

How should we cope with the energy challenges?

Special Advisor to the Prime Minister

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Agenda

- 0. To begin with*
- 1. What has happened thereafter?*
- 2. Parameters to be highlighted*
- 3. Conclusions*

To begin with

“Conclusions” from 2014

- It is the case in a consumer country, particularly one with scarce indigenous natural resources, that once investments for energy efficiency are introduced, its energy saving effect will be long-lasting.
- Also, we must be careful of high volumes of money awash globally, as this can make the oil market highly sensitive to an unexpected event. Efficient energy consumption structures help a consuming country to be more independent and immune from the unpredictable and fluid environment.

To begin with

“Conclusions and proposals” of 2015

(1) Possible decline of oil-supply

- Slowing down of development of new oil.
- Political turmoil in oil supplying countries.
- Increase of domestic oil consumption in oil supplying countries.

(2) Lessons from past oil cycles

- Sharp and protracted swings in oil prices do not last forever. The current down cycle is already the longest peak-to-trough (more than three hundred days).
- The opportunities and threats typically emerge quickly.

(3) Individual or corporate level

- Introduction of energy-conserving equipment
- Streamlining production line, minimizing inventory
- Relocating factories, minimizing transporting parts and semi-complete products, and upgrading logistics

To begin with

“Conclusions and proposals” of 2015

(4) Societal level

- Re-engineering social structures, such as the introduction of a mass-transport system
- Upgrading the electricity supply chain and minimizing disruption, to say nothing of outages

(5) What could we gain?

- Reduction of the consumption of oil
- Reduction of wasted time
- Improvement of the quality of service
- Improvement of the macro-economic balance
- Reduction of the clout of oil-supplying countries

Agenda

0. To begin with

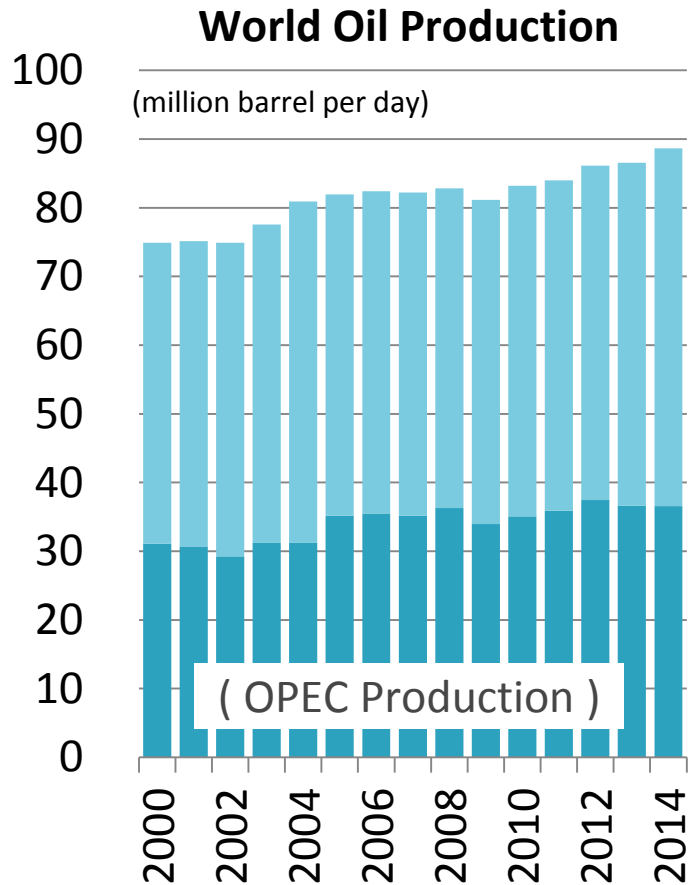
1. What has happened thereafter?

2. Parameters to be highlighted

3. Conclusions

1. What has happened thereafter?

(1) Supply-side



Quote: BP Statistical Review of World Energy 2014

- U.S. oil production has nearly doubled since 2008, and thus, its oil imports have dramatically reduced, which has had a significant impact on some countries in South America and Africa.
- OPEC, since it was agreed upon in November of 2014, does not look to reach consensus.
- Iran, with the fourth largest oil reserves, may step up production.

