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# Short-Term Energy Supply /Demand Outlook
## - Forecast through FY2007 and Analysis on the Effects of Crude Oil Prices, Economic Growth, and Temperatures -

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**Introduction**

This report presents forecasts on the energy supply and demand in Japan for the whole of FY2006 and for FY2007. Since energy demand can be defined as "derived demand" arising out of more fundamental demand from economic activities, it is important to start by evaluating the economic trend. However, the Japanese economy is affected by many internal and external uncertainties, including a higher crude oil price, possible rising interest rates and a sluggish increase in the wage level. Therefore, this report first presents estimations based on the base case, as the most probable scenario for the future, and then presents estimations for different cases under different assumptions on the crude oil price or economic growth. By comparing the latter estimations with the former estimations (base case estimations), we evaluated how these factors may affect the energy supply and demand. The energy demand is also sensitive to the ambient temperature: the unusually hot summer of 2004 and the harsh winter of 2005, for example, greatly affected the energy supply and demand. Therefore, we also estimated how the energy supply and demand could be affected by a higher or lower ambient temperature.

This report is organized as follows. Chapter 1 presents an outlook on economic and production trends up to the end of FY2007, based on which we estimated the energy supply and demand. Assuming the economic and production trends outlined in Chapter 1, Chapter 2 presents estimations on the energy supply and demand. These constitute the base case estimations in this report. Chapter 2 also includes various tables on the estimated energy supply and demand by energy source (based on industrial statistics) and tables on the domestic primary energy supply and the final energy consumption (based on energy balance sheets). Finally, Chapter 3 presents the results of sensitivity analyses for three different factors: crude oil price, economic growth and ambient temperature.

## 1. OUTLOOK ON KEY ECONOMIC INDICATORS FOR FY2006 AND FY2007

### 1-1 Framework for the Short-Term Prediction (See note.)

When estimating the energy supply and demand for the given period, we studied possible evolutions of various factors that would have impacts on the energy supply and demand, while relying upon two econometric models: a macro economy model, and an energy supply and demand model.

Concerning the major economic indicators on which our estimations are based, we made the following assumptions. As to the crude oil price (CIF-based import price), we noted that it exceeded the $70 level last summer but began to decrease in the fall, and so we assumed that it would continue to decrease in FY2007 and took the annual average of $58/barrel. (For more details, refer to "Prospects for the International Market and Crude Oil Pricees in 2007" by Ken Koyama, December 15, 2006.) As to the exchange rate, we assumed that it would continue to move around 115 yen to the dollar. Regarding the ambient temperature, which affects the energy supply and demand particularly in the consumer sector, we assumed a relatively warm winter in the second half of FY2006 while using the average over the last 10 years for both the summer and winter of FY2007.

*Note: The estimations herein incorporate information available to us up to December 11, 2006.*

### 1-2 Outlook on the Macro Economy

For FY2006, Japan continued its longest period of economic expansion after World War II, even longer than the legendary *Izanagi Boom* (1965-70). Despite sluggish growth of personal consumption, growth in export and capital investment is boosting economic growth, and real GDP for this fiscal year is expected to be 2.2% higher than last year.

The world economy is growing firmly, but there are signs of a slight slowdown. The U.S. economy, which is pivotal to the global economic trend, is suffering from a succession of interest rate rises, causing a sharp decrease in housing investment, for example. Even though personal consumption is growing firmly, economic growth is slowing. In Europe, exports are slowing down even though domestic demand is growing strongly. However, the European Central Bank continues to raise interest rates to ease inflation fears. Meanwhile, China is reinforcing policies to curb investment, and even though the Chinese economy is still growing fast, the growth of investment in fixed capital is now slowing down in the iron and steel sector, for example. Nevertheless, as exports continue to grow, China is maintaining economic growth of over 10%. In the NIES and ASEAN countries, exports may shrink as inventories of IT and digital products build up and the U.S. economy cools.

The Japanese economy has continued to expand since January 2002, and although there

was a lull in 2005, exports and capital investment are growing steadily Corporations have overcome the "three excesses" of employment, equipment and debt, and corporate earnings have reached historical highs. Even though buoyant production has led to an increase in the number of employees and improved employment conditions, wage growth remains weak due mainly to an increase in the proportion of non-regular employees. Meanwhile, household finances have not improved and so private consumption remains sluggish. As a result, private final consumption is expected to grow a mere 1.1% from the previous fiscal year. Capital investment by private enterprises, on the other hand, is expected to grow significantly by 8.9% from the previous fiscal year, thanks to strong cash flows. Housing investment is expected to rise 1.4% from the previous fiscal year, finally increasing after two years on the back of rising investment in rental apartments and condominiums with the availability of real estate funds, even though investment in owned houses and single-family houses continues to decrease. Given these factors, the contribution to growth from total domestic private demand is expected to be 2.0%. Government final consumption is expected to increase 0.6% from the previous fiscal year, but government investment (public investment) is expected to fall by 8.5% in reaction to past expenditures on disaster recovery. The contribution to growth from total public demand, therefore, is expected to be minus 0.3%. Exports are growing to all destinations including the United States, Europe and Asia, with strongest growth in automobile exports. Exports are also growing favorably in chemical products, general machinery and electrical machinery. Even though the growth is expected to slow down slightly due to the slowing down of the U.S. economy and inventory adjustment for IT and digital products, exports in this fiscal year are expected to grow by 7.8%. Imports, too, are expected to grow, by 5.2% from the previous fiscal year due to increased imports of intermediate goods to meet the expansion of production. Given these factors, the contribution to growth from foreign demand is expected to be 0.5%.

The growth in the corporate price index is expected to accelerate, increasing by 2.9% from the previous fiscal year even though the price of crude oil is now falling. This is because many corporations have raised prices to recoup the higher costs of the previous fiscal year and earlier. Consumer prices have remained low as the impact of higher raw material and fuel costs has been absorbed by the well-performing corporate sector, but higher costs are gradually being reflected in higher prices, firstly with petroleum products and secondly with consumer goods. The consumer price index, therefore, is expected to increase this fiscal year by 0.4%. Nevertheless, the phenomenon of nominal GDP growth defeated by real GDP growth (greater real economic growth over nominal growth) persists. Deflation has not yet been clearly defeated and it will take a considerable time before the economy makes a clear

departure from the deflationary trend.

For FY2007, we expect the Japanese economy to continue to grow, driven mostly by domestic demand. As to the external factors incorporated in our estimations, we expect that the crude oil price (CIF-based price of crude oil imported by Japan) will fall, resulting in an annual mean of $58.0 per barrel for FY2007 (down 10.3% from the previous fiscal year). The U.S. economy is expected to pause, then begin to recover by the second half of the fiscal year. The consensus is that the annual growth rate for FY2007 will be 2.9%, as predicted by the IMF, which is a little less than the potential growth rate. The Euro economy is also expected to continue mild growth, recording 2.0% growth from the previous fiscal year, driven mostly by domestic demand. The Asian economy will be challenged by the need to adjust the production of IT and digital products. Nevertheless, exports are expected to pick up as the U.S. economy recovers, resulting in a significant growth of 8.6% from the previous fiscal year. Economic growth in China is expected to slow down somewhat. Given these external factors, exports from Japan are expected to continue to grow in FY2007, although more slowly than in the previous fiscal year. Exports in FY2007 are expected to increase by 5.7% from the previous fiscal year. Imports by Japan will grow firmly, by 4.4% from the previous fiscal year. The contribution to growth from total foreign demand is expected to be 0.3%.

As employment conditions improve, the wage level should start to rise gradually. Private final consumption, therefore, is expected to increase by 1.4% from the previous fiscal year. The growth in private capital investments, on the other hand, is expected to slow down significantly because higher raw material prices are gradually being reflected in higher prices and also corporate earnings will shrink as labor costs rise. Nevertheless, the commitment to investment will remain firm in order to maintain competitiveness. We expect capital investment by the private sector in FY2007 will be 5.3% higher, exceeding 5% for the fifth consecutive year. Housing investment is expected to continue to grow, up 1.5% from the previous fiscal year, driven by increasing investment in rental apartments and condominiums, even though investment in single-family houses will continue to fall. The contribution to growth from domestic private demand in FY2007 is expected to be 1.6%, slightly less than in the previous fiscal year. Since the new administration intends to continue financial restructuring, public investment is expected to decrease by 3.4%. Government final consumption expenditure is expected to increase by 0.9% from the previous fiscal year due to increases in social security expenditures despite the Government's efforts to curb public employees' labor costs and other forms of expenditure. The contribution to growth from public demand is expected to be zero. Given all these factors, real GDP in FY2007 is

expected to grow 2.0% from the previous fiscal year.

