

Overview of the JCCP Country-Specific Action Plan

Working Group for Country-Specific Action Plan

JCCP established a special Working Group in FY2007, and through the group, formulated a Country-Specific Action Plan for major counterpart oil-producing countries in the Middle East during the first year of its establishment. Through this initiative, JCCP aims to predict changes in the oil downstream sector in each of those countries based on their socio-economic and oil production situations, and to accurately assess specific considerations that would be necessary for implementing future JCCP activities. The action plan is a compilation of the results of investigations in each country, but this article will identify and examine issues that are common to all Middle East oil-producing countries.

1. Background

Since its founding in 1981, JCCP has engaged in a variety of activities with the objective of contributing to securing a stable supply of oil. However, during the 27 years since its founding, major changes have taken place in the environment surrounding JCCP. To accurately assess the relevance of its activities in light of those changes, JCCP organized a Review Panel in FY2005, and has set out to restructure its activities based on the panel’s proposals.

One of the proposals of the Review Panel was to implement activities that more closely correspond to specific needs in each counterpart country. The panel recommended the establishment of the Working Group for Country-Specific Action Plan, and called for a close assessment of each country’s needs in conjunction with the Downstream Survey in Oil-Producing Countries, which is one of JCCP’s conventional survey activities. In reference to those specific needs, the panel proposed the compilation of an action plan containing considerations that should be given to each country when implementing future JCCP activities. As proposed, the Working Group compiled the Action Plan for Middle East Oil-Producing Countries, as introduced below.

2. Study Approach

Middle East oil-producing countries depend almost entirely on oil and natural gas for their primary energy supplies. The oil downstream sector¹ is largely responsible for responding to the social changes that occur within each country, such as economic development, population growth, and increases in energy consumption. Therefore, needs in the oil downstream sector are closely linked with social changes occurring in each Middle East oil-producing country, and to assess those needs, it is essential to gain an accurate understanding of each country’s social background.

Based on the survey of social changes in Middle East oil-producing countries, this study aimed to identify needs for JCCP cooperation in each country, by examining and comprehensively analyzing the oil refining and technical issues they are facing. (Fig. 1)

¹ The oil downstream sector means all activities from crude oil refining to the delivery of oil products to consumers, but mainly refers to the oil refining, physical distribution, and marketing aspects of oil products.

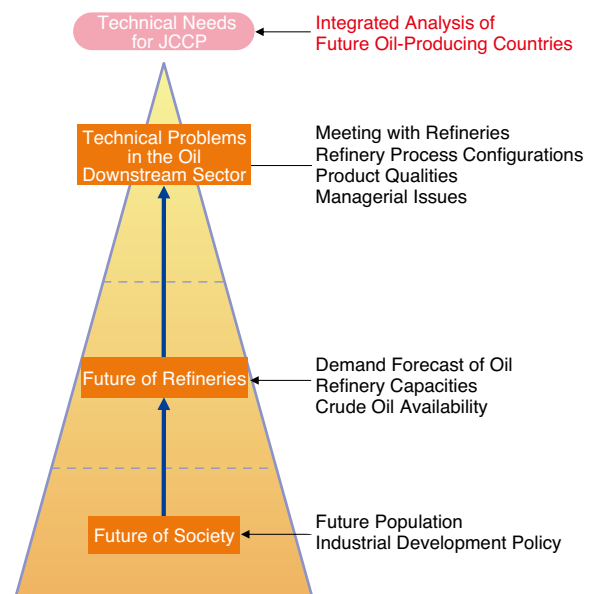


Fig. 1 Approach to Technical Needs of Oil-Producing Countries

3. Summary of Study Results

(1) Social Background

Among the social changes that are occurring in Middle East oil-producing countries, the recent study focused on rapid population growth as the greatest factor impacting the oil downstream sector. Fig. 2 shows demographic trends in Middle East oil-producing countries and Japan, from 1950 to 2050. In the wake of the two major oil crises that have occurred in the 1970s, Middle East oil-producing countries have enjoyed large growth in revenues from oil exports, and took the opportunity to improve social welfare. This led to rapid population increases in those countries.