1. What has happened thereafter?

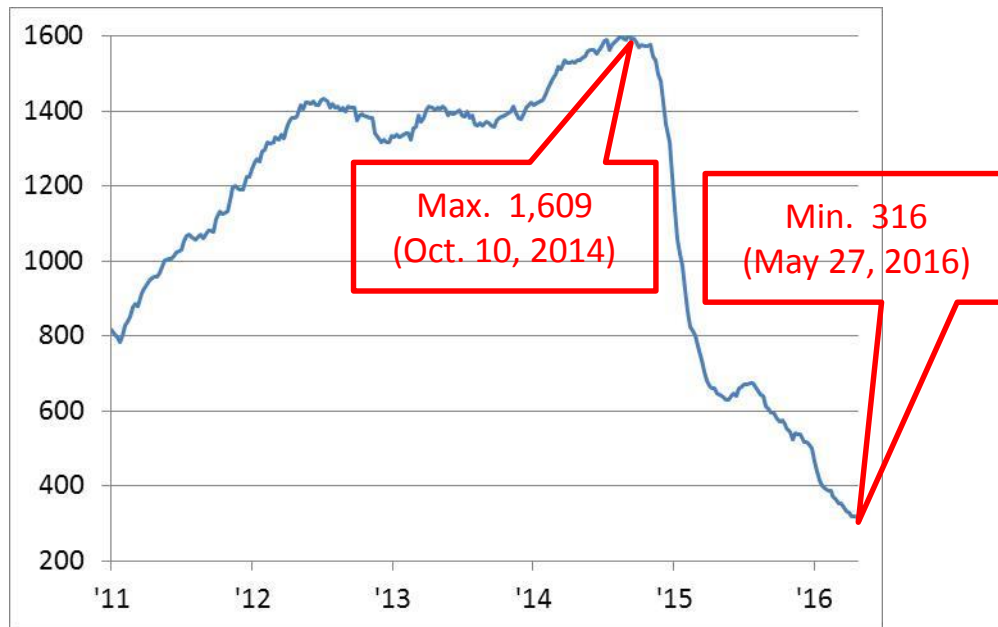
(1) Supply-side

Oil price change
and its consequences

- New projects have been suspended

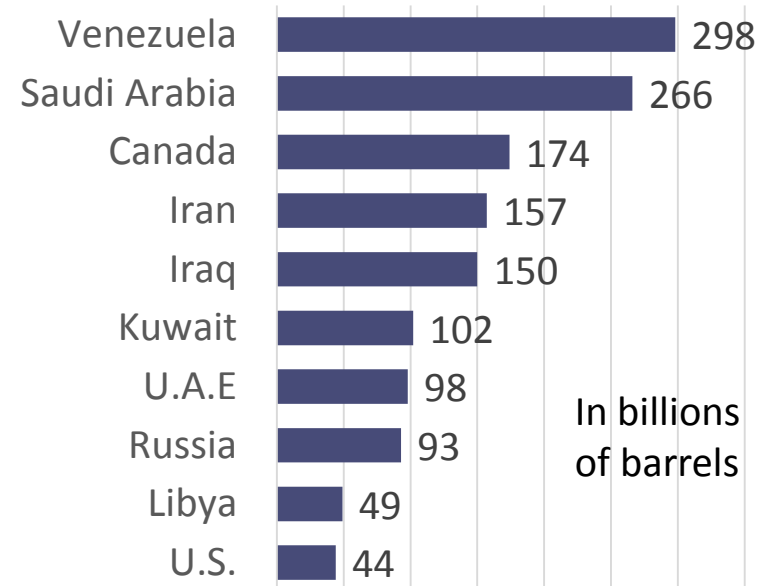
Which countries have huge oil reserves ?

