

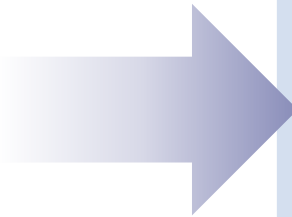
# **Gift Or Trap?**

**How should we capitalize on increased supplies and lower prices of crude oil and natural gas?**

**June, 2014**

# 1. Background

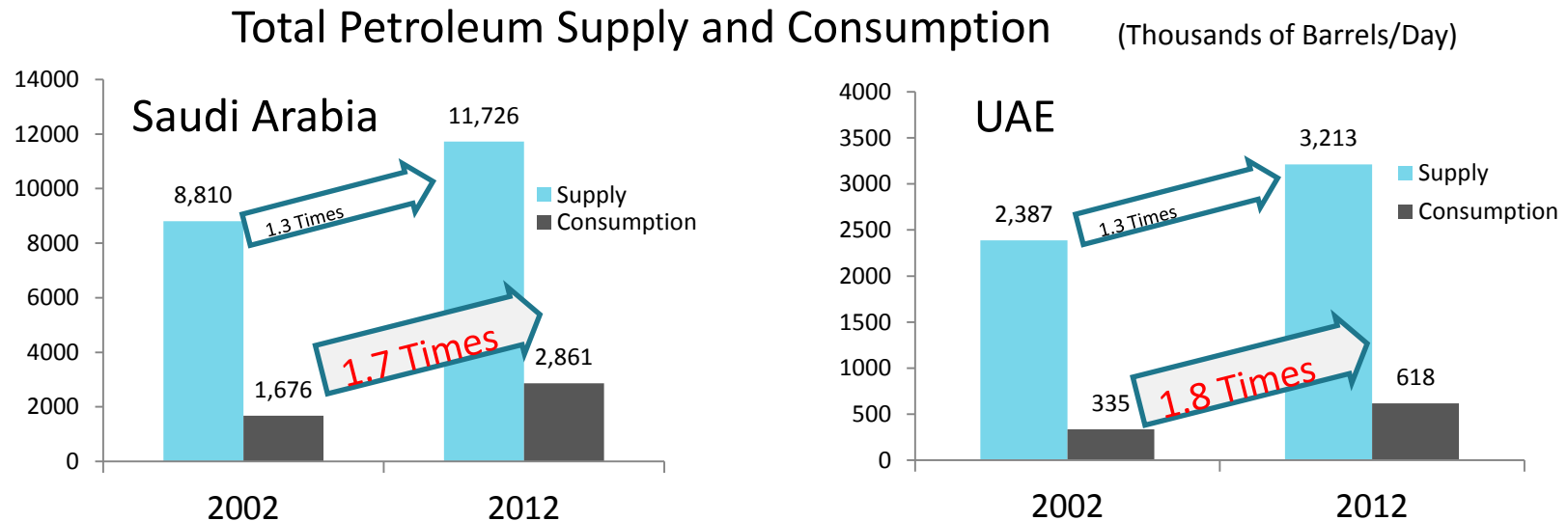
- There has been an increase in shale gas production and a subsequent rise of 'tight' oil production in the U.S. (2005–2013: +44%).
- Slowing economic growth rates are seen not only in developed economies but also in emerging economies.
- The recent completion of natural gas negotiations between Russia and China will allow East Siberian gas to be exported to China. Reportedly, the agreed price of natural gas to China will be lower than the price agreed between Russia and Europe.



