

Energy Problems and Cooperation in Asia

-- Aiming to Establish Asian Superiority --

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and Principal Asian Consumers Regarding Stability, Security and Sustainability in the
Asian Hydrocarbons Economy

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1. Introduction

The aims of this paper are to focus on energy problems in Asia centering oil problem and to discuss the necessity of energy cooperation among Asian countries.

The paper is composed of the following three sections. In the first section, I will describe present energy problems in Asia. In the second section, I will discuss several strategic subjects which should be challenged by Asian countries from now. And finally, I will summarize several concluding remarks of this paper

2. Energy Problems in Asia

Asia has been faced on various kinds of energy problems recently. Of these, I will pick up three representative problems in the Asian hydrocarbon economy in this section.

2.1. Economic development and steady growth of energy consumption

The first problem is the stability and security of oil supply which is, of course, well-known already. In the past 20 years since late 80's, energy consumption in Asia has been increased sharply due to the steady economic growth.

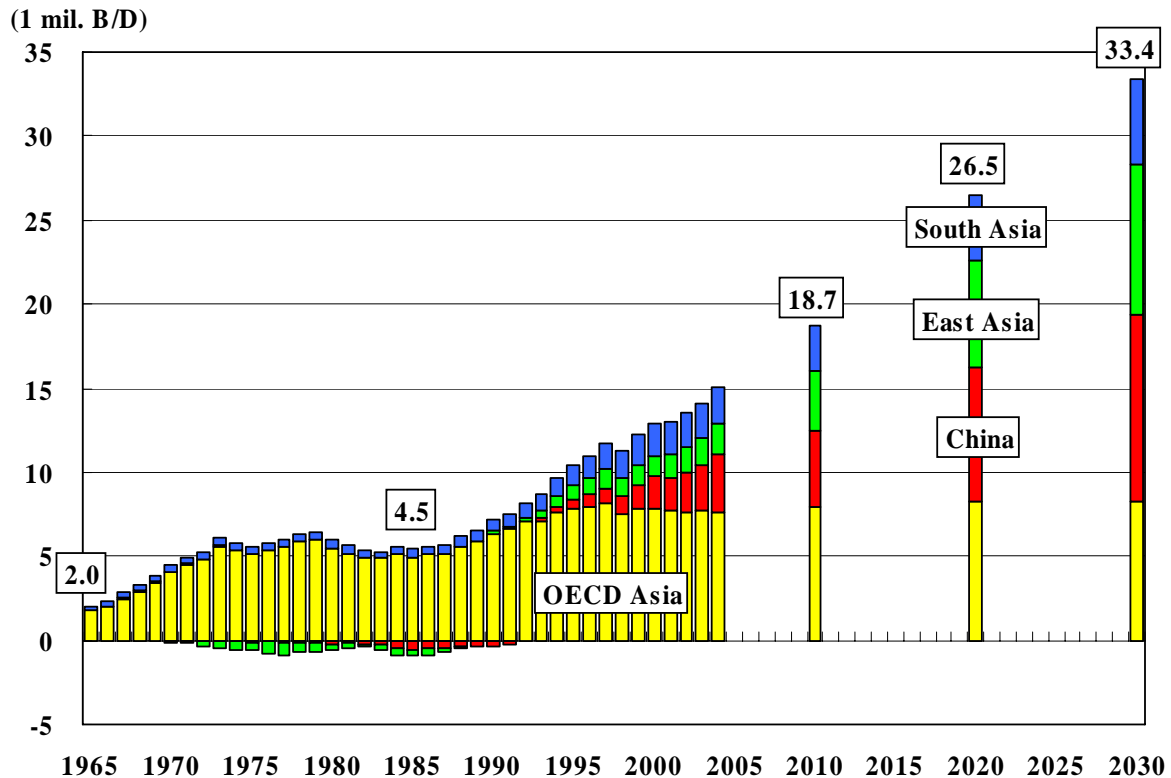
This trend is expected to continue up to 2030 in various energy outlooks. The specific characteristics of energy consumption in Asia are higher dependency on coal and quite low share of natural gas.

Oil consumption in Asia has been also increased rapidly centering transport fuel. Due to the level off of oil production in Asia, net oil imports in Asia will expand from 15 millions B/D in 2004 to 33 millions B/D in 2030, a more than doubled increase, as shown in Fig. 1

Long-term prospects on large oil demand growth in Asia means further increasing dependency on Middle East oil in terms of volume. The share of Middle East oil is already more than 80% in Asia, thus, the share itself seems to have no drastic change. The problem for Asia is a sharp volume increase of Middle East oil.