The growth in the corporate price index will be less because the crude oil price is expected to fall slightly, and is expected to be 0.3% in FY2007. Meanwhile, the consumer price index is expected to rise only slightly, by 0.2%, due to harsh competition in areas such as thin-screen TVs and mobile phone services, even though higher raw material and fuel costs are gradually appearing in higher product prices.

### 1-3 Outlook on Production Activities in Different Sectors

In the first half of FY2006, raw material production was active with factories operating mostly at maximum capacity, while machinery production, particularly that of automobiles and electrical machinery, was also active due to major growth in exports and capital investment. Even though the growth may slow down temporarily due to inventory adjustments for IT and digital products, production in general is expected to continue growing firmly, pushing up the indices of industrial production for FY2006 by 3.5% from the previous fiscal year.

We expect the growth of exports to slow down in FY2007 as the world economy cools. Nevertheless, raw material production will remain active and machinery production will be sustained with only a minor drop in the growth rate. The IIP, therefore, is expected to be 2.4% higher. The following subsections describe the trends of production in major industrial sectors.

#### (1) Crude steel

Crude steel production in the first half of FY2006 was buoyant, driven by high domestic and foreign demand and with factories operating almost at maximum capacity. Production in the first half of FY2006 was up 2.2% over the same period in the previous fiscal year. Since domestic demand remained high due to significant demand for the production of industrial machinery and automobiles and also for the construction of residential and non-residential buildings, the production of both common and special steels increased. Exports to Asian countries such as China and South Korea started to increase from around springtime. Since high domestic and foreign demand are expected to persist in the second half of the fiscal year, we forecast that crude steel production in FY2006 will be as high as 117.1 million tons (up 3.9%), which is second only to the production in FY1973 (120.02 million tons). Domestic demand from both the manufacturing and construction sectors will also continue to be firm in FY2007. Exports, which have been growing, are expected to temporarily decrease while imports of general-purpose steel, particularly from China, will start to increase again. We

expect a mild slowdown in the growth of electric steel production, which has continuously expanded so far. Overall, crude steel production in FY2007 is forecast to be 115 million tons (down 1.8%). This production level is still high, albeit slightly lower than last year.

**(2) Ethylene**

Ethylene production in the first half of FY2006 was down 0.9% from the same period of the previous fiscal year. Even though domestic demand was high and factories continued to operate at maximum capacity, the production level decreased because more factories stopped for periodic maintenance compared with last year. To meet the rising demand, manufacturers used up product inventory of about 2 million tons of ethylene equivalents. Exports, which had been increasing up to the previous fiscal year, started to decrease while imports increased. We expect that, in the second half of the fiscal year, manufacturers will maintain production and that domestic demand will continue to be high. Thus, ethylene production in FY2006 will be 7.57 million tons (up 0.3%), which is very close to the maximum production capacity. We expect domestic demand will remain firm in FY2007, requiring production at maximum capacity. Since fewer factories will stop for periodic maintenance than last year, annual production is expected to increase to 7.62 million tons (up 0.7%).

**(3) Paper and paperboard**

In the first half of FY2006, paper production remained strong due to the general firmness of economic activities and the increased coverage of newspaper space for the World Cup football matches. Paperboard production, on the other hand, suffered a drop in demand from the beverage and greengrocery sectors due to unseasonable coolness in summer even though demand from the freight traffic sector was firm. With these factors, paper and paperboard production in the first half of this fiscal year was 0.3% higher than in the same period of the previous fiscal year. We expect paper and paperboard production for the full year will also be 0.3% higher because, in the second half of the fiscal year, we expect demand from the printing of flyers advertising household appliances and other products and from the printing of books and materials related to the release of a new computer operating system, in spite of a fall from the previous year in which there was demand associated with the Winter Olympics. In FY2007, paper production is expected to be sustained by firm demand from the printing of flyers and catalogs for audio/visual appliances such as thin-screen TVs, while paperboard production will increase on the back of firm demand from the freight traffic sector. Given these factors, paper and paperboard production in FY2007 is forecast to be 0.5% more compared with the previous fiscal year.

**(4) Cement**

Cement production in the first half of FY2006 was down 1.3% from the same period of the previous fiscal year. Even though private demand grew favorably due to the increased construction of condominiums in urban areas and growth in capital investment, a reactionary decrease was recorded following high demand of the previous year, which included special demand for disaster recovery. In the second half of the year, public demand is expected to fall even though private demand and exports will support the overall demand. Cement production in the whole of FY2006 is still expected to be 0.6% lower than in the previous fiscal year. For FY2007, private demand is expected to be strong, but public demand will fall due to less public investment, so the trend of decreasing domestic demand is expected to persist. However, efforts are being made to offset the stagnant domestic demand through exports. With the combination of these factors, we expect that cement production in FY2007 will fall by just 0.9%.

**(5) Transport equipment**

The transport equipment production index for the first half of FY2006 was 5.0% higher compared with the same period of the previous fiscal year. In spite of lackluster domestic sales of passenger cars, the number of manufactured vehicles grew significantly thanks to booming exports to the United States. In the U.S. market, higher gasoline prices created a surge in demand for Japanese compact cars with their high fuel efficiency. The trend of low domestic demand and high foreign demand is expected to persist in the second half of the fiscal year. The shipbuilding industry is also performing well, which already has orders for the next three years or so, thanks to the growth in international trade, and the industry is trying to meet the higher demand by increasing the production capacity. The transport equipment production index for the whole of FY2006 is expected to be 3.2% higher compared with the previous fiscal year. We expect that, in FY2007, domestic sales of passenger cars will be slightly higher due to improvements in employees' income. Export growth, on the other hand, is expected to slow down as the world economy cools. As a result, the growth in the number of manufactured vehicles will slow down somewhat. The shipbuilding industry is expected to grow significantly even though its contribution to the transport equipment production index will be relatively small. With all these factors, the transport equipment production index for FY2007 is expected to be 2.4% higher.

**(6) General and electrical machinery and others** (See note.)

The general and electrical machinery production index for the first half of FY2006 was

10.1% higher compared with the same period of the previous fiscal year, thanks to the increased production of industrial machinery driven by active capital investment, and due also to the increased production of heavy electrical machinery and of the electronic equipment for the consumer sector. In the second half of the fiscal year, both domestic and foreign demand will remain firm, but inventories of IT equipment will need to be adjusted temporarily and capital investment will slow down. Given these factors, the general and electrical machinery production index for the whole of FY2006 is expected to be 6.6% higher. In FY2007, capital investment will continue to slow down but the demand for new game machines and audio/visual appliances such as thin-screen TVs will remain high. Higher consumption with higher wages, combined with the expansion of the regional coverage of land-based digital TV broadcasting and the approaching shutting-down of analog TV broadcasting in 2011, are expected to boost demand for audio/visual appliances. Export growth, on the other hand, will decrease slightly due to the slowing down of the world economy. In view of these factors, we expect the general and electrical machinery production index for FY2007 to be 4.6% higher compared with the previous fiscal year.

*Note: The term "general and electrical machinery" includes general machinery; electrical machinery; IT equipment, electronic parts and devices; precision machinery; and metal products.*

## 2. OUTLOOK ON ENERGY SUPPLY AND DEMAND IN FY2006 AND FY2007

### 2-1 Outlook on Domestic Primary Energy Supply

For FY2006, the domestic primary energy supply is expected to be 0.5% less than in the previous fiscal year despite an active economy, due to impacts from the ambient temperature and from a progress in energy saving. By energy source, coal supply in this fiscal year is expected to be similar to last year despite an increase in supplies to the industrial sector because supplies to the power generation sector will fall. The oil supply in this fiscal year is expected to be 3.5% less than last year due to decreases in supplies to all sectors including the industrial, consumer and transportation sectors. The natural gas supply in this fiscal year is expected to rise by 4.1% thanks to high demand from the power generation and town gas production sectors, while hydroelectricity will grow by 15.9% following the record drought last year. We expect that the utilization of nuclear power in this fiscal year will be down 0.4%, as more nuclear power plants will enter scheduled inspections in the second half of the year. Emissions in this fiscal year of carbon dioxide from energy are expected to be 1.6% lower.