In 2005, the population in Japan and the Middle East oil-producing countries was basically the same, around 130 million, respectively. By 2050, however, the population in Middle East oil-producing

countries is expected to increase almost two-fold, to 250 million.

This year marks the 35th year of the first oil crisis. The population born after the oil crisis has reached their thirties. They have gotten married, started their own families, and are now bringing up the next generation. The increase in population can be expected to still continue for some time.

(2) Energy Consumption

Rapid population growth naturally leads to an increase in energy consumption. In 2006, oil consumption in Middle East oil-producing countries totaled about 6 million b/d, already surpassing that in Japan. It is important to realize that those countries are major oil-consuming countries, while at the same time being oil-producing countries. Fig. 3 shows changes in crude oil production, oil consumption, and the rates of internal oil consumption in Middle

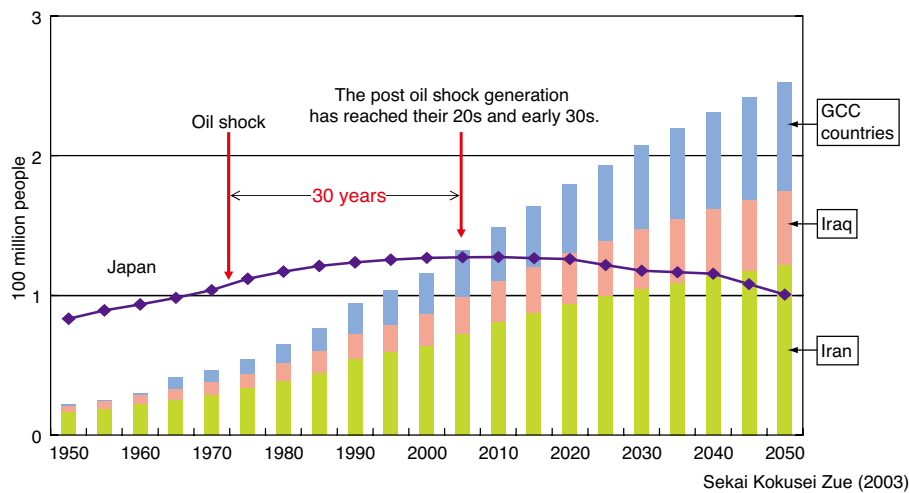


Fig. 2 Population Growth in Middle East Oil-Producing Countries

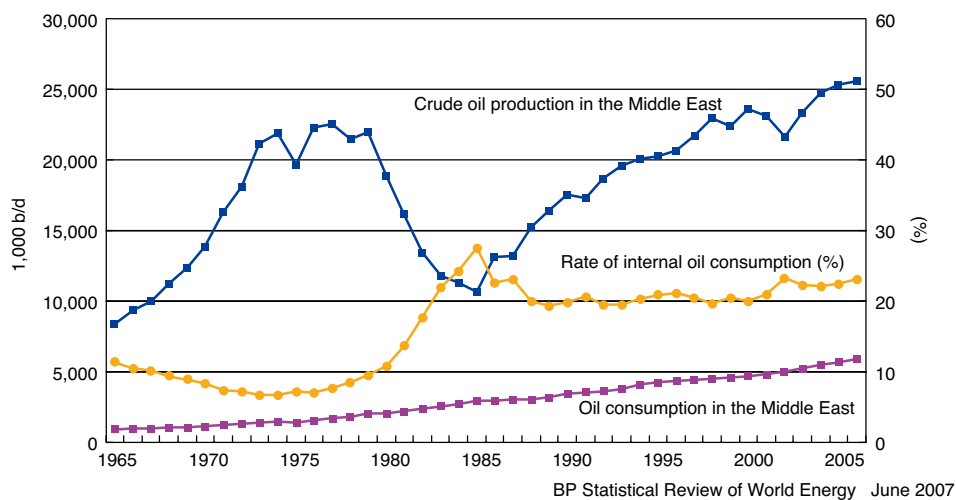


Fig. 3 Oil Consumption of Middle East Oil-Producing Countries

East oil-producing countries. Oil consumption is seen increasing steadily each year, accompanying increases in population and improved living standards. Crude oil consumption rate, which had long been hovering around the 20% level, began to gradually increase from 2000, and has reached 24% in 2006. A continuation of this trend is expected to eventually impose constraints on exports to oil-consuming countries.

