

The investigation report to improve the rule and regulation for Oil Stockpiling among Asia region¹

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For Japan, China, Korea and ASEAN countries, or ASEAN+3 countries, economic growth will be expected and the large increase of demand for oil will also be foreseen in the future. ASEAN+3 countries have no other choice to depend on import crude oil and petroleum products from overseas countries due to big disparity of crude oil demand and supply. Tension rises under the current situation in Middle East and Iraq, and it brings the high price in crude oil market, the supply and demand is very vulnerable. For the ASEAN+3 depend on import, it should be pressing problem to secure Oil, and improvement and expansion of oil stockpiling should be vital for this region. The items listed below are the result of the investigation for the rules and regulations of Europe, USA and other some Asian countries in order to promote the establishment of oil stockpiling for this.

1. EU (European Union)

While the International Energy Agency (IEA) stipulates an oil stockpiling obligation of 90 days equivalent of net import, the stockpiling obligation of the European Union (EU) is set at 90 days equivalent of domestic consumption. Moreover, according to the directive adopted on September 11, 2002 by the European Commission (EC), the stockpiling obligation was increased to 120 days equivalent of domestic consumption. This level should be achieved by January 1, 2007. However, as for crude oil-producing countries, a quantity equivalent to maximum 25% may be deducted from the obligatory quantity of stockpiling. Also, each country is obliged to establish a public stockpiling organization, and a holding of 40 days equivalent or more is required.

<Types of oil for stockpiling>

For each of the following three categories, stockpiling of 90 days equivalent shall be maintained:

- (i) Automobile fuel/ aviation fuel (gasoline type)
- (ii) Gas oil, kerosene, and jet fuel (kerosene type)
- (iii) Heavy Fuel oil

<Substitution with crude oil>

Crude oil and half-finished products shall not exceed 10% of the total obligatory quantity of Category 1 and Category 2, and 50% of Category 3. Crude oil and half-finished products shall be converted to products based on the yield of products for each category obtained from refining companies in the preceding calendar year, or the ratio of total quantity refined and total quantity of crude oil used.

¹ This report is the outline for the project entrusted from the Ministry of Economy, Trade and Industry. The Ministry approved the disclosure of this report.

<Definition of domestic consumption>

Marine fuel burned at sea shall not be included in domestic consumption, while aviation fuel burned in flight shall be included.

<Holding of stockpiling outside the country>

On condition that there is an agreement between governments, oil stockpiling can be held in the territories of other member nations.

<Obligation for reporting>

Member nations have the obligation to submit a summary of stockpiling quantity to the commission by the end of each month. At the beginning of each calendar year, a new obligatory stockpiling quantity shall be calculated, and the stockpiling of that quantity shall be achieved by July 31 at the latest.

<Emergency countermeasures>

In the event that there arises any difficulty in crude oil supply to EC member nations, the commission shall call on member nations for consultation. Until such consultation is completed, member nations shall not withdraw from the stockpile to the extent that it is reduced below 90 days equivalent of the stockpiling obligation quantity. Member nations may reduce their consumption by taking measures to curb demand, or instead may withdraw any stockpiled oil in excess of their obligatory quantity. The commission may set a target to the effect that consumption of oil products should be reduced by 10% of usual consumption up to a maximum of two months.

<Transition of stockpiling quantity>

The stockpiling quantity in 2001 was 84 days equivalent of domestic consumption.

2. France

In France, certified oil companies (major oil companies and domestic refining companies) are responsible for stockpiling 27% of the shipping quantity in the preceding calendar year (equivalent to 98 days in terms of the EC definition, and 90 days in terms of the IEA definition). Either 44% or 19% of the obligatory stockpiling quantity shall be stockpiled on their own responsibility, while the remaining 56% or 81% shall be substituted by the Strategic Petroleum Reserve Expert Committee (CPSSP, *Comite Professionnel des Stocks Strategiques Petroliers*), by paying the required charges to the committee. Also, non-certified oil companies shall allow CPSSP to substitute 100% of the stockpiling by paying charges when they ship products to market. In addition, CPSSP has entrusted the actual business operation to the Safety Reserve Management Company (SAGESS, *Societe Anonyme de Gestion de Stocks de Securite*).