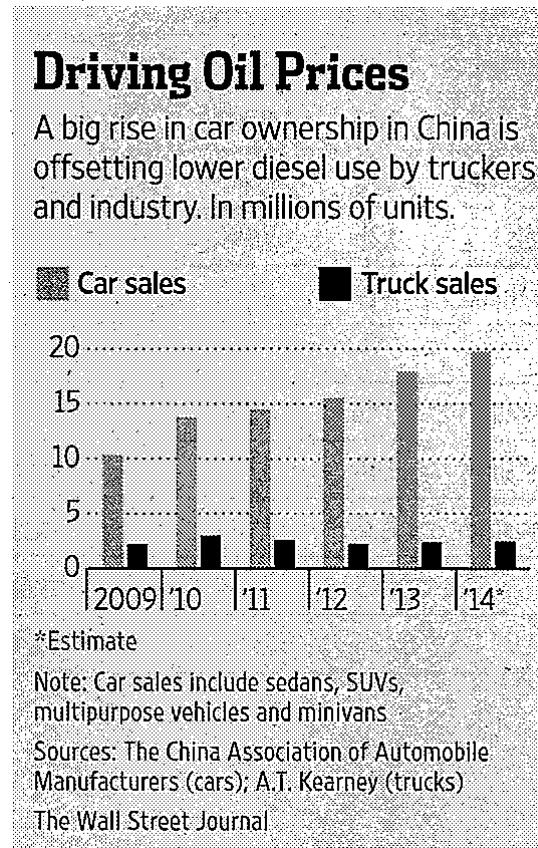
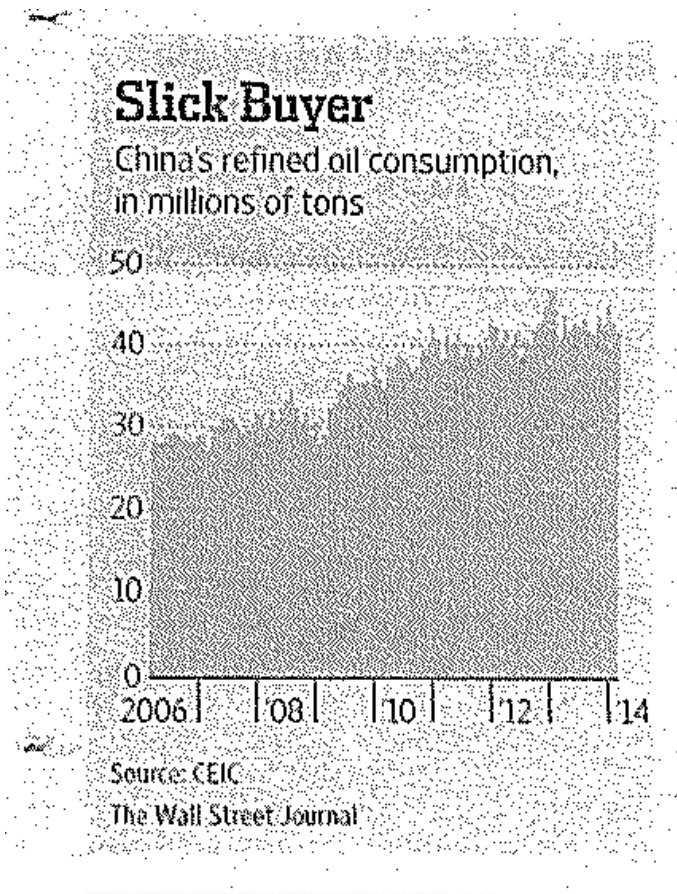
Can we expect to see increased supply and lower prices of crude oil and natural gas?  
Could we have imagined this scenario a decade ago when the price of oil started soaring?

## Caveats

- As a result of lower prices and/or increased supply, oil demand may increase in countries that have high consumption but low energy conservation, such as China.
- Oil demand may surge in supply countries due to their significant domestic industrialization. Oil exporting capacity in these countries may decrease as a consequence.



- There is a notable increase in automobile purchases in China, which is now the largest auto market as well as the largest importer of oil.



In 2010, China had 67 vehicles per 1,000 people, compared with 600 in Europe and 800 in the U.S.