Active Oil Rigs in US



Source: Baker Hughes

Proven oil reserves



In billions of barrels

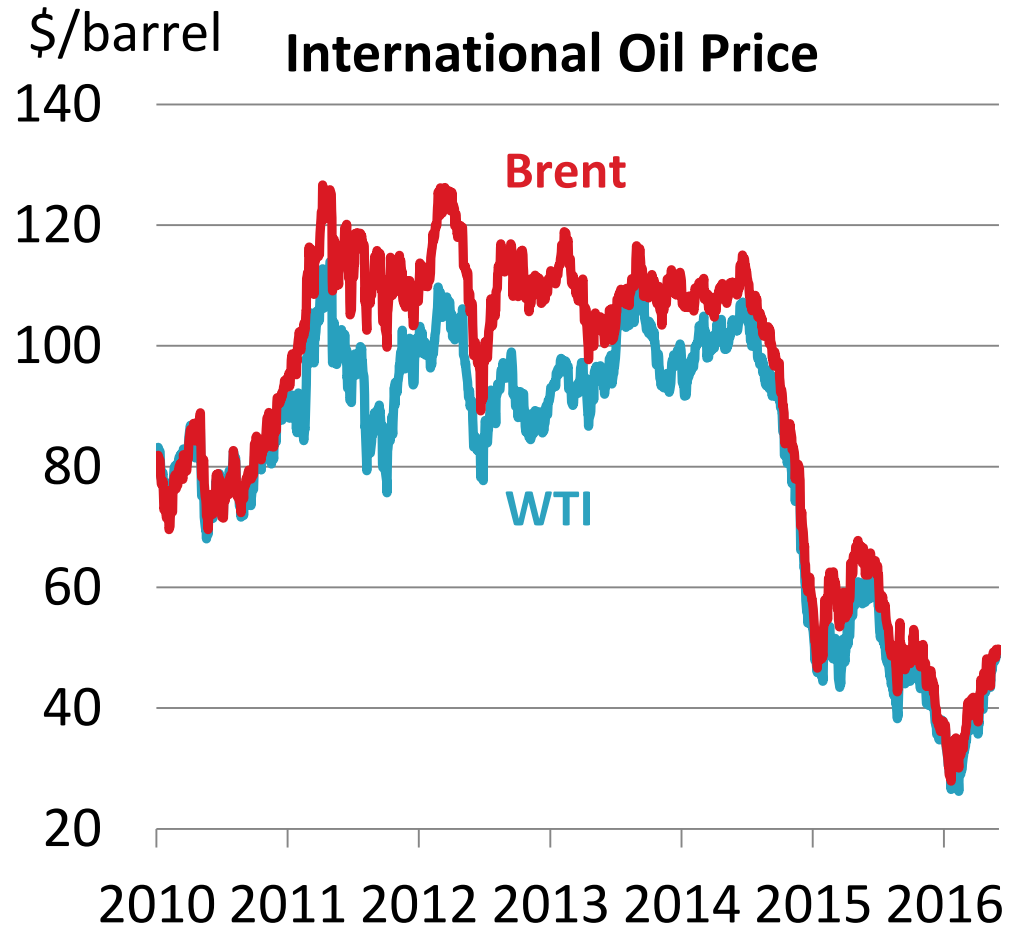
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Source: The Wall Street Journal

1. What has happened thereafter?

(4) What happened to the oil price?

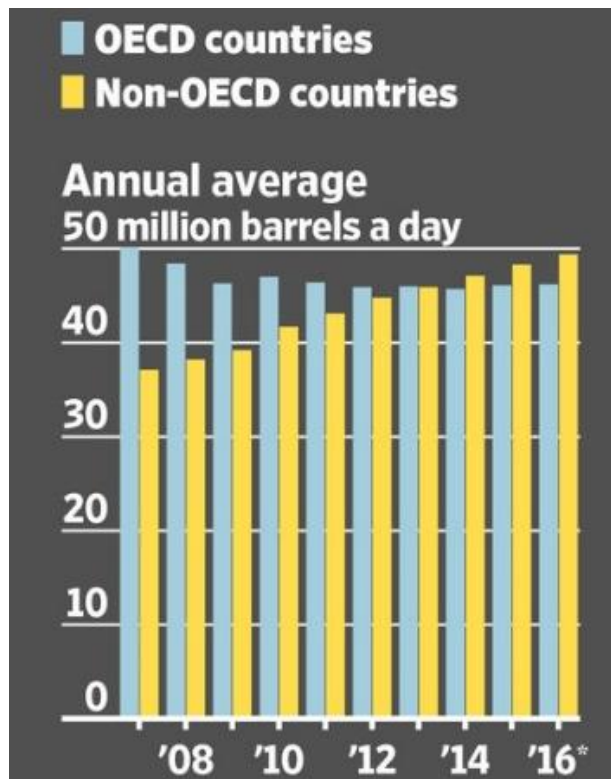
- Dramatically declined since the fall of 2014, and has slightly rebounded recently.
- Brent price was \$50 /barrel on June 1, 2016, while its peak had been \$114 /barrel in 2014.