(3) Consumption of Oil Products

Among all oil products, Middle East oil-producing countries mainly consume automotive fuels (gasoline and diesel fuel) and fuel oil (heavy oil) that are needed for power generation and water desalination. Energies for use by automobiles, electric air conditioners, and drinking water supply systems have direct bearing on people's lives, and can be expected to further increase, along with continued population growth.

(4) Issues Facing Refineries

To respond to rapid increases in demand for oil products, large, new refineries need to be constructed. Middle East oil-producing countries have plans to construct refineries with capacities of about 3 million b/d, over the 10 years from 2005 to 2015. These refineries are expected to include advanced process units, such as a heavy oil cracking unit and diesel fuel deep desulfurization unit, as they are needed to satisfy new environmental standards.

The oil downstream sector in Middle East oil-producing countries must therefore enhance their technologies to a higher level than before. They must develop their capacities to plan and design refineries, manage construction projects, operate advanced processes, and support processing and catalyst technologies, all in a short 10-year period.

(5) Future Direction of Middle East Oil-Producing Countries

The Action Plan also takes a look into the near future, and discusses the direction in which the refineries of Middle East oil-producing countries should hereafter proceed. Fig. 4 shows the value structure of world class refineries.

Middle East oil-producing countries hope to

create as much added value as possible, and sell oil at the highest possible values. Behind this intention lies a sense of crisis stemming from the fact that oil resources are limited and are daily dwindling toward depletion, and the desire to create employment opportunities for the young population, by expanding the scope of the oil industry and developing secondary and tertiary processing industries.

The key to increasing value lies in cracking heavy oil. Heavy oil is cheaper than crude oil, but has several disadvantages. Even so, as a hydrocarbon, heavy oil is apt to have a lot of potential to be used for advanced applications. Conventionally, heavy oil has been burned in a boiler, converted to heat, and used as energy for generating power and desalinating water. In the future, however, heavy oil must be cracked, so that it may be used as blending stock for producing gasoline and diesel fuel. By cracking heavy oil to produce gasoline blending stock, heavy naphtha, which have been previously used as a gasoline blending stock, can instead be applied to the petrochemical value chain. Consequently, the value of hydrocarbons would increase.

Additionally, instead of depending on heavy oil, other forms of energies could be used for power generation and water desalination. The introduction of new and alternative energies such as solar energy and fuel cells, as well as the development of new energy-saving technologies, can be expected to eventually replace oil with non-oil forms of energy.

In an interview, an executive officer of a national oil company in a Middle East oil-producing country called this type of comprehensive refinery that aims to increase the value of oil, as a "world class refinery." Another executive spoke about energy systems "beyond oil," while still others spoke about the need for technical cooperation in introducing solar energy and other forms of energy.

The study helped clarify the increasing awareness in Middle East oil-producing countries, of converting oil to gasoline, kerosene, and diesel oil as much as possible, instead of simply burning it to produce heat, and to use those oil products as transportation fuel inside and outside the respective countries, and as feedstock for higher-value petrochemical products.