<Types of oil for stockpiling>

Stockpiling is obligatory for the following categories:

- Category 1: Gasoline (including aviation gasoline)
- Category 2: Gas oil, heating fuel, kerosene (excluding jet fuel)
- Category 3: Jet fuel
- Category 4: Heavy Fuel oil

<Substitution with crude oil>

1 ton of crude oil is equivalent to 0.8 tons of all products. For the nation as a whole, the percentage to which stockpiling can be covered by crude oil is up to the following ratio:

- Categories 1 – 3: 44%
- Category 4: 50%

<Definition of shipping quantity>

The shipping quantity for domestic consumption and aviation use shall be the basis for calculating the obligatory stockpiling quantity. As for products based on indigenous crude oil, the stockpiling obligation shall be exempted, with 15% of the obligatory quantity as the upper limit.

<Place of stockpiling>

The country is divided into 22 areas, and the quantities corresponding to product demand in each area are stockpiled at 130 places.

<Obligation to hold stockpiling by areas>

As for the stockpiling managed by SAGESS and held by CPSSP, 10 days equivalent quantity for Category 1, and 15 days equivalent quantity for Category 2 shall be maintained for each of the 22 areas.

<Stockpile holding in foreign countries>

Private companies' stockpiles may be held in other EU countries, up to 10% of the required stockpiling quantity. Also, at present, France has concluded reciprocal inventory agreements with Belgium, Germany, Luxembourg, the Netherlands, and the U.K.

<Entrustment fees>

Entrustment fees shall be collected directly by CPSSP from certified oil companies, and collected by customs organizations from non-certified companies. In an emergency, SAGESS is permitted to sell oil stockpiling at the market price, by order of the Energy Minister.

<Tax exemption measures>

Payments for entrustment fees to CPSSP are tax-exempt. Payment of stockpiling entrustment fees from CPSSP to SAGESS and oil companies is also tax-exempt.

<Emergency countermeasures>

In the case of an international emergency, oil stockpiling shall be released in the order of private stockpiles and SAGESS-held stockpiles, under the direction of CPSSP or by order of the Administration, which orders are to be issued following a decision by IEA or EU.

<Transition of stockpiling quantity>

The obligatory stockpiling quantity of France as of January 1, 2003 was 176 million tons. CPSSP's stockpiling is 109 million tons, accounting for 61.4% of the total, of

which 78 million tons are held by SAGESS and 31 million tons are entrusted to oil companies. Stockpiling by oil companies accounts for 38.6% of the total stockpiling quantity.

3. Germany

In Germany, only the Petroleum Reserve Association (EBV, *Erdolbevorratungsverband*), a public utility corporation, have stockpiling obligations at present. The obligatory stockpiling quantity for EBV is 90 days equivalent of the quantity of oil products supplied in the preceding calendar year. Furthermore, it is compulsory for all oil refining companies and importing companies to become members of EBV, and to bear a share of expenses corresponding to their refining quantities/import quantities.

<Types of oil for stockpiling>

- Automobile gasoline, aviation gasoline, and gasoline-based jet fuel
- Gas oil, kerosene, and petroleum-based jet fuel
- Heavy Fuel oil

<Substitution with crude oil>

EBV has the right to choose to hold stockpiles in either crude oil or oil products, but crude oil holdings should be limited to the following ratio. EBV holds crude oil and oil products in the ratio of 50:50, and retains 90% of the total, with the remaining 10% being entrusted to private companies.

- Category 1 (Gasoline): Below 60%
- Category 2 (Middle distillates): Below 60%
- Category 3 (Heavy Fuel oil): It is possible to hold stockpiles in the form of crude oil 100%.