Quote: The Wall Street Journal, May 19, 2014

## Wild Cards

- China's oil- and gas-related industries have a unique structure, characterized by the dominance of state enterprises that do not abide by standard price mechanisms.
- The high liquidity and availability of capital in global financial markets.

## *2. Two scenarios*

### *Scenario 1: “Gift”*

Recently developed shale gas and tight oil capacity, notably from the U.S., along with newly developed natural gas resources from East Siberia coupled with stagnant demand in developed economies relax the global oil and natural gas markets and bring down prices.

# “Gift” Scenario

- In the U.S., domestically produced natural gas and oil resources could strengthen supply structures and create further employment. It would also reduce US oil and natural gas imports and therefore relax the global gas and oil markets.
- In addition to shale gas reaching the market, development of natural gas in East Siberia would increase supply of natural gas.
- If the agreed natural gas price between Russia and China is lower than the price agreed between Russia and Europe, other gas-supplying countries would have to lower their prices in order to be competitive, especially in the Asia market.

## *2. Two scenarios*

### *Scenario 2: “Trap”*

With the prospect of short- to medium-term market relaxation of oil and natural gas, countries will defer investment in energy conservation and non-oil energy sources. When global economic growth becomes more robust and demand increases, or if an unexpected situation occurs somewhere in the world, the price of oil would soar and bring about an unexpected burden on consuming countries.