Oil supply disruption in Middle East, if happen, will be more and more severe, as the absolute volume of Middle East oil import increases more and more.

Fig. 1 Increasing net oil import and Middle East Dependency in Asia



(Source) Made from data in IEA energy statistics and IEA World Energy Outlook 2004

2.2. Recent skyrocketing rise and violent fluctuations of crude oil price

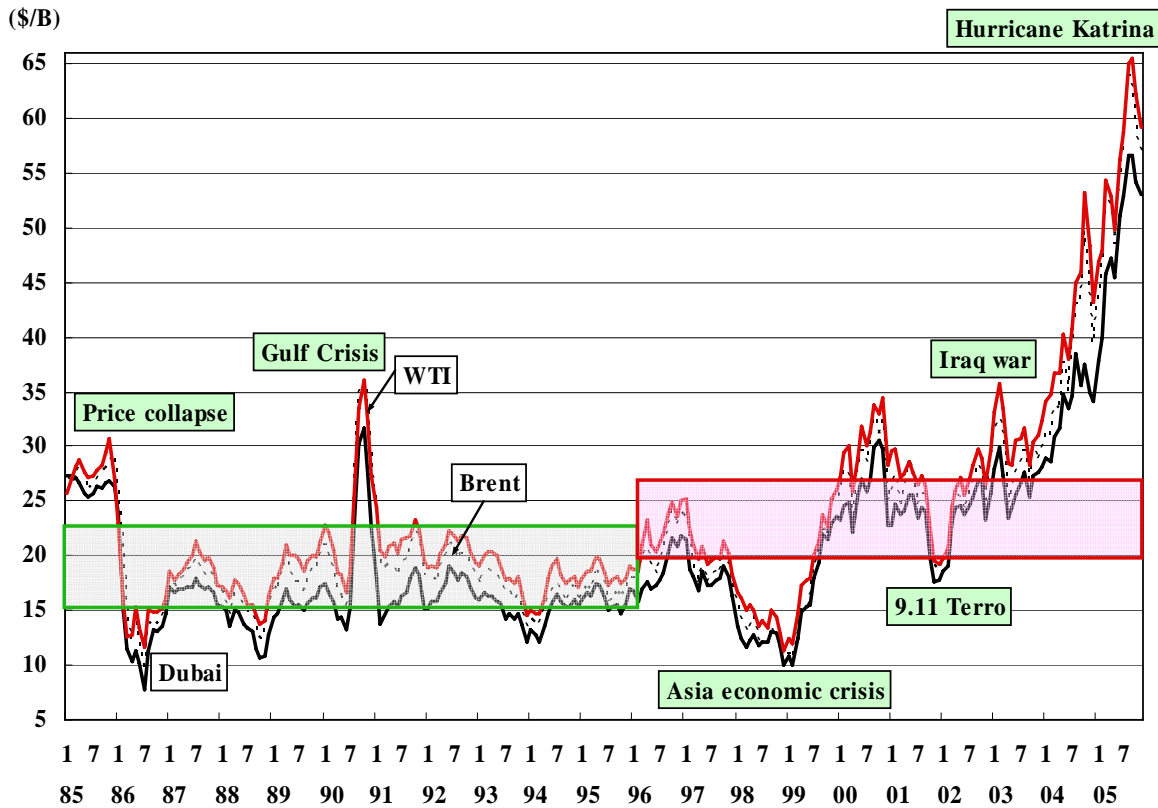
The second problem is the recent skyrocketing rise and violent fluctuations of crude oil price. During 1987 through 1995, crude oil price generally varied within a band of 15 to 21 \$/B and it is said that OPEC could hold price fluctuations to this range through production control, as shown in Fig.2.

From 1996, the crude oil price fluctuations have widened drastically and the skyrocketing price rise has started. In this year, 2005, crude oil price has been always higher than 50\$/B and reached the abnormal level of 70\$/B due to Hurricane Katrina in the United States.

The skyrocketing rise and violent fluctuations of crude oil price were not caused by the depletion of oil resources (oil resources constraint) and also not mainly caused by OPEC production control and not by rapid oil demand increases in Asia.