<Definition of domestic consumption>

Included in domestic consumption are the following items:
Supply to German military forces (those which have been distributed from refineries and oil depots in Germany)
Said oil products produced from indigenous crude oil

<Place of stockpiling>

The obligatory stockpiling shall be reserved, in principle, in rock caverns located within Germany. Also, in each of the five areas into which the Federal Republic of Germany is geographically divided, stockpiling of products equivalent to 15 days of average consumption in the preceding year shall be held.

<Stockpile holdings in foreign countries>

Germany's obligatory stockpiling may be held in foreign countries, insofar as these are EU member nations, with whom bilateral agreements have been concluded.

<Entrustment fee (EBV membership fee)>

The operating capital of EBV is financed through EBV membership fees, and a fee is set for each product category.

<Stockpiling obligation of electric power companies>

Power generation plants are obliged to hold stockpiling sufficient to sustain regular power supply for 30 days.

<Oil purchase and sale by EBV>

EBV may sell oil in excess of 105% of the obligatory quantity, on condition that sufficient care is taken not to disturb the oil market.

<Allocation>

It is stipulated that allocations for releasing the stockpiles shall be decided following consideration of the share of stockpiling cost to be borne by respective member companies.

<Stockpiling quantity>

The stockpiling quantity for the second quarter of 2003 was 260 million barrels, or 98 days equivalent (number of days in terms of domestic demand).

4. Spain

Spain observes EU regulations as its fundamental policy, and is obliged to maintain a stockpile of 90 days equivalent of consumption for oil products, 30 days equivalent of sales or consumption for LPG, and 35 days equivalent of sales or consumption for natural gas. The Strategic Reserve Association (CORES, *Corporacion de Reservas Estrategicas*) holds one third (30 days equivalent) of the obligatory stockpiling as a strategic stockpile, while two thirds is fulfilled by oil-selling companies (or large-scale consumers) on their own initiatives.

<Types of oil for stockpiling>

For each of the following three categories, there is a stockpiling obligation of 90 days equivalent of consumption or sales of oil products:

- Gasoline
- Kerosene/gas oil
- Heavy Fuel oil

There are also stockpiling obligations for LPG (30 days equivalent) and natural gas (35 days equivalent).

<Substitution with crude oil>

As stipulated by the EU, substitution with crude oil is permitted, up to 40% for gasoline/gas oil, and 50% for heavy fuel oil. Raw materials, crude oil, and half-finished products may be included; these are to be counted in each category depending on individual yields.

<Stockpile holding in foreign countries>

The total strategic stockpiling held by CORES is reserved in Spain. Intergovernmental agreements have been concluded with France and Italy, and part of the stockpile held by private companies is reserved in these two countries.

<Operation of CORES>

It is compulsory for all oil product wholesaling companies to become members of CORES. Joining CORES ensures approval as a wholesaler of oil products. The operational costs of CORES are covered by payment of membership fees.

<Release of oil stockpiling>

In a supply crisis, the Minister of Industry and Energy shall prepare an emergency release plan, and shall notify necessary rules and programs. Release of stockpiled oils shall be made from the strategic stockpiling of CORES. The procedure for withdrawal of oil stockpiling of private companies has not yet been formulated.

<Price>

Strategic oil stockpiling shall be provided to member companies at market price, and then supplied to end-users.

<Stockpiling quantity>

The stockpiling quantity for the second quarter of 2003 was 120 million barrels, or 79 days equivalent of domestic demand.

5. The Netherlands

The Netherlands has designated its obligatory stockpiling quantity to be based on the EC directives (90 days equivalent of domestic consumption, scheduled to be increased to 120 days), and the agreement with IEP (International Energy Plan, 90 days equivalent of import). The stockpiling obligation is imposed on oil refining companies, oil importing companies, and the Central Organization for Stockpiling of Oil Products (COVA). Oil refining companies shall stockpile 50 days equivalent of the domestic oil sales quantity for the preceding calendar year, and oil importing companies shall stockpile 16 days equivalent of the sales quantity for the preceding calendar year, for three types of products. COVA shall stockpile the quantity remaining after deduction of stockpiling by those companies from the obligatory government stockpiling quantity.