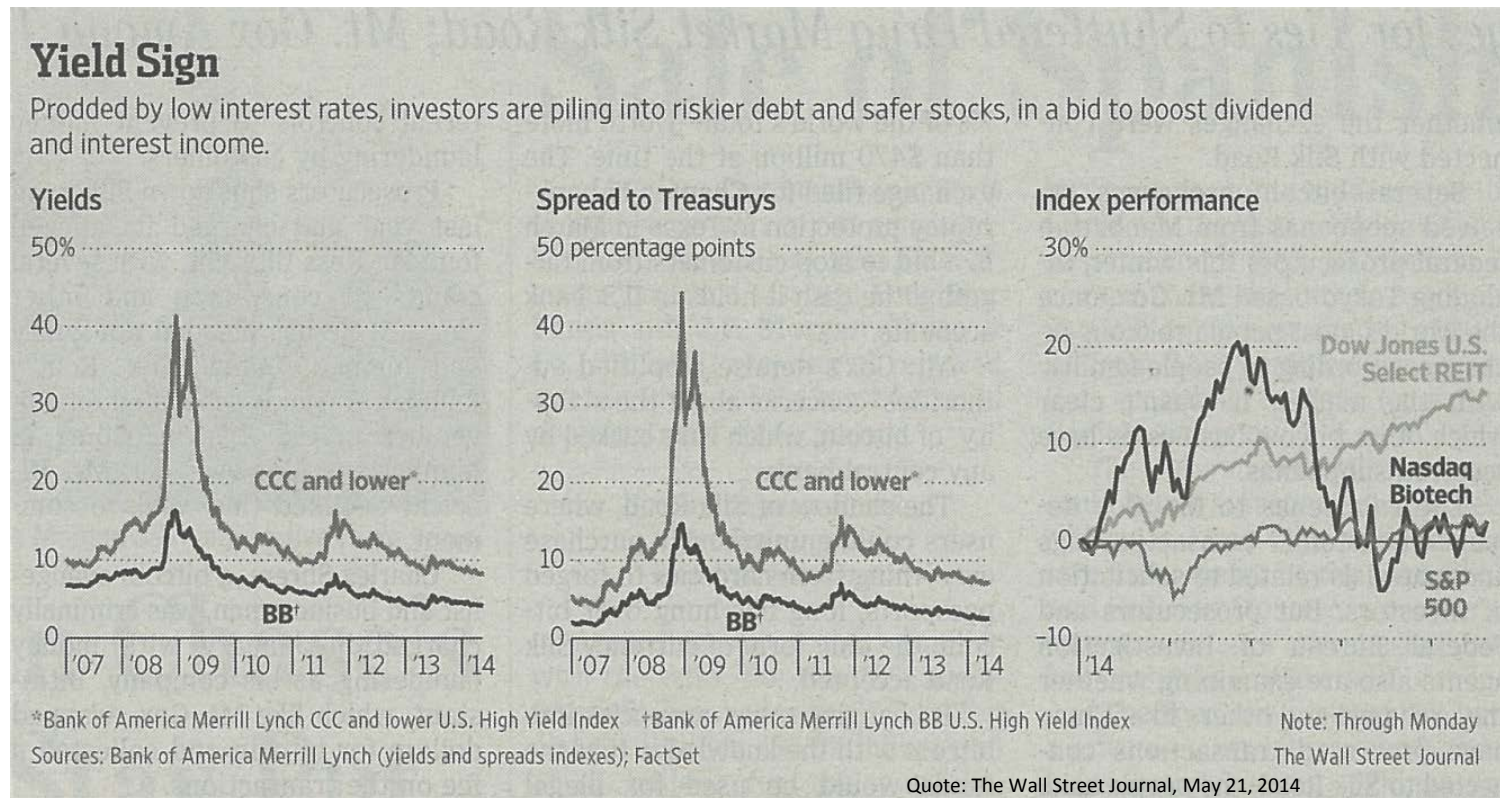
# *“Trap” Scenario*

- Although development of oil and natural gas is being accelerated, actual supply will require infrastructure such as pipelines, refinery equipment, shipping facilities and a train at a harbor.
- There is sometimes significant opposition to such development on environmental grounds. One example is the Keystone XL pipeline project in the U.S.
- Investment for more efficient equipment would not pay off as the depreciation of new investments would be more expensive than consuming more (but cheaper) fuel.

# “Trap” Scenario

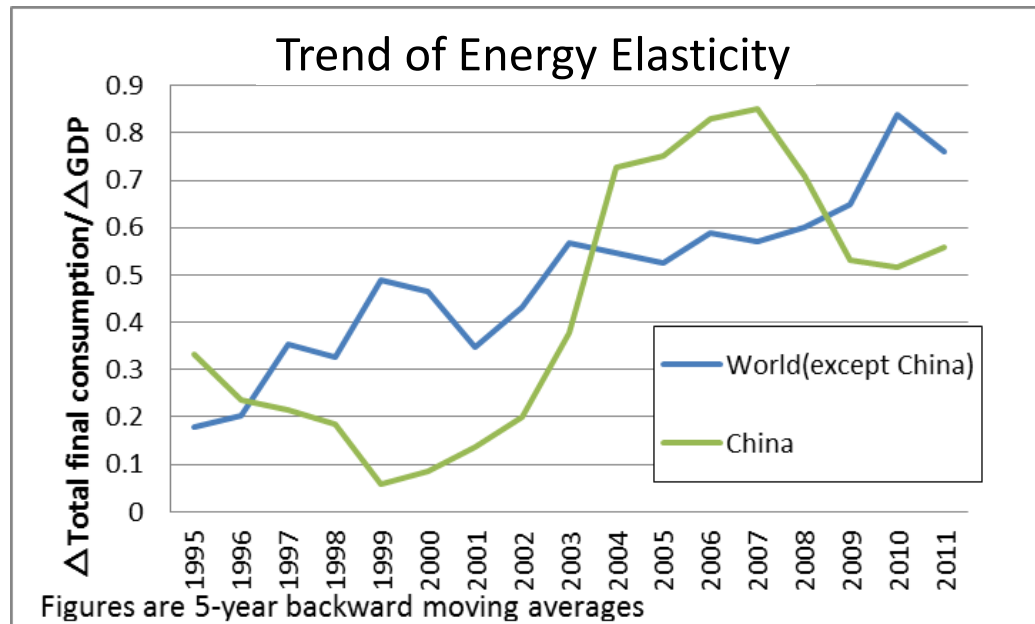
Investors seek higher yields. Recently, with yield levels globally expected to be low, investors have invested more in commodities like oil and natural gas, irrespective of actual demand. This hypothesis is substantiated by recent low level yields of junk bonds.