For FY2007, the coal supply is expected to be 0.7% less compared with the previous fiscal year due to a decrease in supplies to the power generation sector due to the loss of market share to nuclear power, and also due to a decrease in supplies to the industrial sector resulting

from a fall in the production of crude steel and cement. The oil supply in FY2007 is expected to be down 2.9% due to a major decrease in supplies to the power generation sector and continued decreases in supplies to the industrial, consumer and transportation sectors. The natural gas supply in FY2007 is expected to increase by 2.1%, driven by high demand from the town gas production sector despite a decrease in supplies to the power generation sector as natural gas fired power loses market share to nuclear power. The utilization of hydroelectricity in FY2007 is expected to grow by 1.1% thanks to the expanded capacity of hydroelectricity stations, assuming average annual water availability. The utilization of nuclear power generation in FY2007 is expected to increase significantly, by 13.7% from the previous fiscal year. When making this estimation, we calculated the capacity factor based on the utilities' plans for scheduled outages and assumed that plants under inspection resume operation. Given all these factors, we expect that the domestic primary energy supply in FY2007 will be 0.5% higher than last year, while carbon dioxide emissions will be 1.7% lower.

**2-2 Outlook on Final Energy Consumption**

For FY2006, the final energy consumption is expected to be 0.8% less than the previous fiscal year. The figure for the industrial sector is expected to be down 0.1% despite active production in both the raw material and machinery sectors due particularly to progress in energy saving. Meanwhile, the final energy consumption by the household sector is expected to be down 1.9% from the previous fiscal year due to weak demand for cooling resulting from the unseasonably cool summer, and also due to a decrease in the space and water heating demand resulting from a warm climate expected this winter. Even though the space cooling demand in the commercial sector in summer decreased as in the household sector, the impact of decreased water heating demand will not be as severe in the commercial sector as in the household sector. Accordingly, the final energy consumption by the commercial sector is expected to be 0.9% less than the previous fiscal year. The final energy consumption by the transportation sector is expected to be down 1.6% due to the decreased consumption of automobile fuel, which constitutes nearly 90% of total consumption by the transportation sector, for both trucks and passenger cars.

For FY2007, the final energy consumption by the industrial sector is likely to be similar to that in the previous fiscal year despite the continuing buoyancy of production, because the production of some raw materials cannot grow further due to capacity limits and also progress in energy saving. Concerning the final energy consumption by the consumer sector, a reactionary growth in the space cooling and heating demand is expected because we assume

the ambient temperature pattern of an average year (hotter summer and colder winter compared with FY2006). The final energy consumption by the household sector is expected to be 1.4% higher than last year; that by the commercial sector to be 1.6% higher thanks to firm growth in the service industry; and that by the transportation sector to be 1.0% lower due to decreasing demand for automobile fuels. Given all these factors, we expect that the final energy consumption in FY2007 will be 0.1% more compared with the previous fiscal year.

**2-3 Outlook on Energy Demand (Energy Sales)**

**(1) Electricity**

For FY2006, the electricity sales (by electric power utilities) are expected to be 1.8% more compared with the previous year. In spite of the low level of demand for space cooling and heating from the consumer sector, growth will be achieved thanks to a generally high level of production activities, and the increased cases of switching from auto generation to grid power in response to the increasing price of fuel oils.

The demand from the household sector is driven by the increase of "all-electric" households, the total number of which had reached 1.8 million by the end of the first half of the fiscal year. With such expansions of base-load demand and a high level of space heating demand in early spring, the demand from "lighting use" contracts (low demand contracts with residential customers) in the first half of this fiscal year was up 1.8% over the same period of the previous fiscal year despite the low level of demand for space cooling resulting from the unseasonable coolness in summer. In the second half of the fiscal year, the sales figure in October dropped significantly due to a cool September. With additional factors such as a reactionary fall from a high demand in December 2005 resulting from historical cold waves and an anticipated decrease in the space heating demand due to a warm climate expected this winter, the electricity sales for the entire fiscal year are expected to rise by only 0.1%.

The electricity demand dominated by industrial and commercial users, exclusive of "lighting use" contracts (inclusive of "specified scale demand") in the first half of the fiscal year was 2.4% more compared with the same period of the previous fiscal year, thanks to buoyant production and lower dependency on auto generation. The electricity demand for large-industrial use (included in the above) in the first half of the fiscal year was 4.1% more compared with the same period of the previous fiscal year, thanks to a significant growth in demand from many industrial sectors such as the non-ferrous metals sector and the ceramics, stone, and clay sector. The contribution to growth by different sectors was as follows: 1.4% by the machinery manufacturing sector, 0.6% by the chemical industry sector and 0.6% by the iron and steel sector. We assume that production will generally be active in the second half of

the fiscal year, although the growth rate will dip slightly. Given these factors, the electricity demand from larger demand contracts (i.e. all contracts except "lighting use" contracts) for the full fiscal year is expected to be 2.6% higher than last year, with the demand for large-industrial use being 3.6% higher.

For FY2007, the electricity demand from "lighting use" contracts is expected to be driven by stronger demand for space cooling and heating because we assume the ambient temperature pattern of an average year (hotter summer and colder winter compared with FY2006). With a further growth in the share of electricity at households, we expect that the electricity demand from "lighting use" contracts will be 2.8% higher than the previous year. The electricity demand from larger demand contracts exclusive of "lighting use" contracts (inclusive of "specified scale demand") is expected to be up 2.3%, thanks to strength in production and service activities. The electricity demand for large-industrial use is expected to be 1.4% higher, because an anticipated 1.3% decrease in the demand from the iron and steel sector will be offset by a 3.9% increase in the demand from the machinery manufacturing sector. Given these factors, we expect that the total electricity sales in FY2007 will be 2.4% more than in the previous fiscal year.

**(2) Town gas**

The town gas sales for the whole of FY2006 is expected to be 5.1% more than the previous year thanks to a major growth in the demand from the industrial sector despite a decrease in the demand from the consumer sector (lower water heating demand in winter and lower space cooling demand in summer).

The demand from the household sector in the first half of the fiscal year was 5.0% more compared with the same period of the previous fiscal year, thanks to an approximately 1% increase in the number of contracts and a higher water heating demand due to unseasonable coolness in summer. For the second half of the fiscal year, however, we anticipate a reactionary fall from a high demand in December 2005 that resulted from historical cold waves and a decrease in the space and water heating demand due to a warm winter expected this year. Given these factors, the town gas demand from the household sector for the entire fiscal year is estimated to be 0.1% higher than last year.

The demand from the commercial sector (inclusive of not only commercial facilities but also hospitals and public facilities) is supported by the penetration of gas air-cooling (which has grown by approximately 30% in the last five years). In summer, the increase in cooling demand usually exceeds the decrease in water heating demand, but the unseasonably cool summer of 2006 resulted in a low cooling demand. Accordingly, in the first half of the fiscal

year, the demand from commercial facilities was only 0.3% more, and the demand from the rest of the commercial sector was only 1.4% more, compared with the same period of the previous fiscal year. For the second half of the fiscal year, we anticipate an impact from a warm winter climate but expect both the number of new large consumers and demand from existing customers to grow. Looking at demand for the entire fiscal year, the demand from commercial facilities is forecast to be 1.3% more, and the demand from the rest of the commercial sector will be 2.7% more, compared with the previous fiscal year.

The demand from the industrial sector is driven by increased cases of switching from oil and other fuels to town gas for environmental reasons and the high crude oil price. Thanks to additional demand from new customers and higher demand from existing customers driven by a high level of production activity, the demand from the industrial sector in the first half of the fiscal year increased significantly, recording 11.7% growth compared with the same period of the previous fiscal year. For the second half of the fiscal year, we expect the switching from other fuels to town gas will continue and that production will stay strong. The town gas demand for the entire fiscal year is expected to be 10.2% higher, recording double-digit growth for three consecutive years.

For FY2007, the demand from the household sector is expected to be impacted by a decrease in the water heating demand in summer because we assume the ambient temperature of the average summer (hotter than in FY2006) and an increase in the water and space heating demand in winter because we assume the ambient temperature of the average winter (colder than in FY2006). Since the number of contracts will grow firmly, the demand from the household sector will grow by 1.0% from the previous fiscal year. Concerning the demand from the commercial sector, we forecast that the demand from commercial facilities will be 3.5% higher; from the rest of the commercial sector will be 5.5% higher, and from the industrial sector will be 8.8% higher than last year due particularly to a growth in demand from new customers. Given these factors, we expect that the town gas sales as a whole in FY2007 will be 5.5% more compared with the previous fiscal year.