<Types of oil for stockpiling>

Oil types are based on the EC directives, wherein aviation fuel is included, but marine fuel is excluded.

- Category 1: Gasoline
- Category 2: Middle distillate
- Category 3: Heavy Fuel oil

<Substitution with crude oil>

No regulation has been established for the ratio between oil products and crude oil.

<Place of stockpiling>

In the private sector (oil refining companies and importing companies), stockpiling is usually reserved in refineries or commercial storage tanks. Onshore oil stockpiling bases are distributed within the Netherlands, while crude oil is stockpiled in salt caverns in Germany.

<Entrustment fees>

COVA's expenses are to be covered by taxes imposed on gasoline and other oil products. The tax rate for oil products is designed to correspond to costs accrued.

< Reciprocal agreements for stockpile holding>

Official bilateral stockholding agreements exist with Belgium, Germany and Luxembourg, together with informal bilateral agreements with the United Kingdom, Ireland, Denmark, France and Italy.

<Release in an emergency>

Dependent on IEP actions and other international circumstances, the Minister of Economic Affairs shall decide the time and quantity of release, with withdrawal from the COVA stockpiling having priority. The portion held by COVA beyond the obligatory stockpiling quantity may be released to the markets in semi-emergency situations.

<Stockpiling quantity>

The stockpiling quantity for the second quarter of 2003 was 110 million barrels, or 115 days equivalent of domestic demand.

6. Switzerland

Stockpiling obligations have been imposed on all companies importing oil into Switzerland. The obligatory quantity shall be decided under the 5-year plan formulated by the government, and currently is set at 50% of the product imported for the preceding year, or 180 days equivalent. The obligatory quantities for individual companies shall be decided by allocation under the government plan, according to the import allotment quantity for each company. Besides the above provision, there is an additional stockpiling of approximately 1 month equivalent as a wartime contingency, but details of this holding are classified for security purposes.

<Types of oil for stockpiling>

Five types of oil are specified: gasoline (leaded/unleaded), gas oil, heating oil, and jet fuel. Heavy fuel oil can be substituted for gas oil up to a given quantity, but substitution with crude oil/material oil is not permitted.

<Substitution with crude oil>

Substitution with crude oil or other products is not permitted.

<Place of stockpiling>

More than half of the stockpiling is reserved in the tanks of oil importing companies, or in their joint facilities, while part is reserved in Federal Government tanks. The Federal Government tanks are operated directly by the Central Swiss Office for Imported Fuels and Combustible Liquids (Carbura), at its own fund.

<Costs>

Stockpiling costs shall be borne primarily by individual companies, but the construction costs of stockpiling tanks, together with stockpiling management and

financial costs, shall be reimbursed with funds sourced from the surcharges paid to Carbura by individual companies. The surcharge shall be added to the retail price. The level of surcharge shall be decided each year, subject to approval by the Federal Department of Economics.

<Organization format>

All importing companies are obliged to become members of Carbura. Stockpiling shall be executed by individual importing companies, while Carbura is responsible for management and supervision. Carbura shall collect the surcharge, operate the fund, and reimburse the costs involved in stockpile holding to individual companies.

<Finance>

Carbura shall collect the surcharge from all importing companies and save it as a fund. (The surcharge shall be added to the retail price.) The construction costs of stockpiling tanks, together with stockpiling management and financial costs, shall be reimbursed with funds sourced from the surcharges paid to Carbura by individual companies.

<Emergency countermeasures>

Withdrawal from stockpiling is permitted only at those times when there is a critical physical shortage of oil. The Federal Office for National Economic Supply shall summon a "The Emergency Assessment Task Force", and this committee shall submit a proposal relevant to the situation. The management of stockpiling release shall be carried out by Carbura.

<Price>

When releasing oil stockpiling, the price is regulated with an upper price or an upper margin set in advance.

< Stockpiling quantity>

Stockpiling quantity for the second quarter of 2003 was 37 million barrels, or 144 days equivalent of domestic demand.