1. What has happened thereafter?

(2) Demand-side

Oil Demand

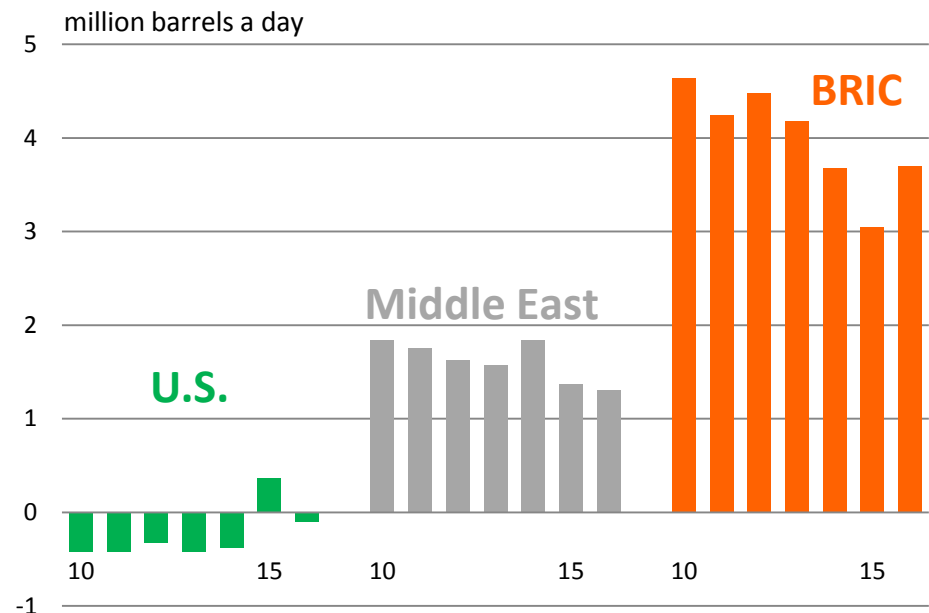


Source: "Oil-Flow Shift Poses Price Threat," The Wall Street Journal February 11, 2016

Note: * Projection

Oil-demand growth forecast for major consuming countries

IEA medium-term oil demand growth forecasts, by year of report



Source: IEA, Medium-Term Oil Market Report

1. What has happened thereafter?

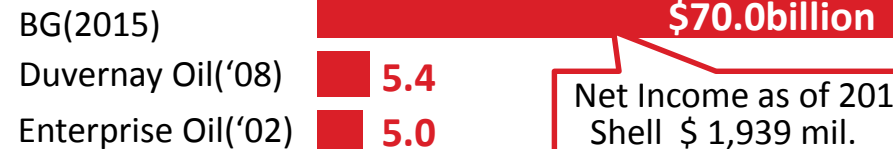
(3) Oil-related industries

➤ M & A
An example is Royal Dutch Shell PLC's purchasing of BG Group PLC.

➤ Due to the recent plummeting oil price, the asset value of oil-related companies has generally decreased, thus making the purchase of their stocks less costly.



Royal Dutch Shell



Net Income as of 2015
Shell \$ 1,939 mil.
BG \$ 1,697 mil.



Exxon



Net Income as of 1998
Exxon \$ 6,370 mil.
Mobil \$ 1,704 mil.