They were mainly caused by the reduction of structural surplus made by oil crises in 70's in crude production, oil refining and oil inventory especially in US and Europe. That is, the supply cushions in US and Europe has been weakened in the past 20 years. The overshooting reaction in the oil future market has also made matters worse.

Fig. 2 Recent Skyrocketing Rise and Violent Fluctuations of Crude Oil Price



(Source) Made from data in IEA oil market report and US.DOE Home page.

Asia is only a final acceptor of the damages induced by price hikes and fluctuations. We need to find a solution to stop a vicious spiral of violent price fluctuations and lowering long-term plant investments.

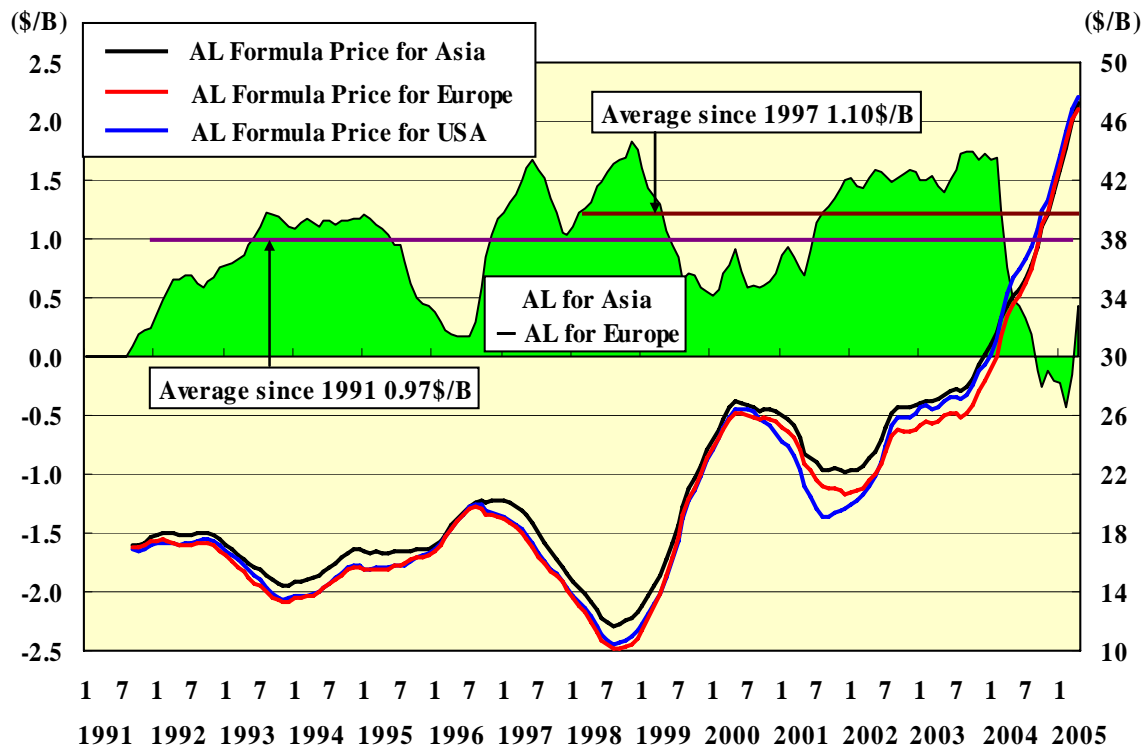
2.3. Higher energy prices in Asia

The third problem is the relatively higher energy prices in Asia. Crude oil prices for Asia have been higher than those for Europe and US by \$1~ \$1.5 \$/B over ten years from 1992, as shown in Fig. 3. Therefore, the higher oil prices in Asia are not a temporal phenomenon limited to short-term.

Since energy prices are determined in reference to crude oil prices for Asia, the issue of higher prices is not only limited to oil but also applied to all other energies. In addition, the price settings of LNG and LPG for Asia have an original higher price problem, respectively. For example, LNG prices for Asia also remained higher than those for Europe by average 5.7\$/B-oe since 1992.

If this situation is common to all Asian countries, Asia should not keep quiet at the existence of higher prices, causing large economic losses.