7. Portugal

In Portugal, there exists no government stockpiling. Refining companies and importing companies are obliged to stockpile oil in amounts equivalent to 90 days to 120 days of handling quantity for each product. Note: Currently, there is one refining company called Petrogal Corporation, which is a quasi-governmental corporation, and there are 15 importing companies.

<Types of oil for stockpiling, and obligatory quantities>

- Jet fuel: One fourth equivalent of actual imports or quantity procured through refining in Portugal for the past 12 months (around 90 days equivalent)
- Gasoline, gas oil, fuel oil, and kerosene: Equivalent to one third of the above (around 120 days equivalent)
- Imported fuel oil for power generation: one fourth equivalent of actual imports in the past 12 months (around 90 days equivalent)

<Substitution with crude oil>

Stockpiling may be achieved using either oil products or crude oil.

<Place of stockpiling>

Obligatory stockpiling shall utilize tanks registered with the General Directorate for Energy, Ministry of Economy (DGE : Direccao Geral de Energia).

<Organization in emergency>

In a crisis, the Organizacao para Emergencia Energetica (OEE), with the Director-General for Energy as chairperson under the jurisdiction of Minister of Economy, shall be responsible for the proposal, implementation, and coordination of the crisis management policy approved by the government. The Energy Emergencies Planning Board (CPEE: *Comissao de Planeamento Eneretico de Emergencia*) shall conduct discussions and make decisions, while the Energy Bureau (DGE: Direccao Geral de Energia) shall conduct actual business operations.

<Emergency countermeasures>

The government believes that demand curbing measures should be the major policy. There is also provision for rationing as the ultimate measure.

< Stockpiling quantity>

The stockpiling quantity for the second quarter of 2003 was 25 million barrels, or 72 days equivalent of domestic demand.

8. Czech Republic

Preparation is now going ahead to meet IEA and EU stockpiling obligations by November 30, 2005, under the “Emergency Oil Stocks Act” established in 1999. The EU obligation calls for the stockpiling of 90 days equivalent of domestic consumption, while the IEA requires 90 days equivalent of net imports. There is no law stipulating stockpiling obligations on companies.

<Types of oil for stockpiling>

Types of oil shall be subject to the EU provisions, viz.:

- Automobile fuel/aviation fuel (gasoline type)
- Gas oil, kerosene, and jet fuel (kerosene type)
- Heavy fuel oil

<Substitution with crude oil>

It is stipulated that up to 60% substitution with crude oil is allowed.

<Place of stockpiling>

There exist a crude oil stockpiling base and a new stockpiling facility (crude oil: 125 thousand cubic meter; oil products: 40 thousand cubic meter), which began operating at the end of 2003.

<Stockpile holding in foreign countries>

Stockpiling of up to 17% of total holdings may be held in foreign countries.

<Organization>

The Administration of the State Materials Reserves (ASMR) has been the core organization responsible for implementation of stockpiling.

<Emergency countermeasures>

Declarations of the onset or termination of a crisis situation shall be proposed by ASMR, and the government shall make the appropriate decisions and declarations. Also, consumption restrictions and emergency stockpiling withdrawal quantities shall be proposed by ASMR to the government, and release of government stockpiling shall be implemented up to a given quantity, as stipulated beforehand by the government.

<Stockpiling quantity>

The stockpiling quantity for the second quarter of 2003 was 14 million barrels, or 69 days equivalent of domestic demand.

9. Hungary

Hungary decided, under the Law on the Security Stockpiling of Imported Crude Oil and Petroleum Products enacted in 1993, to maintain stockpiling of 90 days equivalent of net import quantities, as required by the IEA. The stockpiling obligation is imposed on all oil importing companies, however the actual stockpiling business operations are to be conducted by the Crude Oil and Oil Product Stockpiling Association (Koolaj es Koolajtermek Keszletezo Szovetseg: KKKSZ), and oil importing companies shall pay a levy to the Stockpiling Association.

