenditure Structure of Urban Residents (%)

Source: National Bureau of Statistics of China
The 3rd New Driver: The coordinated regional development strategy will provide a broader space for industrial further expansion.

Northeast China-Eastern Inner Mongolia Economic Zone

Beijing-Tianjin-Hebei Economic Circle & Xiong'an New Area

Guangdong-Hong Kong-Macao Greater Bay Area

Hainan Pilot Free Trade Zone

“Belt and Road”

GDP (%): Midwest + Northeast

- 2017: 35%
- 2050: 40%

GDP (%): East + South

- 2017: 51%
- 2050: 46%

Yangtze River Economic Belt
The 4th New Driver: Technological revolution will foster new growth and promote the upgrading of traditional petroleum and petrochemical industries.

**Emerging Industry Developing and Growing**

**New Business Model**
- “Internet Plus”, Block chain, Sharing Economy, Modern Supply Chain, etc.

**A New Generation of Information and Technology Industry**
- Big Data, Cloud Computing, High-end Software, etc.

**New Energy, New Materials**
- Clean Energy, Advanced Polymer Materials, High Performance Materials, etc.

**New Energy Vehicle**
- Electric Vehicles, Fuel Cell Vehicle, etc.

**Boosted GDP by more than $7.5 trillion**

**Traditional Industry Transforming and Upgrading**

**Traditional Manufacturing**
- Promoting the In-depth Integration of the Internet, Big Data, Artificial Intelligence with the Real Economy

**Energy Industry**
- Building a clean, low-carbon, safe and efficient modern energy system

**Chemical Industry**
- Product Upgrading, Resource Conservation and Clean Production
The 5th New Driver: More comprehensive opening-up in China will create a more favorable industrial investment environment

- China will substantially ease market access, strengthen intellectual property rights protection, and take the initiative to expand imports.

China will never close but open its door even wider.
Environmental protection costs have accelerated the industry reshuffle, further enhanced the industry concentration.

- Outdated production capacity will be largely eliminated to make room for the development of advanced clean production capacity and green production.
- Environmental costs of companies will be increased significantly.
- The development space of urban enterprises will be limited.
2. China’s energy transition will move faster than the world, and energy efficiency will be greatly improved

China's energy intensity descends most quickly

![Graph showing China's energy intensity compared to Total World, China, Europe, and US over time.]

<table>
<thead>
<tr>
<th>Year</th>
<th>Total World</th>
<th>China</th>
<th>Europe</th>
<th>US</th>
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<tbody>
<tr>
<td>2000-2010</td>
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<tr>
<td>2010-2016</td>
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<tr>
<td>2016-2020</td>
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<td>2020-2025</td>
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China's energy consumption has been decoupled from GDP growth

- 2000-2017: 10% GDP growth rate, 8% energy consumption growth rate
- 2017-2025: 6.5% GDP growth rate, 2% energy consumption growth rate
- 2026-2035: 5% GDP growth rate, 0.7% energy consumption growth rate
- 2035-2050: 4% GDP growth rate, 0.1% energy consumption growth rate

Will reach the peak of carbon emissions before the world does

- The world will reach the peak during 2035 to 2040
- China will reach the peak before 2030

China's energy transition will move faster than the world, and energy efficiency will be greatly improved.
3. The market for petroleum and petrochemicals remains huge, especially in natural gas, chemicals and new materials.
4. China's market will be more competitive, with the gradual formation of a pluralistic supply system
3 Market Prediction for 2019
Focuses on 6 Questions

1. What Are the Roads Ahead for World and China Economy?
2. How Do We Evaluate Forces that Influence the Sustainable Development of Energy?
3. Will Gas Supply be very tight in 2019?
4. How Will the New Expansion of Refinery and Petrochemical Capacity Influence the Market?
5. How Will the Market Demand Be in 2019?
1. What Are the Roads Ahead of World and China’s Economy?

Higher Risks

- 2018: 3.2%
- 2019: 3.1%

Stability First

- 2018: 6.6%
- 2019: 6.0-6.5%

I. Shrinking Trade
- Trade friction
- Unilateral sanctions

II. Contracting Real Economy
- The manufacturing PMI has decreased by 3.8% since the beginning of 2018

- Employment: Stable
- Finance: Stable
- Foreign Trade: Stable
- Foreign Investment: Stable
- Investment: Stable
- Expectation: Stable
2. Whether the Energy Industry Can Achieve Sustainable Development?