**(3) Oil**

For FY2006, we expect that the fuel oil sales will be 3.5% less compared with the previous fiscal year due to impacts from the ambient temperature, substitution by other fuels in the industrial and commercial sectors, and a decrease in the demand for gasoline and gas oil as automobile fuels.

The gasoline demand, which mostly comes from automobiles, dropped significantly in the first half of this fiscal year, down 1.7% from the same period of the previous fiscal year. This

is attributable mainly to better fuel efficiency and shorter distances traveled by automobiles, as represented by growing sales of mini-size vehicles and a decrease in automotive air conditioning demand due to the cool summer. The gas oil demand in the first half of this fiscal year was down 2.2% despite the recovery of freight traffic, due to a decrease in the number of diesel vehicles (both passenger cars and trucks). For the second half of the fiscal year, we expect that the gasoline price will fall but that the shift to mini-size vehicles and improvement in fuel efficiency of passenger cars will continue, thus having further impacts. Moreover, the number of diesel vehicles is expected to continue to shrink. Given these factors, we expect that, for the entire fiscal year, the gasoline sales volume will be 1.1% less, and the gas oil sales volume will be 2.1% less, compared with the previous fiscal year.

The sales volume of naphtha, a raw material for petrochemical products, in the first half of this fiscal year was down 2.2% from the same period of the previous year because a larger number of ethylene plants were stopped for periodic maintenance. In the second half of the fiscal year, we anticipate that ethylene production will be at maximum capacity with fewer plants stopped for periodic maintenance, resulting in a mild recovery of naphtha demand. The naphtha demand for the entire fiscal year is expected to be 0.3% less than last year. The kerosene demand fell significantly in the first half of this fiscal year, down 9.2% from the same period of the previous fiscal year, due to substitution by electricity, town gas and other fuels in both the consumer sector and the industrial sector. For the second half of the fiscal year, in which about 70% of the annual demand is usually expected, we anticipate an impact from a warm winter (true so far at the end of 2006) and a reactionary fall from a high demand in December 2005 that resulted from historical cold waves. Since we already assume that the space heating demand will decrease due to a warm winter climate, the kerosene demand for the entire fiscal year is likely to drop significantly, by 8.1% from the previous fiscal year.

Concerning heavy fuel oil-A, demand will shift to heavy fuel oil-C in the marine vessel sector as ships become larger, but in some cases heavy fuel oil-A is replacing heavy fuel oil-C due to environmental regulations at ports. The demand for heavy fuel oil-A from the industrial sector and the consumer sector dropped significantly in the first half of this fiscal year, recording a 12.0% decrease from the same period of the previous fiscal year, due to substitution by town gas and the switching from auto generation to grid power in response to high fuel prices. The falling demand, due to substitution by other fuels or otherwise, is expected to persist in the second half of the fiscal year. The demand for heavy fuel oil-A for the entire fiscal year is forecast to be 10.5% less than last year. Concerning heavy fuel oil-C, the demand from the power generation sector in the first half of this fiscal year was down 10.0% from the same period of the previous fiscal year due to loss of market share to nuclear

power generation, coal-fired generation and LNG-fired generation. Like in the case of heavy fuel oil-A, the demand for heavy fuel oil-C from the industrial sector decreased due to substitution by other fuels and the tendency to rely less on auto generation. The total demand for heavy fuel oil-C in the first half of this fiscal year was down 11.1%. In the second half, the decrease in the demand from the industrial sector will persist but the demand from the power generation sector will increase due to a drop in the nuclear power plant capacity factor. We expect that the demand for the entire fiscal year will decline by 4.9%. The LPG sales volume in the first half of this fiscal year was 2.3% more compared with the same period of the previous fiscal year thanks to growth in the demand from the industrial sector and the demand for LPG as a raw material for chemical products. In the second half, the space and water heating demand will decrease due to the warm winter. We expect that the LPG demand for the entire fiscal year will be 0.3% more compared with the previous fiscal year.

For FY2007, we expect that the gasoline demand will be 0.6% less than the previous year, recording a decrease for three consecutive years. Even though there will be a slight increase in the number of gasoline-powered vehicles and a reactionary growth from a low level of the automotive air conditioning (cooling) demand in the previous year, the shift to mini-size vehicles and improvement of fuel efficiency will continue. The gas oil sales volume will be 1.9% less than last year as the number of diesel vehicles will continue to shrink. However, naphtha demand will be 0.7% higher because we assume a slight increase in ethylene production. Kerosene demand will fall 2.0% from last year because kerosene is losing market share in the industrial sector, even though we assume the wintertime temperature of an average year (colder than in FY2006). The demand for heavy fuel oil-A is expected to be 5.4% less compared with the previous fiscal year due to further substitution by other fuels in the industrial and consumer sectors, even though industrial activity will remain strong. The demand for heavy fuel oil-C from the power generation sector will drop significantly as the nuclear power plant utilization factor will rise. The demand from the industrial sector and elsewhere will also continue to decrease. We expect that the total demand for heavy fuel oil-C will be 11.9% less compared with the previous fiscal year. Given these factors, the total fuel oil sales in FY2007 will be 2.4% less than the previous fiscal year, recording a decrease for five consecutive years. The LPG sales volume in FY2007 is expected to grow only by 0.4% from the previous fiscal year due to popularization of LNG as a raw material for town gas and increasing number of “all-electric” households, despite the expected increase in demand for raw materials of chemical products and for space heating and water heating resulting from temperature instability.

## 3. EVALUATION OF POSSIBLE IMPACTS ON THE ENERGY SUPPLY AND DEMAND IN FY2007

To evaluate the possible impacts from factors that may affect the energy supply and demand, we performed sensitivity analyses on our forecasts for FY2007. In a sensitivity analysis, we analyze variations from the base case in terms of differences in the outputs (forecasts) resulting from a change in only one of the assumptions (exogenous variables). This allows quantitative evaluation of the degree of impact from that change. In this case, we performed sensitivity analyses for the crude oil price and real GDP which appear to be highly uncertain in the short term, in order to identify how variations in these factors may impact our forecasts on the economic activities and the energy supply and demand in FY2007. In addition, we quantitatively evaluated possible impacts from a higher or lower ambient temperature, which tends to affect the energy demand.

### 3-1 Possible Impacts from a Higher or Lower Crude Oil Price

The price of crude oil remains high, and so could affect the Japanese economy and the energy supply and demand. The crude oil price (CIF-based import price) that we assumed for the base case was based on "Prospects for the International Market and Crude Oil Pricees in 2007" by Ken Koyama; we assumed that the mean crude oil price in FY2007 would be $58/barrel, which is still high but lower than the price in FY2006. The following describes our evaluation on the possible impacts from a higher or lower crude oil price based on analyses on the higher and lower crude oil price cases. The higher-price case assumes the FY2007 annual mean crude oil price of $68/barrel, which is $10/barrel higher than that assumed in the base case. The lower-price case assumes the FY2007 annual mean crude oil price of $48/barrel, which is $10/barrel lower than that assumed in the base case.

#### (1) Higher crude oil price case

In comparison with the base case, a crude oil price $10 higher will decrease the FY2007 real GDP growth by 0.2 percentage points, resulting in 1.8% growth from the previous fiscal year. Again in comparison with the base case, the higher crude oil price will increase the consumer price index by 0.2 percentage points. In terms of the impact on growth in energy consumption, the growth of the domestic primary energy supply will decrease by 0.2 percentage points from the base case, resulting in 0.3% growth from the previous fiscal year. The final energy consumption will decrease by 0.3 percentage points from the base case, resulting in a 0.2% drop from the previous fiscal year.

Looking at final energy consumption by sector, the higher crude oil price will slow down

economic growth and so suppress final energy consumption by the industrial sector and the transportation sector by 0.4 and 0.3 percentage points respectively, compared with the base case. The impact will be less on the final energy consumption by the consumer sector, which will decrease by 0.1 percentage point from the base case. In terms of energy sales, the higher crude oil price will directly affect the fuel oil sales, leading to a decrease of 0.4 percentage points from the base case, resulting in a 2.9% drop from the previous fiscal year. The impact will be less on the electricity sales and the town gas sales. The former will not change at all, while the latter will decrease by 0.1 percentage point in comparison with the base case.