<Types of oil for stockpiling>

KKKSZ holds crude oil, gasoline, and gas oil. KKKSZ purchases only crude oil, and refines it into products at the refinery of MOL (an oil company in which the government holds a 22.7% share). One-third of the total stockpiling quantity is in crude oil with the remainder in products.

<Place of stockpiling>

It is stipulated that oil stockpiling shall be reserved in storage tanks within the country.

<Finance>

The stockpiling costs of the Association shall depend on the levies paid by the importing companies in line with import quantities. The costs of these levies have been passed on to end-users.

<Emergency countermeasures>

Release of oil stockpiling shall be decided by Ministry of Economy, and an order for release shall be issued to KKKSZ. The actual business operations shall be carried out by KKKSZ. The Minister of Economic Affairs is given wide-range authority to implement measures to curb demand, with ultimate power to impose allocation and rationing systems for large-scale consumers.

<Stockpiling quantity>

The stockpiling quantity for the second quarter of 2003 was 18 million barrels, or 130 days equivalent of domestic demand.

10. Turkey

In Turkey, the Turkish Petroleum Refineries Corporation (TUPRS), a quasi-governmental corporation (65% of capital held by the government), operates four of the country's six refineries. Government policy is to observe IEA stockpiling obligations and emergency countermeasures, and all refineries are obliged to stockpile 30 days equivalent, while all sales companies are obliged to stockpile 10 days equivalent.

<Organization form of implementation agency>

Stockpiling shall be implemented by each refinery, importing company, and sales company.

<Organization in an emergency>

The government is given an authority to withdraw the products stockpiling in an emergency. Also, the government is given an authority to curb demand including the adoption of rationing system.

<Emergency countermeasures>

In the first instance, voluntary release of stockpiling shall be implemented by TUPRS, with distribution based on actual results and an order of priority formulated by the authorities. In the event that voluntary release is inadequate, a demand-curbing program shall be executed under the National Security Law and the National Protection Law.

<Price>

Release of products is carried out at market prices. In an emergency, the government may decide oil product prices in accordance with the National Protection Law.

<Stockpiling quantity>

The stockpiling quantity for the second quarter of 2003 was 55 million barrels, or 77 days equivalent of domestic demand.

11. U.S.A.

The U.S. holds only government stockpiling as strategic stockpiling, and the stockpiling quantity as of March 2004 is 650 million barrels, making this country the world's largest stockpile holder. Maintenance of Strategic Petroleum Reserve (SPR) was resolved under the Energy Policy and Conservation Act (EPCA) of 1975. SPR as of March 2004 is 53 days equivalent of import quantity, but if private inventory is taken into account, there is a total stockpiling of approximately 150 days equivalent.

<Types of oil for stockpiling>

Crude oil is held as SPR. Crude oil is reserved in four salt caverns in the states of

Texas and Louisiana, which border the Gulf of Mexico. In addition, 2 million barrels of heating oil are stockpiled at private facilities in the North-Eastern region of the U.S.

<Finance>

SPR funding is disbursed from the general account budget. However, unlike many other types of budget, SPR budget is not governed by fiscal year considerations, and remains in force until it is used.

<Emergency countermeasures, organization and authority>

The Department of Energy (DOE) is responsible for all functions, in its capacity as National Emergency Sharing Organization (NESO), under Presidential order. DOE oversees implementation of its emergency management program by the Federal Emergency Management Agency (FEMA). Ministries and agencies concerned with security and emergency operations assist DOE with coordination within the country (including interstate liaison) in respect of emergency management.

<Utilization of SPR>

Authority is vested in the President to utilize SPR for the purpose of increasing petroleum supplies in the U.S., and promoting voluntary supply by U.S. companies.

<Release of SPR>

If SPR is to be released, it can arrive in the market within 13 days of the President's decision. Maximum shipping capability is 4.3 million B/D, which can be released for 90 days. The following stages are set as withdrawal levels for SPR:

- (i) Release of all stock
 - (ii) Releasing of part stock
 - (iii) Test release
- (i) and (ii) shall be decided by the President, while (iii) shall be decided by the Energy Secretary.