Fundamentally, the pursuit of efficient energy consumption by individuals and society as a whole would slow (see the graph on the next page).



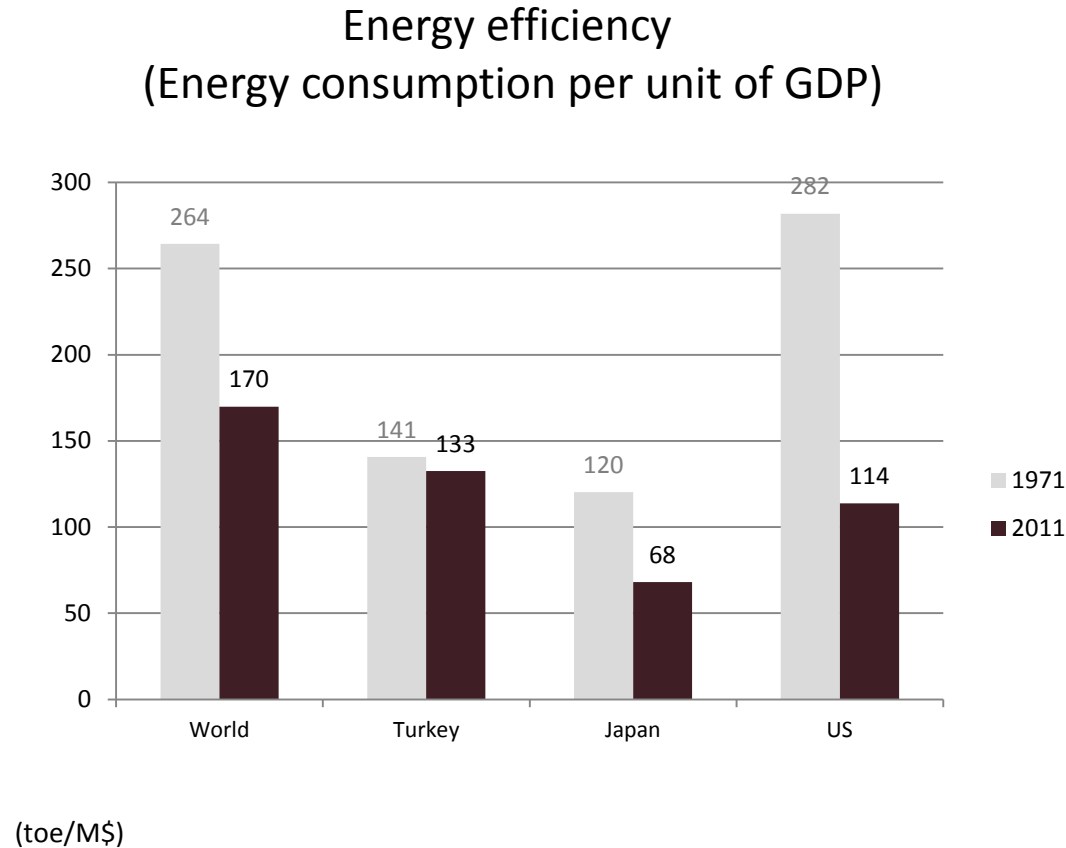
# 3. Points For Discussion

- Energy consumption per unit of global GDP growth had been deteriorating for the past two decades, up until 2011. Though we have to examine recent trends carefully, we nonetheless need to reverse this trend and make society and industry more energy-efficient. This will also contribute to reducing emissions.



# 3. Points For Discussion

- Japan has maintained its position as one of the most energy-efficient countries.