**(2) Lower crude oil price case**

In comparison with the base case, a crude oil price $10 lower will increase the FY2007 real GDP growth by 0.2 percentage points, resulting in 2.2% growth from the previous fiscal year. In terms of the impact on energy consumption growth, the growth of the domestic primary energy supply will increase by 0.3 percentage points from the base case, resulting in 0.8% growth from the previous fiscal year. The final energy consumption will increase by 0.3 percentage points from the base case, resulting in 0.5% growth from the previous fiscal year.

**3-2 Possible Impacts from a Higher or Lower Economic Growth**

Even though the Japanese economy is growing firmly, its direction remains uncertain due to the potential risks of the flattening out of private consumption, economic growth hampered by higher interest rates, the world economy slowing down, and so on. The following describes our evaluation on how the energy supply and demand can be affected by lower or higher economic growth based on analyses on the low and high economic growth cases. The low-growth case assumes GDP growth 1.0 percentage point lower than the base case, while the high-growth case assumes GDP growth 1.0 percentage point higher than the base case.

**(1) Low economic growth case**

In comparison with the base case, an economic growth 1 percentage point lower will decrease the domestic primary energy supply by 0.5 percentage points, resulting in 0.1% growth from the previous fiscal year. The final energy consumption will decrease by 0.4 percentage points from the base case, resulting in a 0.3% drop from the previous fiscal year. Looking at the final energy consumption by sector, the impact will be relatively great on the final energy consumption by the industrial sector, which will decrease by 0.6 percentage points from the base case. In terms of energy sales, the impact will be relatively great on the fuel oil sales, which will decrease by 0.7 percentage points from the base case. The impacts

on the electricity sales and the town gas sales will be relatively small. The proportion by which the energy consumption decreases will be smaller than the proportion by which the economic growth has decreased (1.0 percentage point decrease, in this case).

**(2) High economic growth case**

In comparison with the base case, an economic growth 1 percentage point higher will increase the domestic primary energy supply by 0.5 percentage points, resulting in 1.0% growth from the previous fiscal year. The final energy consumption will increase by 0.4 percentage points from the base case, resulting in 0.6% growth from the previous fiscal year. As with the low-growth case, the proportion by which the energy consumption increases will be smaller than the proportion by which the economic growth has increased (1.0 percentage point increase, in this case).

**3-3 Possible Impacts from a Higher or Lower Ambient Temperature**

The ambient temperature tends to affect the energy demand, particularly the demand for space cooling and heating from the consumer sector. Since the ambient temperature has been quite irregular in recent years (exceptionally hot and cool summers, etc.), there is a growing need to evaluate how the ambient temperature affects the energy demand. Focusing on summer (July to September) and winter (January to March) in which an irregularity in the ambient temperature may produce a significant impact, we evaluated the possible impacts on the energy supply and demand from an ambient temperature 1°C higher or lower in summer and winter, while the base case preconditions average temperature for the past 10 years.

**(1) Ambient temperature 1°C higher in summer (July to September)**

If the mean ambient temperature is 1°C higher than in the average year, this will increase the domestic primary energy supply and the final energy consumption by 1.3% and 0.7%, respectively. In the household sector, the higher ambient temperature will increase the space cooling demand but decrease the water heating demand, the combination of which will result in a 1.1% increase in the final energy consumption. The impact will be greater on the commercial sector because of a larger proportion of the space cooling demand and a smaller proportion of the water heating demand compared with the household sector. The higher ambient temperature will increase the final energy consumption by 2.5% in the commercial sector, and by 0.5% in the transportation sector because the fuel consumed by automobiles will increase due to heavier use of automotive air conditioning. In terms of energy sales, the higher ambient temperature will increase the electricity sales by 2.4% by enlarging the space

cooling demand. With regard to town gas, the higher ambient temperature will increase the space cooling demand particularly from the commercial sector but decrease the water heating demand from the consumer sector, the combination of which will result in a 0.6% increase. The 1°C higher temperature will also increase the fuel oil sales by 1.0% because it will increase not only the consumption of gasoline by automobiles but also the demand for heavy fuel oil-C for power generation, which will intensify due to the larger consumption of electric power.

**(2) Ambient temperature 1°C lower in winter (January to March)**

If the mean ambient temperature is 1°C lower than in the average year, this will increase the domestic primary energy supply and the final energy consumption by 1.3% and 1.1%, respectively. In the consumer sector, a lower ambient temperature and a lower water temperature will increase the space heating demand and the water heating demand, respectively. The final energy consumption will increase by 3.3% in the household sector and by 2.0% in the commercial sector, compared with the base case. In terms of energy sales, the lower ambient temperature, by increasing the space heating demand, will increase the electricity sales by 1.4% and the fuel oil sales by 0.9%. The lower temperature will also increase the town gas sales by 2.8%. This increase is larger than for other energy sources because the town gas demand will be driven by both the space heating demand and the water heating demand.

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Table 1: Overview (Base Case)

| | | FY2004 | FY2005 (Actual) | | | FY2006 (Forecast) | | | FY2007 |
|---|---|---|---|---|---|---|---|---|---|
| | | Actual | 1H | 2H | Total | 1H | 2H | Total | Forecast |
| Key economic indicators | GDP | **527,856** | **266,091** | **274,351** | **540,442** | **271,069** | **281,088** | **552,157** | **563,161** |
| | (Chained to year 2000, in billion yen) | (2.0) | (2.0) | (2.8) | (2.4) | (1.9) | (2.5) | (2.2) | (2.0) |
| | Private demand | **394,977** | **200,925** | **203,682** | **404,608** | **204,979** | **210,319** | **415,298** | **424,192** |
| | [Contribution to GDP] | [1.8] | [1.7] | [2.0] | [1.8] | [1.5] | [2.4] | [2.0] | [1.6] |
| | Public demand | **118,721** | **57,688** | **61,533** | **119,221** | **56,712** | **61,007** | **117,719** | **117,870** |
| | [Contribution to GDP] | [-0.3] | [0.2] | [-0.0] | [0.1] | [-0.4] | [-0.2] | [-0.3] | [0.0] |
| | External demand | **14,084** | **7,650** | **9,390** | **17,040** | **9,905** | **9,972** | **19,878** | **21,797** |
| | [Contribution to GDP] | [0.5] | [0.1] | [1.0] | [0.6] | [0.8] | [0.2] | [0.5] | [0.3] |
| | Corporate goods price index | **96.4** | **97.8** | **99.0** | **98.4** | **101.0** | **101.5** | **101.2** | **101.5** |
| | (Year 2000=100) | (1.5) | (1.7) | (2.4) | (2.1) | (3.3) | (2.5) | (2.9) | (0.3) |
| | Consumer price index | **100.3** | **100.1** | **100.0** | **100.0** | **100.5** | **100.4** | **100.4** | **100.6** |
| | (Year 2005=100) | (0.0) | (-0.2) | (-0.4) | (-0.3) | (0.4) | (0.5) | (0.4) | (0.2) |
| | Indices of industrial production | **100.5** | **99.8** | **104.5** | **102.1** | **104.5** | **106.8** | **105.7** | **108.2** |
| | (Year 2000=100) | (4.1) | (0.1) | (3.1) | (1.6) | (4.8) | (2.2) | (3.5) | (2.4) |
| | Crude steel production | **112,897** | **56,797** | **55,921** | **112,718** | **58,051** | **59,021** | **117,073** | **114,963** |
| | (in '000t) | (1.7) | (0.7) | (-1.1) | (-0.2) | (2.2) | (5.5) | (3.9) | (-1.8) |
| | Ethylene production | **7,555** | **3,674** | **3,875** | **7,549** | **3,642** | **3,927** | **7,569** | **7,625** |
| | (in '000t) | (1.8) | (0.6) | (-0.7) | (-0.1) | (-0.9) | (1.3) | (0.3) | (0.7) |
| | Exchange rate | **107.5** | **109.4** | **117.1** | **113.3** | **115.3** | **115.0** | **115.2** | **115.0** |
| | (Yen/US$) | (-4.9) | (-0.4) | (11.4) | (5.4) | (5.4) | (-1.8) | (1.7) | (-0.1) |
| | Crude oil CIF price | **38.6** | **52.7** | **58.2** | **55.4** | **67.8** | **61.5** | **64.7** | **58.0** |
| | (US$/Bbl) | (30.8) | (44.1) | (42.9) | (43.5) | (28.8) | (5.6) | (16.6) | (-10.3) |
| | Heating degree-days | **965** | **49** | **1,067** | **1,116** | **64** | **889** | **953** | **990** |
| | | (4.4) | (23.0) | (15.3) | (15.6) | (32.5) | (-16.7) | (-14.6) | (3.8) |
| | Cooling degree-days | **491** | **444** | **5** | **449** | **377** | **3** | **379** | **415** |
| | | (62.8) | (-9.7) | - | (-8.7) | (-15.1) | (-49.0) | (-15.5) | (9.4) |
| Key energy indicators | Primary energy supply | **541,179** | **263,714** | **278,710** | **542,424** | **262,663** | **276,872** | **539,535** | **542,476** |
| | (10^10kcal = KTOE) | (2.3) | (-0.2) | (0.6) | (0.2) | (-0.4) | (-0.7) | (-0.5) | (0.5) |
| | Final energy consumption | **372,251** | **177,108** | **196,479** | **373,587** | **175,742** | **194,747** | **370,489** | **371,002** |
| | (10^10kcal = KTOE) | (0.6) | (0.7) | (0.0) | (0.4) | (-0.8) | (-0.9) | (-0.8) | (0.1) |
| | Industrial sector | **178,580** | **86,015** | **91,958** | **177,973** | **85,565** | **92,242** | **177,807** | **177,718** |
| | | (-0.5) | (1.2) | (-1.7) | (-0.3) | (-0.5) | (0.3) | (-0.1) | (-0.0) |
| | Consumer sector | **101,961** | **45,093** | **59,381** | **104,474** | **45,141** | **57,818** | **102,959** | **104,499** |
| | | (2.3) | (0.7) | (3.9) | (2.5) | (0.1) | (-2.6) | (-1.5) | (1.5) |
| | Transportation sector | **91,710** | **46,000** | **45,140** | **91,140** | **45,036** | **44,688** | **89,724** | **88,785** |
| | | (1.0) | (-0.0) | (-1.2) | (-0.6) | (-2.1) | (-1.0) | (-1.6) | (-1.0) |
| | Electricity sales | **892.1** | **453.7** | **459.6** | **913.3** | **463.6** | **466.3** | **929.9** | **952.5** |
| | (billion kWh) | (3.9) | (0.5) | (4.3) | (2.4) | (2.2) | (1.5) | (1.8) | (2.4) |
| | Town gas sales | **30,138** | **14,697** | **17,762** | **32,459** | **15,742** | **18,375** | **34,117** | **35,983** |
| | (million $m^3$/10,000kcal) | (5.3) | (6.0) | (9.1) | (7.7) | (7.1) | (3.4) | (5.1) | (5.5) |
| | Fuel oil sales | **237,245** | **109,868** | **126,320** | **236,188** | **104,630** | **123,357** | **227,987** | **222,429** |
| | (1,000kl) | (-1.4) | (0.0) | (-0.8) | (-0.4) | (-4.8) | (-2.3) | (-3.5) | (-2.4) |
| | $CO_2$ emissions | **326** | | | **329** | | | **324** | **318** |
| | (million t-C) | (0.0) | | | (0.8) | | | (-1.6) | (-1.7) |