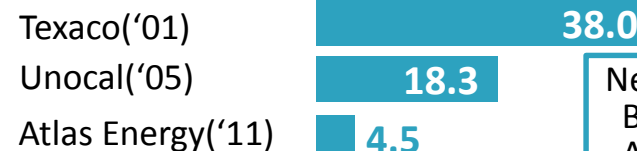
BP



Net Income as of 1997
BP \$ 4,051 mil.
Amoco \$ 2,720 mil.



Chevron

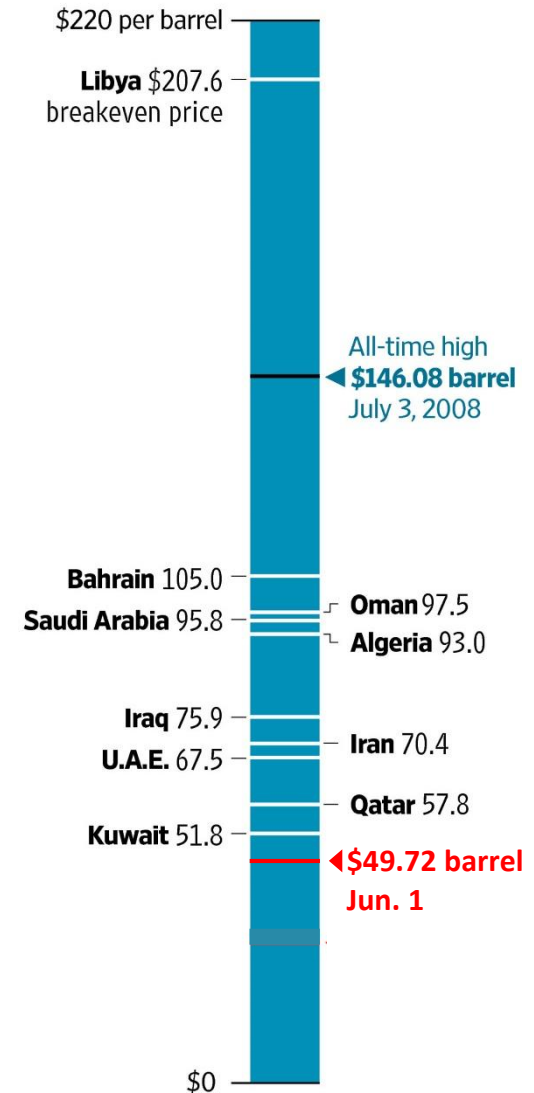


Net Income as of 1999
BP \$ 2,070 mil.
Amoco \$ 1,177 mil.

1. What has happened thereafter?

(3) Oil-related industries

- Petrostates need to sell oil at a certain price in order to balance their budgets.
- Based on current crude prices many could be facing deficits this year.



Source: "Oil's Long Plunge Upends Global Order," The Wall Street Journal, January 20, 2016, modified.

Note: Brent price. Projections for 2016

Agenda

0. To begin with

1. What has happened thereafter?

2. Parameters to be highlighted

3. Conclusions

2. Parameters to be highlighted

(1) G7 Ise-Shima Summit

- Ensuring swift and successful implementation of the Paris Agreement including the long-term aims on mitigation, adaptation, and finance
- Investment in supporting innovation in energy technologies and encouraging clean energy and energy efficiency.
Energy investments, in particular, investments in quality energy infrastructure and upstream development
- Is the low price of energy helpful to G7 countries, the majority of which are net energy importing countries, or not?

2. Parameters to be highlighted

(2) COP 21

- Commitment to reducing global warming gas emission by not only developed countries but also large developing countries such as China
- Energy conservation, and not only de-carbonization, but also innovating the social energy consuming structure
 - Increasing renewable energy, natural gas, and safe nuclear energy

2. Parameters to be highlighted

(3) Dynamics within OPEC member countries

- New policy initiative of Saudi Arabia---reducing dependence on oil
- To what extent will Iran accommodate other member countries ?
- Some financially strapped countries

2. Parameters to be highlighted

(4) To be noted in some countries

➤ China

Reform Initiative vs. Slowing growth pace

- Excess producing capacity such as steel
- Surplus power generating capacity
- Highly polluted atmosphere
- Continuous demand in growth of transport

➤ India

Brisk growth of economy

- Highly polluted atmosphere
- Accelerated construction of roads
- Continuous demand in growth of transport

➤ Unanticipated production disruptions

Such as militant attacks in Nigeria, wildfires in Canada, and political unrest in Libya

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3. *Conclusions*

(1) Raising energy efficiency

- Infrastructure
- Innovation

Note 1 : Energy consumption per GDP

(2) Diversifying energy sources

3. *Conclusions*

(3) *Securing redundant supplies in some cases*

- Sufficient electricity for critical usage such as medical care, financial and other IT networks, and public utilities (supply of water and etc.)