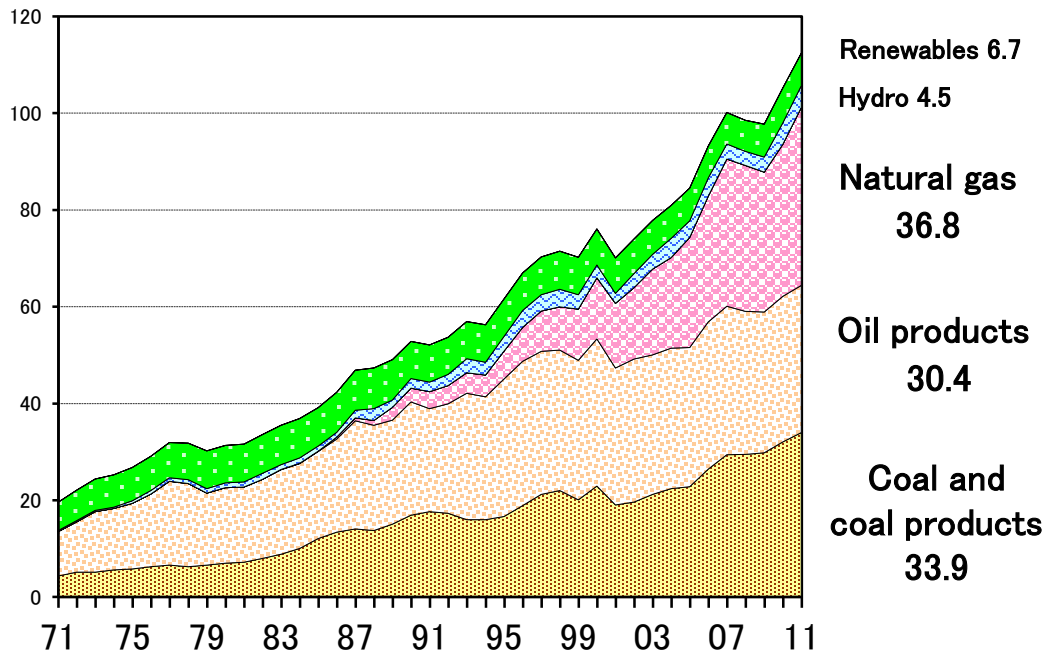


- Once energy-saving investments are introduced, their effect is embedded and therefore long-lasting. As such, returns on these investments should be evaluated not only on a short-term basis. However, when oil and natural gas prices are expected to be on a downward trend, such an evaluation may not be widely accepted.
- When the global money supply is plentiful, oil and natural gas prices may be speculatively overpriced. Energy efficiency would protect individuals and societies from overspending on fuels.

- This would be the case globally, but there would also be particular ramifications for countries with scarce domestic oil resources such as Japan and, to a lesser extent, Turkey.

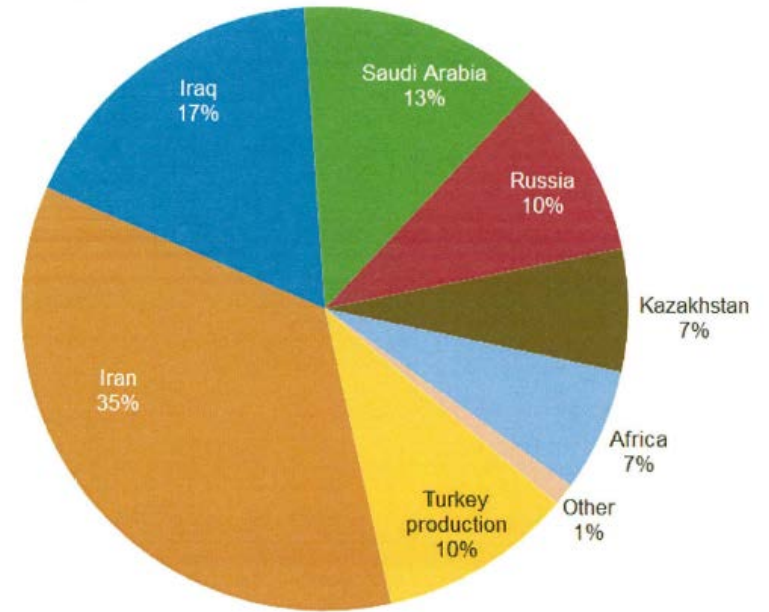
### Turkey primary energy supply

(Million tons of oil equivalent)