Sources: Actual results data prepared from various publications; forecasts by IEEJ

Notes:

1. Bracketed figures indicate % changes year-on-year, except GDP contributions.
2. GDP contributions may not add up to total due to minor data deviations.
3. The industrial sector consumption includes non-energy uses.

Table 2: Macroeconomic Outlook (Base Case)

| | FY2004 | FY2005 (Actual) | | | FY2006 (Forecast) | | | FY2007 |
|---|---|---|---|---|---|---|---|---|
| | Actual | 1H | 2H | Total | 1H | 2H | Total | Forecast |
| Real GDP | **527,856** | **266,091** | **274,351** | **540,442** | **271,069** | **281,088** | **552,157** | **563,161** |
| (Chained to year 2000, in billion yen) | (2.0) | (2.0) | (2.8) | (2.4) | (1.9) | (2.5) | (2.2) | (2.0) |
| Private demand | **394,977** | **200,925** | **203,682** | **404,608** | **204,979** | **210,319** | **415,298** | **424,192** |
| | (2.4) | (2.2) | (2.6) | (2.4) | (2.0) | (3.3) | (2.6) | (2.1) |
| Private final consumption expenditure | **296,889** | **149,833** | **152,713** | **302,546** | **150,859** | **155,112** | **305,971** | **310,190** |
| | (1.3) | (1.5) | (2.3) | (1.9) | (0.7) | (1.6) | (1.1) | (1.4) |
| Private residential investments | **18,662** | **9,236** | **9,238** | **18,475** | **9,283** | **9,456** | **18,739** | **19,015** |
| | (1.7) | (-2.6) | (0.6) | (-1.0) | (0.5) | (2.4) | (1.4) | (1.5) |
| Private capital investments | **77,894** | **39,496** | **42,891** | **82,387** | **42,422** | **47,329** | **89,751** | **94,490** |
| | (6.2) | (6.8) | (4.8) | (5.8) | (7.4) | (10.3) | (8.9) | (5.3) |
| Public demand | **118,721** | **57,688** | **61,533** | **119,221** | **56,712** | **61,007** | **117,719** | **117,870** |
| | (-1.5) | (1.1) | (-0.2) | (0.4) | (-1.7) | (-0.9) | (-1.3) | (0.1) |
| Government final consumption expenditure | **93,890** | **47,357** | **47,418** | **94,774** | **47,523** | **47,809** | **95,332** | **96,204** |
| | (1.7) | (2.0) | (-0.1) | (0.9) | (0.4) | (0.8) | (0.6) | (0.9) |
| Public fixed capital formation | **24,524** | **10,191** | **13,994** | **24,185** | **9,065** | **13,054** | **22,119** | **21,375** |
| | (-12.7) | (-3.3) | (0.0) | (-1.4) | (-11.0) | (-6.7) | (-8.5) | (-3.4) |
| Net export of goods & services | **14,084** | **7,650** | **9,390** | **17,040** | **9,905** | **9,972** | **19,878** | **21,797** |
| | (25.0) | (5.2) | (37.8) | (21.0) | (29.5) | (6.2) | (16.7) | (9.7) |
| Goods & services export | **69,569** | **36,492** | **39,355** | **75,847** | **40,064** | **41,692** | **81,756** | **86,381** |
| | (11.4) | (6.3) | (11.7) | (9.0) | (9.8) | (5.9) | (7.8) | (5.7) |
| Goods & services import | **55,485** | **28,843** | **29,965** | **58,808** | **30,159** | **31,720** | **61,879** | **64,584** |
| | (8.4) | (6.6) | (5.4) | (6.0) | (4.6) | (5.9) | (5.2) | (4.4) |
| Nominal GDP | **498,280** | **247,967** | **255,400** | **503,367** | **250,430** | **260,579** | **511,009** | **521,315** |
| (billion yen) | (0.9) | (0.7) | (1.3) | (1.0) | (1.0) | (2.0) | (1.5) | (2.0) |
| Indices of industrial production | **100.5** | **99.8** | **104.5** | **102.1** | **104.5** | **106.8** | **105.7** | **108.2** |
| (Year 2000=100) | (4.1) | (0.1) | (3.1) | (1.6) | (4.8) | (2.2) | (3.5) | (2.4) |
| Tertiary industry activity index | **104.8** | **105.8** | **108.5** | **107.1** | **107.9** | **110.0** | **108.9** | **111.2** |
| (Year 2000=100) | (2.3) | (2.0) | (2.3) | (2.2) | (2.0) | (1.4) | (1.7) | (2.1) |
| Domestic corporate goods price index | **96.4** | **97.8** | **99.0** | **98.4** | **101.0** | **101.5** | **101.2** | **101.5** |
| (Year 2000=100) | (1.5) | (1.7) | (2.4) | (2.1) | (3.3) | (2.5) | (2.9) | (0.3) |
| Consumer price index | **100.3** | **100.1** | **100.0** | **100.0** | **100.5** | **100.4** | **100.4** | **100.6** |
| (Year 2005=100) | (0.0) | (-0.2) | (-0.4) | (-0.3) | (0.4) | (0.5) | (0.4) | (0.2) |
| Exchange rate | **107.5** | **109.4** | **117.1** | **113.3** | **115.3** | **115.0** | **115.2** | **115.0** |
| (Yen/US$) | (-4.9) | (-0.4) | (11.4) | (5.4) | (5.4) | (-1.8) | (1.7) | (-0.1) |
| Crude oil CIF price | **38.6** | **52.7** | **58.2** | **55.4** | **67.8** | **61.5** | **64.7** | **58.0** |
| (US$/Bbl) | (30.8) | (44.1) | (42.9) | (43.5) | (28.8) | (5.6) | (16.6) | (-10.3) |

Sources: Actual results data prepared from various publications; forecasts by IEEJ

Notes:

1. Bracketed figures indicate % changes year-on-year.
2. GDP contributions may not add up to total due to minor data deviations.