Fig. 3 Higher Oil Prices in Asia Continuing from 1992



3. Strategic Subjects Should be Challenged by Asian Countries

In order to solve three energy problems in Asia discussed already, it is quite indispensable for Asian countries to challenge the following eight strategic subjects and measures, (1) to prepare oil stockpile for emergency and to develop coordinated system for oil stockpile use, (2) to develop international oil markets in Asia, (3) to strengthen fuel switching flexibility at demand side, (4) to prepare oil stockpile at final consumer, (5) to develop oil and gas resources in FSU and to prepare supply networks, (6) to develop technologies for effective use of coal, rich domestic resources(7) To develop and to infiltrate technologies for energy conservation and environmental protection and (8) to develop competitive renewable and new energies.

I will explain four strategic subjects in detail in this section.

3.1. Developments of oil market in Asia and Middle East

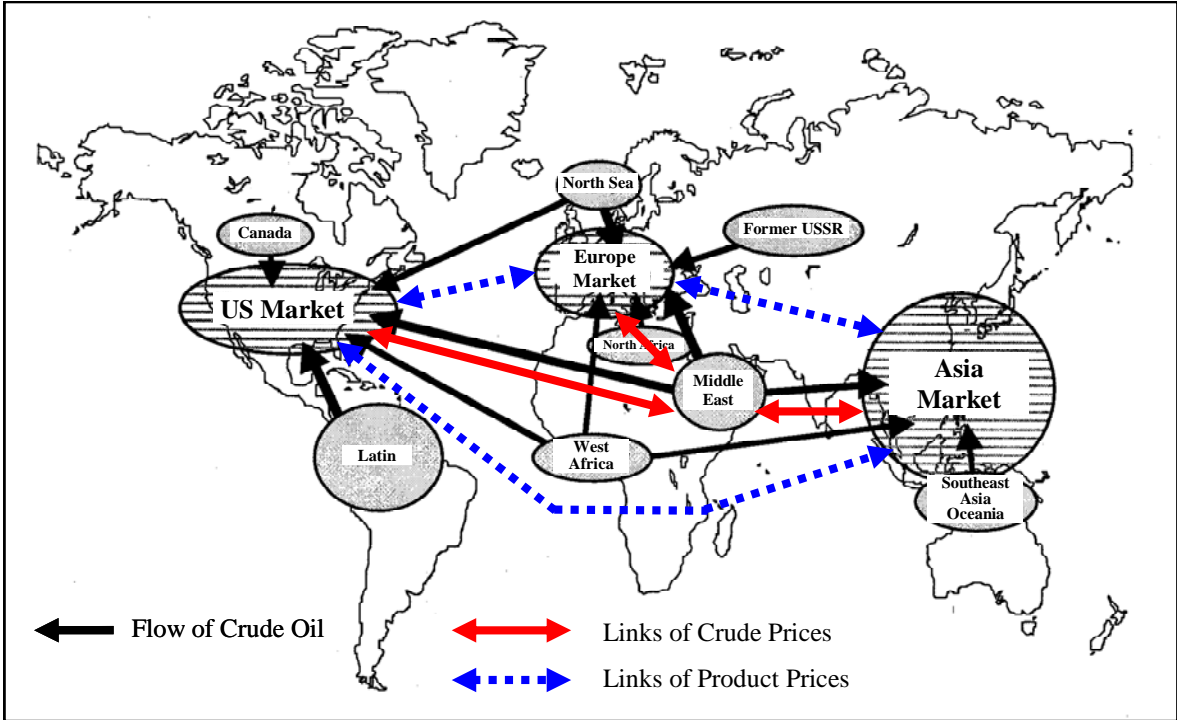
The first strategic subject is the oil market developments in Asia and Middle East. The recent price hikes and violent fluctuations were mainly caused by the marginal WTI and Brent markets reflecting weakened supply cushions in US and Europe.

If Middle East oil producing countries establish crude oil market by spot trading of their

crude oils, Middle East crude oil market will function as the very center of global crude oil trading, instead of marginal Brent and WTI trading.

It is also important to develop international oil product market in Asia. To achieve this objective, it is crucial to streamline and strengthen Asian oil product market, by revitalizing trading activities through the deregulation of each Asian country.

Fig.4 Global Links of Oil Markets



Through these market developments in Asia and Middle East, it is important to form a global link of oil markets in the next step as shown in Fig. 4.

The participation of Asia and Middle East into the global link of oil markets will bring a well-balancing function to adjust the global price level of oil and minimize price fluctuations.