**Production:** A clean, efficient and diversified energy supply system is forming

- **Coal:** Capacity clearance has been basically completed
- **Oil & Gas:** Upstream investment continues to recover
- **New Energy:** Subsidized development→connotative development

**Consumption:** The goal of optimizing energy structure was achieved ahead of schedule

<table>
<thead>
<tr>
<th>Total amount of energy consumption</th>
<th>Energy consumption per unit of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Billion tonnes oil equivalent</td>
<td>tonnes of oil equivalent / RMB ten thousand yuan</td>
</tr>
<tr>
<td>3.3</td>
<td>0.43</td>
</tr>
<tr>
<td>3.4</td>
<td>0.45</td>
</tr>
</tbody>
</table>

**International Cooperation**

- Deepened under the "Belt and Road" initiative

**Reform:** The process of marketization has been accelerated

- Crude oil futures trading launched
- Subsidies for PV reduced
- Liberalization of petroleum retail market

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018.3</td>
<td>Crude oil futures trading launched</td>
</tr>
<tr>
<td>2018.5</td>
<td>Subsidies for PV reduced</td>
</tr>
<tr>
<td>2018.6</td>
<td>Liberalization of petroleum retail market</td>
</tr>
<tr>
<td>2018.6</td>
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</tr>
<tr>
<td>2018.8</td>
<td>Subsidies for PV reduced</td>
</tr>
<tr>
<td>2019</td>
<td>Liberalization of petroleum retail market</td>
</tr>
</tbody>
</table>

- The unification of residential and non-residential gas prices has began
- Electricity spot market operating
- Establishment of China Pipelines Corp.

**Technology Development:** The cost of non-fossil energy continues to fall

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost of PV power generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>Before 531 Policy: 6 yuan/W</td>
</tr>
<tr>
<td>2019</td>
<td>After 531 Policy: 4.14 yuan/W</td>
</tr>
</tbody>
</table>

- Offshore wind power generation has been developed rapidly

- Non-fossil energy continues to fall

- Total amount of energy consumption: 2018: 3.3, 2019: 3.4
3. Will Gas Supply be very tight in 2019?

More rational demand
Fuel conversion from coal-to-gas will be more rational.

- Urban Gas
- Industry
- Electricity Generation
- Chemistry

305 Bcm
+28 Bcm
Year-to-year growth: 10.1% (2018: 17%)

More sufficient supply
The establishment of production, distribution, storage and sales systems has been stepped up.

313 Bcm
+33 Bcm
Year-to-year growth: 11.7% (2018: 15.9%)

Production: Domestic gas production will be increased by over 7%.

Supply:
- Global LNG production +76%
- LNG terminal: +6.40Mt/Y

Storage: Gas storage +3 Bcm

Sales:

Pipeline network interconnection has been accelerated
- "Gas supply from South to North": 30 Mcm/d
- Supply increase in Beijing-Tianjin-Hebei surrounding areas: 60 Mcm/d
4. How Will the Operation of Private-owned Refinery and Petrochemical Capacity Influence the Market?

“3 Reconstructions” and “1 Breakthrough”

- **5%** Refinery +40
- **19%** Ethylene +4.8
- **68%** PX+9.5

Production capacity increase of ethylene and PX are equivalent to the amount of new capacity added in the past 4-7 years combined.

1. **Reconstruction** of oil refining and petrochemical industrial layout
   - Private-owned Refinery: +4 percent
   - Private-owned Ethylene: +13 percent
   - Private-owned PX: +20 percent
   - Private-owned EG: +9 percent

2. **Reconstruction** of trade flow

3. **Reconstruction** of synthetic fiber raw materials industry value chain

4. **Breakthrough**: Exports of refined oil has exceeded 5 million tons
5. How Will the Market Demand Be in 2019?

Demand of refined oil will **weaken**
- Downturn of Auto: -3% to -5%
- Alternative Fuel for Replacement: 93%
- Economic Slowdown: 6.6% to 6-6.5%
- Total volume will increase: 366 to 379 to 386 million tons

Demand of petrochemicals will **slow down**
- The supporting factors of last year disappeared.
- Focus on export: 2.1%
- Environmental protection /overhaul: 0.6%
- Ban of plastics import: 1.5%
- Basic growth: 4.9%

Unit: Million tons

* end-use consumption

The low-sulfur requirement of bunker fuel will extend the refinery margin, but China’s margin will be lower than world average level for the reason of significant new capacity.

Under strongly increasing supply but decreasing demand, China’s Petrochemical profit ability will decline from high level.
Thank you