Table 3: Outlook on Industrial Activities (Base Case)

| | | FY2004 | FY2005 (Actual) | | | FY2006 (Forecast) | | | FY2007 |
|---|---|---|---|---|---|---|---|---|---|
| | | Actual | 1H | 2H | Total | 1H | 2H | Total | Forecast |
| Production (1,000t) | Crude steel | **112,897** (1.7) | **56,797** (0.7) | **55,921** (-1.1) | **112,718** (-0.2) | **58,051** (2.2) | **59,021** (5.5) | **117,073** (3.9) | **114,963** (-1.8) |
| | Ethylene | **7,555** (1.8) | **3,674** (0.6) | **3,875** (-0.7) | **7,549** (-0.1) | **3,642** (-0.9) | **3,927** (1.3) | **7,569** (0.3) | **7,625** (0.7) |
| | Cement | **71,682** (-2.5) | **35,639** (3.7) | **38,293** (2.6) | **73,931** (3.1) | **35,167** (-1.3) | **38,309** (0.0) | **73,476** (-0.6) | **72,848** (-0.9) |
| | Paper/Paperboard | **30,874** (0.9) | **15,460** (0.4) | **15,609** (0.9) | **31,069** (0.6) | **15,509** (0.3) | **15,667** (0.4) | **31,176** (0.3) | **31,332** (0.5) |
| Indices of industrial production (Year 2000=100) | Foods | **95.7** (-1.5) | **95.8** (-1.8) | **92.4** (-1.7) | **94.1** (-1.8) | **95.1** (-0.7) | **90.8** (-1.7) | **92.9** (-1.2) | **91.9** (-1.2) |
| | Textiles (excl. chemical fiber) | **68.4** (-6.1) | **64.3** (-7.1) | **63.3** (-6.5) | **63.8** (-6.8) | **62.1** (-3.3) | **58.9** (-7.0) | **60.5** (-5.1) | **57.6** (-4.8) |
| | Iron & steel | **108.2** (3.5) | **108.0** (0.5) | **106.4** (-2.4) | **107.2** (-0.9) | **109.3** (1.2) | **110.9** (4.3) | **110.1** (2.7) | **109.7** (-0.4) |
| | Chemicals (incl. chemical fiber) | **102.3** (1.7) | **99.2** (-1.4) | **101.6** (-2.4) | **100.4** (-1.9) | **97.5** (-1.6) | **105.8** (4.2) | **101.7** (1.3) | **103.8** (2.1) |
| | Ceramics, stone, and clay | **83.2** (-2.5) | **80.0** (-1.7) | **81.8** (-3.9) | **80.9** (-2.8) | **78.2** (-2.3) | **84.7** (3.5) | **81.4** (0.6) | **80.1** (-1.6) |
| | Pulp, paper and paper products | **97.9** (1.0) | **98.2** (0.8) | **99.4** (1.1) | **98.8** (1.0) | **98.6** (0.4) | **99.8** (0.4) | **99.2** (0.4) | **99.7** (0.5) |
| | Non-ferrous metals | **97.7** (0.3) | **98.4** (2.4) | **104.5** (5.3) | **101.5** (3.9) | **103.9** (5.5) | **108.5** (3.8) | **106.2** (4.7) | **108.8** (2.4) |
| | Transport equipment | **118.4** (8.7) | **116.0** (3.0) | **124.4** (0.1) | **120.2** (1.5) | **121.8** (5.0) | **126.2** (1.5) | **124.0** (3.2) | **127.0** (2.4) |
| | Electrical machinery and others | **101.3** (6.7) | **101.9** (0.1) | **110.0** (9.1) | **105.9** (4.6) | **112.1** (10.1) | **113.8** (3.5) | **113.0** (6.6) | **118.1** (4.6) |
| | Total mining & manufacturing | **100.5** (4.1) | **99.8** (0.1) | **104.5** (3.1) | **102.1** (1.6) | **104.5** (4.8) | **106.8** (2.2) | **105.7** (3.5) | **108.2** (2.4) |

Sources: Actual results data prepared from various publications; forecasts by IEEJ

Notes:

1. Bracketed figures indicate % changes year-on-year.
2. “Electrical machinery and others” includes: general machinery; electrical machinery; information and communication electronics equipment; electronic parts and devices; precision instruments; and fabricated metals.

Table 4: Outlook on Electricity Demand (Base Case)
(Electric power utilities, by use)

| | | FY2004 | FY2005 (Actual) | | | FY2006 (Forecast) | | | FY2007 |
|---|---|---|---|---|---|---|---|---|---|
| | | Actual | 1H | 2H | Total | 1H | 2H | Total | Forecast |
| Electricity demand (billion kWh) | Lighting use | **272.6** (5.0) | **132.4** (0.7) | **148.9** (5.5) | **281.3** (3.2) | **134.7** (1.8) | **146.8** (-1.4) | **281.5** (0.1) | **289.3** (2.8) |
| | Non-lighting use (incl. specified scale demand) | **619.6** (3.5) | **321.3** (0.4) | **310.7** (3.7) | **632.0** (2.0) | **328.9** (2.4) | **319.5** (2.8) | **648.4** (2.6) | **663.2** (2.3) |
| | Total (incl. specified scale demand) | **892.1** (3.9) | **453.7** (0.5) | **459.6** (4.3) | **913.3** (2.4) | **463.6** (2.2) | **466.3** (1.5) | **929.9** (1.8) | **952.5** (2.4) |
| | (Regrouped) Large-industrial use | **288.6** (2.4) | **148.3** (0.7) | **146.0** (3.4) | **294.4** (2.0) | **154.4** (4.1) | **150.6** (3.1) | **305.0** (3.6) | **309.3** (1.4) |
| | Chemical industries | **28.6** (3.6) | **14.7** (1.5) | **14.9** (6.0) | **29.6** (3.7) | **15.6** (5.9) | **15.7** (5.0) | **31.2** (5.5) | **32.0** (2.5) |
| | Iron & steel industries | **53.6** (1.6) | **26.7** (-0.8) | **26.6** (-0.1) | **53.3** (-0.5) | **27.7** (3.5) | **27.8** (4.7) | **55.5** (4.1) | **54.8** (-1.3) |
| | Machinery manufacturing | **72.0** (5.1) | **37.6** (1.8) | **36.9** (5.4) | **74.5** (3.5) | **39.7** (5.5) | **38.0** (3.1) | **77.7** (4.3) | **80.7** (3.9) |
| | Mining & manufacturing | **240.1** (2.6) | **123.5** (0.8) | **122.1** (3.9) | **245.6** (2.3) | **129.5** (4.9) | **126.4** (3.5) | **256.0** (4.2) | **260.1** (1.6) |

Sources: Actual results data prepared from METI, "Monthly Electricity Survey & Statistics"; forecasts by IEEJ

Notes:

1. Bracketed figures indicate % changes year-on-year.
2. The data includes specified supplies by electricity enterprises.
3. The data does not include self-consumption by Tobata Joint Thermal Power Generation Company.