(4) *Predicting mid-and long-term scenarios together with scenario B*

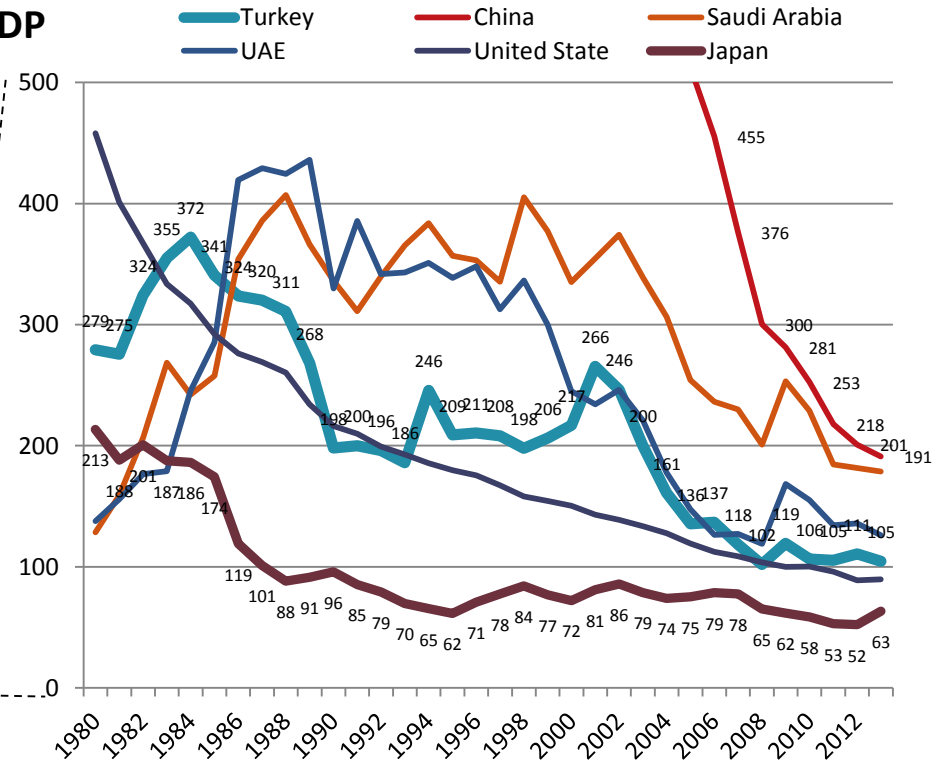
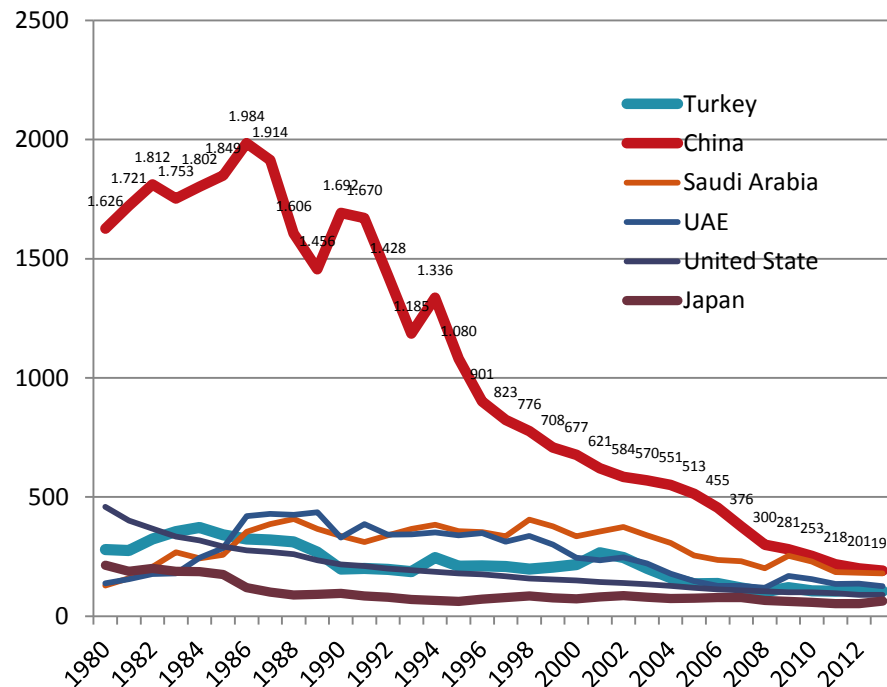
3. Conclusions