(Data: The Institute of Energy Economics, Japan)

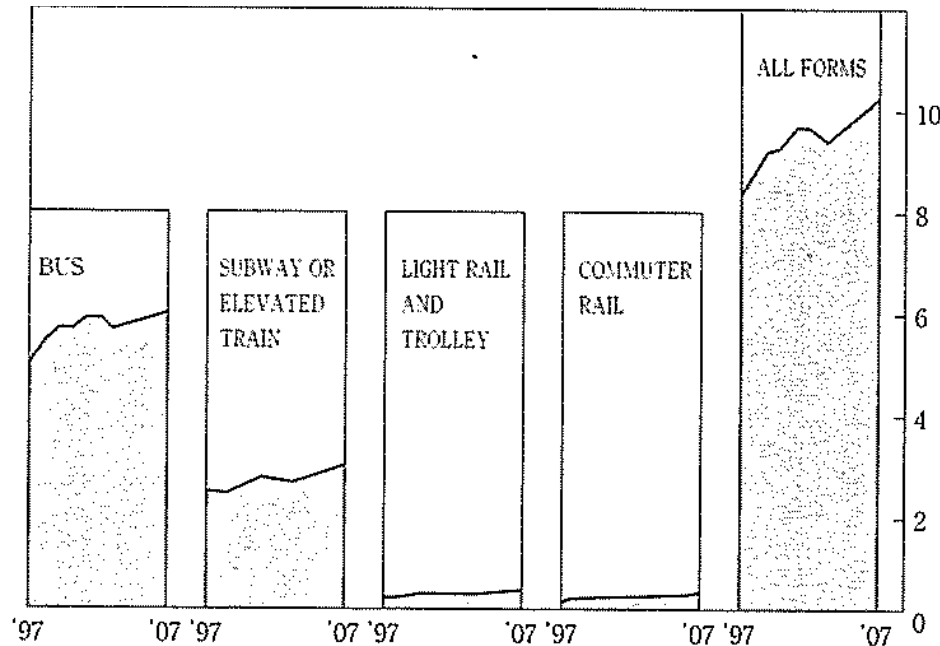
Turkey crude oil supply mix, 2012



Source: U.S. Energy Information Administration, International Energy Statistics, Eurostat

- In the largest oil-consuming country, the U.S., aggressive efforts were introduced to reduce dependency on oil. These included the increased use of mass transportation, like trains and buses, between 2005 through mid-2008. This trend continued until the Lehman Brothers shock and financial crisis.

Trend of Major Transportation Passengers (Billion passengers/year)



Source: New York Times, May 08, 2010

- We must monitor and assess whether an abundance of newly available domestic natural gas and oil would affect efforts towards energy savings and efficiency.
- In the largest oil-importing country, China, efficient consumption of energy (notably automobile fuels) is vitally important not only for economic reasons but also for environmental and health reasons. Everyone wants to enjoy cleaner air in big cities in China.



- China and the U.S. account for 32% of global oil consumption, 26% of natural gas and 60% coal. If both countries improved the efficiency of energy consumption, the positive impact would be tremendous, both for stabilizing the oil and natural gas markets and for reducing emissions.
- With the global trend towards more affluent lifestyles and increased technology use, more energy will be consumed through electricity (rather than heat). Therefore, more wasted heat calories would be generated than in a case where energy is consumed in heat.

# *4. Lessons we must learn*

## **1. Develop an energy-saving society**

- Do not hesitate to implement new and energy-efficient investments and renew existing investments, despite the perceived lack of short-term profit.