3.2 Development of alternative crude oils in the areas excluding Middle East

The second strategic subject is the alternative crude oil developments in the area excluding Middle East. Entering 90's, many Asian countries have imported West African and North Sea crude oils, but the present supply potential is limited.

Therefore, we need to develop alternative crude oil in various areas excluding Middle East. We have four potential candidates of such developments. First candidate is neighboring oil resources such as Sakhalin, Far East Russia and Central Asia. This topic is

one of the important key-elements which should be discussed in the today's Round Table.

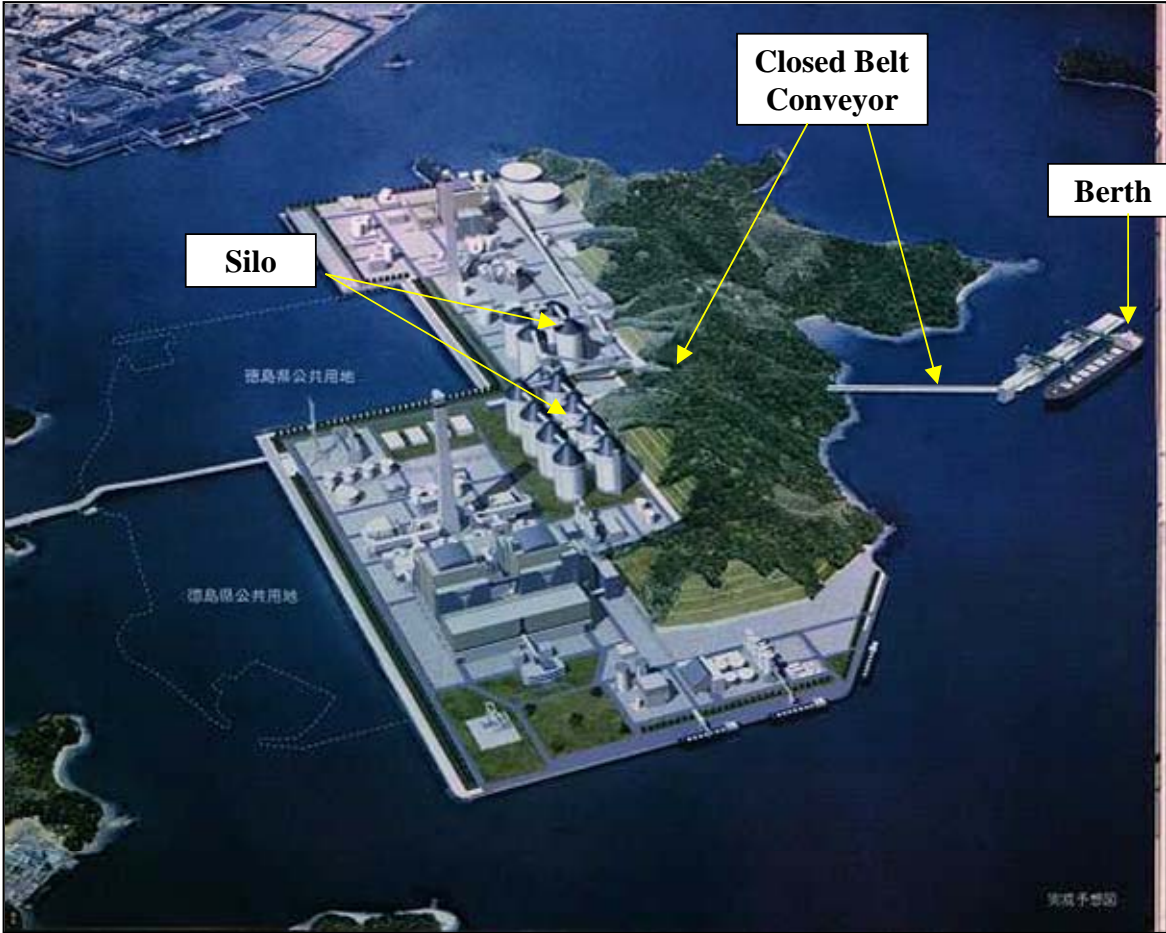
Second candidate is oil resources in Atlantic Basin, third candidate is unconventional oil such as oil sand and oil shale and the last candidate is liquid fuels (GTL) from various primary energy such as natural gas, coal etc.