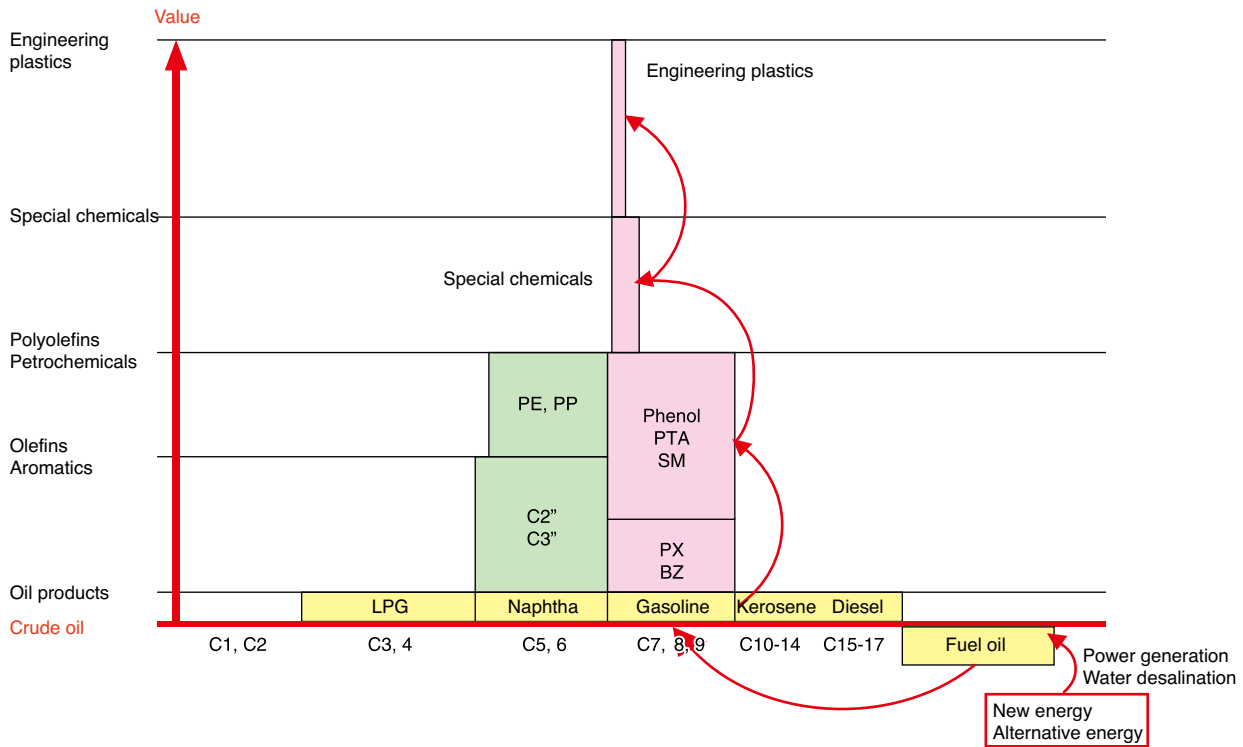


Fig. 4 Value Structure of a World Class Refinery

4. Needs for JCCP Cooperation

Based on the above results, the needs in Middle East oil-producing countries for JCCP cooperation can be divided into the following three categories.

1) Upgrading refineries

Providing technical support for upgrading refineries, such as through the transfer of heavy oil cracking technologies, petrochemical integration, and quality improvement

2) Strengthening the management foundation

Technical support for strengthening the management foundation in the oil downstream sector, by transferring technologies for planning and designing advanced refineries, managing projects, ensuring safe and stable operations, and increasing cost competitiveness when exporting petrochemical products to the global market

3) Human resource development

Support for the development of human resources, and particularly of young leaders, so that each country can independently accomplish the above tasks

5. Significance of the Country-Specific Action Plan

The Action Plan provides a sound basis for conducting a detailed assessment of needs in Middle East oil-producing countries.

JCCP will support refineries in Middle East oil-producing countries, in their effort to become world class refineries, in the form of training programs and technical cooperation projects. By helping these countries control their internal oil consumption, achieve advanced utilization of oil, and maintain steady oil exports, JCCP aims to contribute to securing stable supplies of oil.

From FY2008, JCCP has renewed its efforts based on the Action Plan. It is strengthening dialogues with Middle East oil-producing countries, and is working to implement activities that more specifically and effectively respond to the needs of each country.

In the future, the Action Plan should probe deeper into situations in Middle East oil-producing countries, to increase their accuracy, as well as to better address environmental changes in each country. It should also be formulated, in sequence, for oil-producing countries in regions other than the Middle East. Toward these ends, the Working Group will continue with its investigations this fiscal year.