<Price>

The selling price shall be the competitive selling price at the time of obtaining such stockpiled petroleum, or, in the event that any competitive sales should not be taking place at that time, the average price of SPR petroleum purchased at the most recent competitive sales.

<Countermeasures for private stockpiling>

Although the U.S. does not call on private companies to stockpile for an emergency, the government retains a discretionary authority to establish Industrial Petroleum Reserve (IPR) by acquiring up to 3% of the total quantity either imported or refined in the preceding year by importing companies or petroleum refining companies. This authority has not been exercised to date, and the government has no current plans to utilize this authority.

<Stockpiling quantity>

The government stockpiling quantity as of March 2004 is 650 million barrels (53 days equivalent). The previous highest quantity was 118 days equivalent in 1985.),

however total stockpiling including private holdings is 150 days equivalent.

12. Canada

Canada is a net exporting country in both crude oil and oil products, so it has no need to meet the IEA stockpiling obligation of 90 days equivalent. Therefore, there exists no stockpiling system stipulating a stockpiling obligation. However, as of 2003, there does exist a stockpile of around 70 days equivalent of domestic consumption in the form of operational stockpiling by refineries.

<Emergency organization and authority>

Authority to respond to a petroleum crisis is vested in the Energy Supply Allocation Board (ESAB) of the Federal Government of Canada. ESAB is also authorized to prepare demand-curbing programs, allot crude oil and products, or ration gasoline in a petroleum crisis.

<Countermeasures>

In the event of a crisis declaration by IEA, strict curbing of demand shall be imposed. In addition, fair allocation throughout the country shall be implemented by means of an obligatory allocation program initiated by the authority under the Energy Supplies Emergency (ESE) Act.

<Stockpiling quantity>

Currently, a petroleum inventory of 50 days equivalent of production is held in refineries in Canada, of which 10 days equivalent is in crude oil inventory and 40 days equivalent is in products inventory. According to the IEA Oil Market Report, the stockpiling quantity for the second quarter of 2003 was 160 million barrels, or 72 days equivalent of domestic demand.

13. Korea

In Korea, there is a government stockpiling system as well as a stockpiling obligation imposed on oil companies. The government's stockpiling system is handled by KNOC (Korea National Oil Corporation; Former name: PEDCO) established in 1979, with the second oil shock providing the impetus. Since 1980, they have been building the government's stockpiling system in a three-phase plan. The Korean government's stockpiling is made up of those of crude oil, oil products and LPG.

The first and second phases have already been completed, and the total capacity of the three crude oil stockpiling sites is 83.5 million barrels, the total capacity for the four products stockpiling sites is 7.6 million barrels, and the total capacity of the LPG stockpiling site is 4.4 million barrels.

With the completion of the third phase scheduled for the end of 2007, the government's stockpiling capacity will reach 127.5 million barrels of crude oil in four stockpiling sites, 14.1 million barrels of products in five sites, and 4.4 million barrels of LPG in another site; and thus the total oil storage capacity in the government's stockpile will amount to 146 million barrels.

A private stockpiling system in Korea was introduced in connection with the revision of the Oil Business Law in 1991, and started in 1992. The stockpiling obligation is aimed at companies importing and selling oil in the private sector, with a stockpile

equivalent to 40 days of consumption averaged for a 12-month period. For LPG, there is a storage holding obligation equivalent to 30 day's average consumption calculated in the same way.

The MOCIE (Ministry of Commerce, Industry and Energy) is the agency in charge of energy policy, including the oil stockpiling program.

Chapter 4 of the Oil Business Law stipulates the contents of measures to be taken by the government, such as oil demand and supply adjustment, required in the event of a fundamental change in the oil markets, war, natural disaster or other factors, as there is considerable anxiety that these events may occur.

The oil inventory as of the end of 2003 in Korea was: crude oil, 13.92 million tons; oil products, 7.06 million tons; or a total of 20.98 million tons.