3.3. Efficient Use of Coal Positioned as Rich Domestic Resource in Asia

The third strategic subject is efficient uses of coal which is positioned as a rich domestic resource in Asia. Now coal is being exposed on against winds because of environmental problems.

But if we consider steady economic growth and rapid expansion of energy demand in the future of Asia, we cannot give up coal option easily. We should concentrate large efforts on technology developments such as clean coal technologies and gasification plant in order to make effective uses of coal in Asia.

Fig. 5 Recent Coal-fired Power Plant in Japan



Coal fired power plants recently constructed in Japan are equipped with closed belt conveyors that convey coal from ports all the way to coal silos, as shown in Fig. 5. Coal

crushed up into fine powder in a silo is blown directly into a boiler. Filtered, desulfurized, and denitrified emissions are released into the air without any pollutants. Moreover, all by-products such as ash and gypsum are utilized as materials for cement, plaster boards, and the like.

As the operations of this closed system expose no coal, it can be set up even in the vicinity of national parks without causing any controversy. Although the construction of the system itself costs a lot, it has sufficient cost competitiveness compared with other power generation systems.

3.4. Increase of consumer's strength and advantages

The last strategic subject I would like to insist is to increase consumer strength and advantages. In the past, Japan adopted mainly supply-side measures by thinking energy demand as a fixed element. But, I think, it is important to develop demand-side flexibility in consumer from now on.

For example, we can list up the following methods such as (1) flexible selection of crude and product import, (2) fuel switching capability in the end-use of energy, (3) developments of higher-grade energy saving technology, and (4) development of technologies for efficient use of various energies in end-use.

Now borderless conditions due to deregulation are exposed on energy industries in Japan. I think, it is important to make a system to pursue appropriate energy mix flexibly and finally to establish comprehensive energy industry which can handle all energies flexibly.

3.5. Importance on regional and international cooperation in energy sector

To achieve these various subjects and to solve many energy problems in Asia, I think, it is indispensable to make energy cooperation among Asian countries.

Regional and international cooperation will be beneficial from the following viewpoints, (1) synergies, (2) the most suitable utilization of resources, capitals, technologies, infrastructures etc. (3) bargaining power and (4) Shift to regional energy market, as shown in Fig. 7.

Several kinds of regional cooperation in Asia was organized recently as shown in this slide. Cooperation between North and Central Asian producers and principal Asian consumers is also another potential and important cooperation in Asia.

If we would like to get steady progresses and sound results, to adopt step by step method is quite important. I heard India and Japan will have a joint research project related to this cooperation as the first step. I sincerely hope that the joint research project can produce successful and fruitful results.

It is essential for Asian countries to form a common perception and to cooperate at the various governmental and private stages. It is also essential that private companies incorporate not only a perspective of cooperation, but also a perspective of competition as

well, and that they pursue a win-win relationship entailing mutual benefits.

Fig. 7 Importance on Regional and International Cooperation in Asia

- **Energy security is a common issue in Asia**
- **Regional and international cooperation is beneficial from the following viewpoints**
 - # **Synergies**
 - # **The most suitable utilization of resources, capitals, technologies, infrastructures etc.**
 - # **Bargaining power**
 - # **Shift from national energy market to regional energy market**
 - = **Energy efficiency improvements**
 - = **New business opportunity**
- **Examples of regional and international cooperation in Asia**
 - # **Cooperation among North East Asian countries**
 - # **Cooperation in ASEAN+3 (China, Korea, Japan)**
 - # **Cooperation in ASEAN**

In addition, it is important to have opinion exchanges through dialogs between producers and consumers such as the International Energy Forum (IEF).

It is also necessary for the Middle East and Asia to strengthen their mutual ties through a relationship of supply security and demand security and to develop a dialog on energy between East and West Asia.

4. Concluding Remarks

Asia is now faced with various energy problems such as oil supply security, violent price fluctuations and higher energy prices, as discussed in Section 2.

To solve these problems, I think, Asia should challenge various strategic subjects in the hydrocarbon sector, as discussed in detail in Section 3. There is no single all-mighty option. Therefore, Asia needs to tackle all of the possible options to establish her superiority in the Asian hydrocarbon economy.

For this purpose, regional and international cooperation among Asian countries is quite crucial to achieve sound and sustainable developments. I wish the issues I pointed out in my presentation would be helpful and useful for today's discussion in the Round Table from now.