Can we predict Global Oil Price? The Implications of Energy Security in East Asia

Dr. HAN, Phoumin
Energy Economist

“The views and interpretations are of presenter’s view, and it may not reflect the position of the organization”
OUTLINE OF PRESENTATION

I. OVERVIEW OF ENERGY DEMAND

II. OIL PRICE AND DEVELOPMENT

III. GAS PRICE AND DEVELOPMENT

IV. ENERGY SECURITY CONCEPT & RESPONSE MEASURES

V. CONCLUSION
I. Global energy demand: Economic Activities and Petroleum Demand
World Oil Demand Outlook

By region

- International bunkers
- Oceania
- Africa
- Non-OECD Europe/Central Asia
- OECD Europe
- Middle East
- Asia
- Latin America
- North America

By sector

- Transformation
- Non-energy use
- Buildings, etc.
- Transport
- Industry

Source: IEEJ, Asia/World energy outlook 2017
Fuel Mix

Primary energy consumption by fuel

- Renewables*
- Hydro
- Nuclear
- Coal
- Gas
- Oil

Shares of primary energy

- Oil
- Coal
- Gas
- Hydro
- Renewables*
- Nuclear

*Renewables includes wind, solar, geothermal, biomass, and biofuels

Source: BP Statistics 2018
II. Oil Price & Development-Historical Crude oil prices
US dollars per barrel

Source: BP Statistics 2018
Can OPEC’s Collective Decision Affect Global Oil Price?

- Crude oil production by the OPEC is an important factor that affects oil prices.

- OPEC organization seeks to actively manage oil production in its member countries by setting production targets. Historically, crude oil prices have seen increases in times when OPEC production targets are reduced.

- OPEC member countries produce about 40 percent of the world's crude oil. Equally important to global prices, OPEC's oil exports represent about 60 percent of the total petroleum traded internationally.

- Because of market share, OPEC's actions can, and do, influence international oil prices. In particular, indications of changes in crude oil production from Saudi Arabia, OPEC's largest producer, frequently affect oil prices.
Can we predict oil price?

US dollars per barrel

$US 70/bbl?
What push the price high to $US70/bbl?

- OPEC + Russia extended production cuts throughout 2018;
- OPEC closely monitors the inventory stock;
- US shale oil product is expected to increase to 10.2 mbbl/day;
- However, it observed that inventories fell by almost five million barrels to 419.5 million barrels in the week to 5 January. US production also fell by 290,000 barrels per day to 9.5 million (EIA)
-Assumption of oil and natural gas price

Crude oil
- Healthy growth of demand.
- Supply need to rely on risky OPEC production.
- Marginal production cost will gradually increase.
- In flow of speculative money will maintain high volatility.

Natural gas
- US will enjoy low price, while marginal production cost will gradually increase.
- Continue to be affected by oil price.
- LNG import from US has limited effect to reduce price in Asia.

* Historical prices are nominal price. Assumed future prices are real price in $2016.
✓ Factors to constrain oil demand growth

- Advanced policy and technology would curb oil demand.
  - Efficiency improvement.
  - Switch to lower carbon fuels.

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**Outlook of world’s TPES by scenario**

<table>
<thead>
<tr>
<th>Year (Mtoe)</th>
<th>Fossil fuel share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>81%</td>
</tr>
<tr>
<td>2050</td>
<td>79% (Reference)</td>
</tr>
<tr>
<td></td>
<td>68% (Advanced Technologies)</td>
</tr>
</tbody>
</table>

Source: IEEJ, 2017
Major oil trade movements 2016
Trade flows worldwide (million tonnes)
III. Gas Prices and Development

$/mmBtu

- US Henry Hub
- Average German Import Price cif
- UK NBP
- Japan LNG cif
Henry Hub natural gas spot prices, first day of the month, 2010–17

Source: EIA, 2018
Growth of LNG Demand in Asia

Source: BP Statistical Review of World Energy Outlook 2017
Major gas trade movements 2016
Trade flows worldwide (billion cubic metres)

Source: BP Statistical Review of World Energy Outlook 2017
LNG Trade Flow by 2035 (Net amount)
Increasing LNG import in ASEAN

- **Bangladesh**: Fast growing demand.
- **Myanmar**: Fast growing demand.
- **Viet Nam**: Rapidly increasing demand.
- **Thailand**: Deplete domestic resource.
- **Malaysia**: Mismatch of demand and resource distribution.
- **Singapore**: Opportunity in LNG trade
- **Indonesia**: Fast growing demand.