Korea applied for IEA membership in 2001, and after fulfilling the required stockpiling quantity equivalent to 90 days of imports (which was the condition for membership), was accepted as a member on March 28, 2002. Korea became the second Asian member nation of IEA following Japan, or the 26th member country of IEA worldwide.

14. China

At the present time, there is no government stockpile, and oil companies, too, have no stockpiling obligation. Therefore, the oil inventory of China is limited to a commercial inventory that national oil companies and other companies hold for the sake of their own operations.

However, due to the steep rise in crude oil prices in the international crude oil market and increasing tensions in the Middle East since 1999, in addition to a sharp increase in China's oil imports, the importance of building an oil stockpiling system has been strongly recognized.

In "The Tenth 5-year Plan (2001-05)," a policy to the effect that "A strategic oil stockpiling system shall be built as quickly as possible" was adopted, and review and preparation was started for constructing the government's stockpiling facilities and for securing stockpiling by private companies.

At present, reports and announcements have been made on various plans and projects for the development of the stockpiling system in China. For instance, the Chinese "Economic Daily" dated March 3, 2004 reported that Zhenhai, Zhejiang Province, Zhoushan-Daishan, Zhejiang Province, Dalian, Liaoning Province, and Huangdao, Shandong Province had been determined as the sites for the government's oil stockpiling program. However, the Chinese Government itself has made no formal announcements/comments to date on a concrete stockpiling plan.

It has been decided that the stockpiling policy shall be formulated by the National Oil Stockpiling Office, Energy Bureau in the National Development Reform Commission of the State Council.

15. Thailand

In Thailand, ever since the establishment of the Fuel Law in 1978, an obligation to carry out private stockpiling has been imposed. The law targets companies that refine, import, and sell oil at or above 100 thousand tons per year.

There is presently no government stockpiling, and the stockpiling obligation of the private sector is 5% of refining/selling quantity, or the equivalent of 18 day's

consumption.

The stockpiling obligation at present is around 36 days equivalent of domestic consumption, and if the ordinary running inventory (10-15 days equivalent) is added, the total should be equivalent to 40-50 days of domestic consumption.

Soon after the terrorist attacks in the US on September 11, 2001, the Thai Government raised the stockpiling obligation of oil companies (from 3% to 5%), and at the same time, accelerated investigation into the establishment of a government stockpiling system.

The stockpiling policy is being investigated, with Energy Policy and Planning Office (EPPO) under Energy Ministry established in October 2002 as the core player.

In Thailand, the "Strategic Energy Land Bridge" program is also being investigated in relation to oil stockpiling. This involves the construction of a crude oil pipeline that crosses the Malay Peninsula, and the building of an oil stockpiling terminal and shipping facilities at both ends of the pipeline, thus developing a route that bypasses the Strait of Malacca, with the additional aim of establishing an oil-trading hub in this region.

16. The Philippines

At present, there is no government stockpiling system in the Philippines. The private stockpiling obligation was imposed on oil companies under the Oil Industry Deregulation Law established in February 1997. However, the revised Oil Industry Deregulation Law that contains the provision to abolish the stockpiling obligation was established in February 1998, based on the recognition that in the development of liberalized oil markets, the capital investment required for stockpiling had acted as an entry barrier.

However, in the face of increasing tension in the Middle East a minimum inventory holding obligation was imposed on oil companies in accordance with the Presidential Executive Order No. 134 in October 2002. After that, the Department of Energy decided that this minimum stockpile should be equivalent of 30-40 days of consumption.

The energy policy of the Philippines, including oil stockpiling, is handled by the Department of Energy (DOE).

In the Philippines, only in the case where a Presidential Decree is promulgated in an emergency under the State Law No. 7638, may DOE carry out demand control, distribution control, price control, and other measures.

The oil inventory of the Philippines as of November 2003 was crude oil, 3.34 million barrels; oil products, 6.37 million barrels; or a total of 9.71 million barrels.

The Philippines has expressed interest in effective joint utilization of the oil storage capacity in Subic, and is examining ways forward for enhancing oil security of the country as well as that of the Asian region as a whole.

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