Note 1 : Energy consumption per GDP

- Energy consumption per GDP has generally improved.
- There is a significant gap in the pace of improvement among countries.

tonnse of oil equivalent (toe)
/ million dollars of GDP

Energy Consumption per Unit GDP



Source: IEA "Energy balances of OECD/NONE-OECD countries" (Consumption), IMF (GDP)
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3. Conclusions

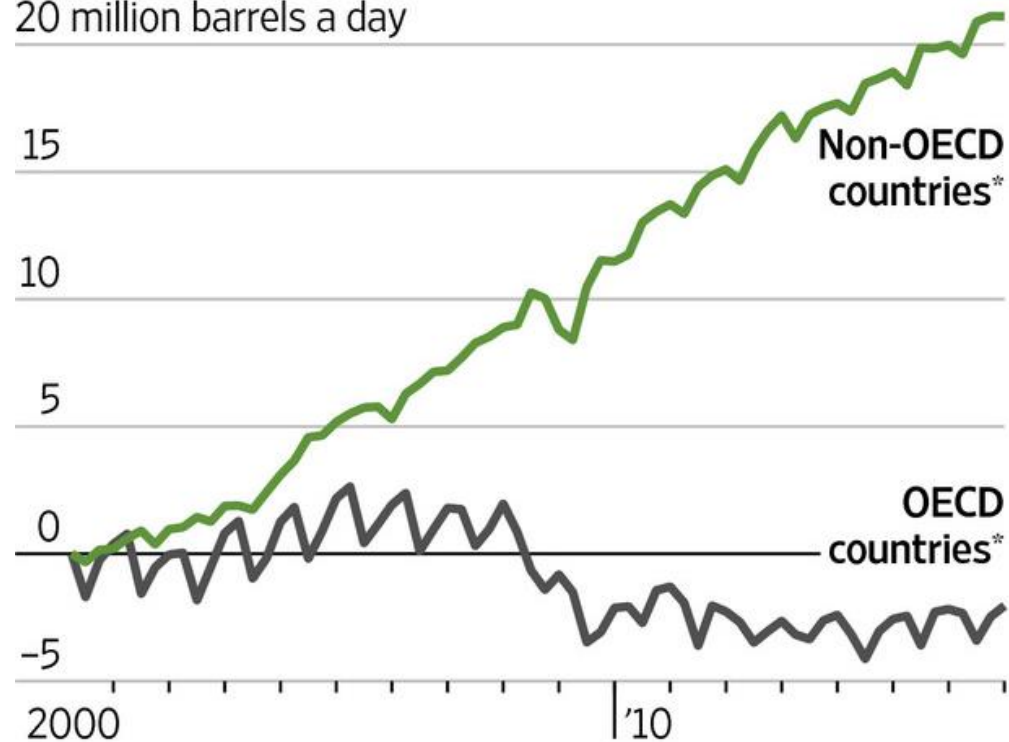
Note 2 : Forecast in Oil Demand

- Regardless of the oil-price trend, oil consumption in non-OECD countries keeps rising.

Crude-oil consumption

Change since 1Q 2000

20 million barrels a day



Source: "Outlook Dims for Global Oil Use," The Wall Street Journal, October 22, 2015

Note: Historical demand estimated, and forecast.