Source: IEEJ, 2018
IV. The Implications of Energy Security

- The higher oil/gas price (how high?) affect the affordability of consumers and also affect the production cost;

- Oil price is one of the important signal for every country to safeguard their supply shock, however, the cause of higher oil price is the most important;

- If a shortfall of supply due to security issues/middle transport route or disaster hit oil facilities, thus energy security response is necessary; otherwise oil price should be left for the market to play;

- All countries may need some kind of energy security to protect economies and some important sectors when needed in the case of oil supply disruption.
The Implications of Energy Security - The Concept

- **Secure resources**
  - Develop domestic resource
  - Acquire overseas resources
  - Transportation risk management

- **Reliable domestic supply chain**
  - Reliability of energy supply
  - Build supply infrastructure

- **Manage demand**
  - Energy efficiency

- **Preparedness for supply disruption**

- **Environmental sustainability**

- Having high energy security mean having high energy resiliency.
- Oil & gas resiliency is a state in which "if oil & gas disruption" the state could restore the situation back to normal situation as quick as possible either by its own ability or by the help of others (ASEAN body-APSA, or Japan, Korea or EAS framework)
Response Measures

Increase supply
- Stockdraw
- Production surge

Reduce demand
- Demand restraint
- Fuel switching

Government
- Loans
- Sale/tender

Agency
- Loans
- Sale/tender

Industry
- Reduction of mandatory level
- Instruct physical release
- Use of spare production capacity

Increased indigenous production

Light-handed
- Persuasion/public campaigns (e.g. eco-driving, carpooling)

Medium
- Administrative/compulsory (e.g. speed reduction)

Heavy-handed
- Administrative/compulsory (e.g. driving restrictions)
- Electricity generation in multi-fired installations

Temporarily replacing oil use with other energy sources
Do your country have legal and institutional framework to deal with emergency energy response?

– Legislation:
  • Law or regulations to deal with oil & gas energy emergency response?

– National Emergency Strategy Organisation (NESO)
  • Any assigned body or institution?

– Data collection
  • Monthly Oil & Gas Statistics?
  • Emergency questionnaire?
National Emergency Strategy Organization (NESO) to deal with energy emergency response

NESO
Chair: Deputy Minister or Director General of the Ministry
Secretary: Department of Oil of the Ministry

Minister of the relevant ministry

National Emergency Council

Ministry of Transportation
Ministry of Foreign Affairs
Ministry of Interior
Other relevant ministries
Oil industry
Stockpiling organization (if existing)

APSA Secretariat
IEA Secretariat

Minister of the relevant ministry

Other relevant ministries
Supply-side measures

• Stock-draw
  – Most commonly used & most effective measure
  – IEA countries obligated to hold at least 90 days net-imports
  – ASEAN Petroleum Security Agreement (APSA) similar to IEA, CERM, but APSA does not function.

• Production Surge
  – Cambodia does not have fossil fuel domestic production yet
  – ASEAN as a group are net energy import/ dependent

• Stock holding system
  – Strategic oil stock
  – Most ASEAN Member States hold about 15-20 days of operational stocks at the oil imported company level, although the regulation require them to hold about 30 days
V. Conclusions

- It is not impossible, but very hard to predict the oil price, although we know factors contributing to oil price;
- Oil price plays significant role in politics and energy security; Thus knowing the sources/reasons causing oil price high is important to take appropriate action;
- Pressures to curb oil demand growth are likely taking place such as EV, EEC, Climate Change...etc, and technologies & innovation will shape oil consumption pattern in the near future;
- Energy infrastructure resiliency, energy cooperation remain importance for the region’s energy security;
- Physical oil & LNG stock is the most important part for each country in the region to make response to disruption of oil & gas.
- Specific organization like NESO should be considered for the oil and gas supply disruption.