# 4. *Lessons we must learn*

## 2. It is important to reduce oil and natural gas consumption.

- For a country with scarce indigenous oil and natural gas resources, reduced consumption would improve the current trade balance at a macroeconomic level. It would also mean that energy imports would be more independent from the influence of supplying countries.
- Furthermore, such a reduction would contribute to decreased emissions.

# 4. *Lessons we must learn*

## 3. Introduce energy sources other than oil and natural gas, such as renewables, coal and nuclear.

### ○ Renewables

- To raise the portion of the total energy supply from renewables, we also have to evaluate their cost efficiency vis-à-vis other primary energy sources.

# 4. *Lessons we must learn*

## ○ Coal

- Coal is globally abundant and therefore does not generally suffer from supply shortages. It does, however, pose some serious problems for the environment, and can cause disastrous accidents at the production and extraction stages.
- Adequate regulations for safe production and efficient combustion technology that can minimize carbon dioxide emissions are indispensable. Both are achievable.

# 4. *Lessons we must learn*

## Introduction of Highly Efficient Coal-fired Thermal Power Generation Plants

- ✓ Enhancing the efficiency of coal-fired thermal power generation is the key to ensuring sufficient electricity supply throughout the world and contributing to minimizing global warming. In 2010, coal-fired thermal power generation accounted for more than 40% of the world's electricity generation.
- ✓ The coal-fired thermal power generation technology used in Japan is some of the most advanced in the world and facilitates efficient electricity generation. The Government of Japan will proactively export this technology to other parts of the world.

**Contribute to the reduction of global CO<sub>2</sub> emissions and countering global warming**

Example:

Applying the efficiency of Japan's latest coal-fired thermal power generators to plants in the U.S., China and India would enable...

...a reduction in CO<sub>2</sub> emissions equivalent to Japan's total emissions (approximately a 1.3 billion ton annual decrease)

Breakdown:

US: 1.95 billion tons → 1.56 billion tons (-390 million tons)

China: 2.27 billion tons → 1.49 billion tons (-780 million tons)

India: 570 million tons → 390 million tons (-180 million tons)

# 4. *Lessons we must learn*

## ○ Nuclear

- All discussions must be based upon first ensuring safety.
- Nuclear can emanate huge amounts of energy and, therefore, generate abundant electricity in a sustainable manner once the nuclear fuels are installed.
- Uranium ores are present in a broad range of countries, including developed and stable ones.
- Nuclear does not emit greenhouse gases such as carbon dioxide.

# 4. *Lessons we have to learn*

## 4. Diversify energy supplying sources.

- History tells us that much oil was produced in geopolitically volatile areas. A significant portion of oil is from areas with hard terrain and needs extensive infrastructure construction. Practical wisdom is not to depend on a limited number of supplying countries, but to diversify sources, lest even a single geopolitical disruption in a supply area or on a transit route to an importing country should cause interruptions.



## 4. *Lessons we have to learn*

### 5. Prepare for any situation and maintain appropriate stockpiles.

- Suppose that a country has a petroleum stockpile equivalent to a month's consumption. If petroleum supply to the country falls by ten percent, the stockpile would compensate for the reduction and, therefore, domestic supply would not decrease for ten months.

# 5. Conclusion

- The shale gas and tight oil boom led by the U.S. is significantly increasing supply in the global energy market. Also, a recent agreement between Russia and China on supplying natural gas from East Siberia to China may lead to increases in cheaper natural gas from other supplying countries, which have to be competitive with both the U.S. and Russia.
- We must ensure that these events be a gift to the global energy market. In order to do so, we should keep seeking the most efficient energy consumption structure and making investments, and avoid risk of complacency due to the present situation. Also, when an unexpected disruption occurs, the prices of oil and natural gas may easily fluctuate.

# 5. Conclusion

- It is the case in a consumer-driven economy, 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.