Table 5: Outlook on Town Gas Sales (Base Case)

| | | FY2004 | FY2005 (Actual) | | | FY2006 (Forecast) | | | FY2007 |
|---|---|---|---|---|---|---|---|---|---|
| | | Actual | 1H | 2H | Total | 1H | 2H | Total | Forecast |
| Town gas sales (million $m^3$) | Household | **9,463** (-2.5) | **3,774** (4.1) | **6,153** (5.4) | **9,927** (4.9) | **3,964** (5.0) | **5,972** (-3.0) | **9,935** (0.1) | **10,038** (1.0) |
| | Commercial | **4,711** (6.4) | **2,499** (1.4) | **2,392** (6.4) | **4,892** (3.8) | **2,506** (0.3) | **2,449** (2.4) | **4,955** (1.3) | **5,130** (3.5) |
| | Industrial | **13,285** (10.4) | **7,069** (9.6) | **7,712** (12.8) | **14,780** (11.3) | **7,899** (11.7) | **8,390** (8.8) | **16,289** (10.2) | **17,718** (8.8) |
| | Others | **2,678** (9.3) | **1,354** (2.5) | **1,504** (10.9) | **2,859** (6.8) | **1,373** (1.4) | **1,563** (3.9) | **2,937** (2.7) | **3,097** (5.5) |
| | Total | **30,138** (5.3) | **14,697** (6.0) | **17,762** (9.1) | **32,459** (7.7) | **15,742** (7.1) | **18,375** (3.4) | **34,117** (5.1) | **35,983** (5.5) |

Sources: Actual results data prepared from METI, "Monthly Gas Industry Statistics"; forecasts by IEEJ

Notes:

1. Bracketed figures indicate % changes year-on-year.
2. Converted at $1m^3$=41.8605MJ (10,000kcal).

Table 6: Outlook on Fuel Oils Sales (Base Case)

| | | | FY2004 | FY2005 (Actual) | | | FY2006 (Forecast) | | | FY2007 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Actual | 1H | 2H | Total | 1H | 2H | Total | Forecast |
| Fuel oils sales (1,000kl) | Gasoline | | **61,476** (1.5) | **31,343** (0.4) | **30,079** (-0.6) | **61,422** (-0.1) | **30,818** (-1.7) | **29,940** (-0.5) | **60,758** (-1.1) | **60,370** (-0.6) |
| | Naphtha | | **49,026** (1.2) | **24,029** (2.0) | **25,402** (-0.3) | **49,431** (0.8) | **23,493** (-2.2) | **25,795** (1.5) | **49,289** (-0.3) | **49,656** (0.7) |
| | Jet fuel | | **4,906** (9.0) | **2,544** (4.4) | **2,601** (5.3) | **5,145** (4.9) | **2,463** (-3.2) | **2,620** (0.7) | **5,083** (-1.2) | **5,146** (1.2) |
| | Kerosene | | **27,977** (-3.9) | **7,695** (3.8) | **20,570** (0.0) | **28,265** (1.0) | **6,989** (-9.2) | **18,983** (-7.7) | **25,972** (-8.1) | **25,457** (-2.0) |
| | Gas oil | | **38,203** (0.2) | **18,419** (-2.4) | **18,717** (-3.2) | **37,136** (-2.8) | **18,015** (-2.2) | **18,330** (-2.1) | **36,345** (-2.1) | **35,664** (-1.9) |
| | Fuel oil-A | | **29,100** (-2.2) | **12,784** (-2.1) | **14,996** (-6.5) | **27,780** (-4.5) | **11,248** (-12.0) | **13,604** (-9.3) | **24,852** (-10.5) | **23,498** (-5.4) |
| | Fuel oil-B, C | | **26,556** (-12.0) | **13,054** (-1.8) | **13,955** (5.2) | **27,010** (1.7) | **11,603** (-11.1) | **14,085** (0.9) | **25,688** (-4.9) | **22,639** (-11.9) |
| | | For power generation | **9,834** (-21.5) | **5,260** (4.3) | **6,520** (36.1) | **11,780** (19.8) | **4,733** (-10.0) | **7,041** (8.0) | **11,774** (-0.1) | **9,475** (-19.5) |
| | | For other uses | **16,722** (-5.4) | **7,794** (-5.5) | **7,435** (-12.3) | **15,230** (-8.9) | **6,870** (-11.9) | **7,044** (-5.3) | **13,914** (-8.6) | **13,164** (-5.4) |
| | Total | | **237,245** (-1.4) | **109,868** (0.0) | **126,320** (-0.8) | **236,188** (-0.4) | **104,630** (-4.8) | **123,357** (-2.3) | **227,987** (-3.5) | **222,429** (-2.4) |
| LPG sales (1,000t) | | | **18,408** (-1.8) | **8,469** (0.5) | **10,238** (2.6) | **18,707** (1.6) | **8,661** (2.3) | **10,111** (-1.2) | **18,772** (0.3) | **18,853** (0.4) |

Sources: Actual results data prepared from METI, "Monthly Resources & Energy Statistics", Petroleum Association of Japan, "Monthly Oil Statistics", Japan LP Gas Association, "LP Gas Receipt and Delivery Monthly Reports"; forecasts by IEEJ.

Note:

1. Bracketed figures indicate % changes year-on-year.

Table 7: Outlook on Domestic Primary Energy Supply (Base Case)

| | | FY2004 | FY2005 (Actual) | | | FY2006 (Forecast) | | | FY2007 |
|---|---|---|---|---|---|---|---|---|---|
| | | Actual | 1H | 2H | Total | 1H | 2H | Total | Forecast |
| Domestic primary energy supply (10^10kcal) | Coal | **117,384** (7.7) | **59,441** (0.2) | **57,584** (-0.8) | **117,025** (-0.3) | **58,798** (-1.1) | **58,219** (1.1) | **117,016** (-0.0) | **116,250** (-0.7) |
| | Oil | **256,367** (-1.7) | **119,331** (-0.1) | **137,536** (0.5) | **256,867** (0.2) | **114,039** (-4.4) | **133,902** (-2.6) | **247,942** (-3.5) | **240,628** (-2.9) |
| | Natural gas | **78,424** (-0.7) | **38,624** (2.7) | **39,690** (-2.7) | **78,314** (-0.1) | **40,366** (4.5) | **41,174** (3.7) | **81,540** (4.1) | **83,258** (2.1) |
| | Hydroelectricity | **20,964** (-1.3) | **10,718** (-11.8) | **6,680** (-24.2) | **17,398** (-17.0) | **12,184** (13.7) | **7,977** (19.4) | **20,161** (15.9) | **20,389** (1.1) |
| | Nuclear | **60,724** (17.7) | **31,984** (0.2) | **33,537** (16.4) | **65,521** (7.9) | **33,526** (4.8) | **31,759** (-5.3) | **65,285** (-0.4) | **74,197** (13.7) |
| | Others | **7,316** (-2.3) | **3,616** (-0.5) | **3,683** (0.0) | **7,299** (-0.2) | **3,749** (3.7) | **3,842** (4.3) | **7,591** (4.0) | **7,755** (2.1) |
| | Total | **541,179** (2.3) | **263,714** (-0.2) | **278,710** (0.6) | **542,424** (0.2) | **262,663** (-0.4) | **276,872** (-0.7) | **539,535** (-0.5) | **542,476** (0.5) |
| Real GDP (Chained to year 2000, in billion yen) | | **527,856** (2.0) | **266,091** (2.0) | **274,351** (2.8) | **540,442** (2.4) | **271,069** (1.9) | **281,088** (2.5) | **552,157** (2.2) | **563,161** (2.0) |
| GDP intensity (Energy supply/GDP) (Year2000＝100) | | **96.9** (0.3) | | | **94.9** (-2.1) | | | **92.3** (-2.6) | **91.0** (-1.4) |
| $CO_2$ emissions (million t-C) | | **326** (0.0) | | | **329** (0.8) | | | **324** (-1.6) | **318** (-1.7) |

Sources: Actual results data prepared from IEEJ database and Cabinet Office, "Preliminary National Income Statistics"; Forecasts by IEEJ

Notes:

1. Bracketed figures indicate % changes year-on-year.
2. “Others” include geothermal, new energies, etc.

Table 8: Outlook on Final Energy Consumption (Base Case)

| | | FY2004 | FY2005 (Actual) | | | FY2006 (Forecast) | | | FY2007 |
|---|---|---|---|---|---|---|---|---|---|
| | | Actual | 1H | 2H | Total | 1H | 2H | Total | Forecast |
| By sector (10^10kcal) | Industry | **178,580** (-0.5) | **86,015** (1.2) | **91,958** (-1.7) | **177,973** (-0.3) | **85,565** (-0.5) | **92,242** (0.3) | **177,807** (-0.1) | **177,718** (-0.0) |
| | Consumer | **101,961** (2.3) | **45,093** (0.7) | **59,381** (3.9) | **104,474** (2.5) | **45,141** (0.1) | **57,818** (-2.6) | **102,959** (-1.5) | **104,499** (1.5) |
| | Residential | **53,214** (2.7) | **21,265** (1.6) | **34,042** (5.4) | **55,307** (3.9) | **21,663** (1.9) | **32,595** (-4.3) | **54,258** (-1.9) | **55,026** (1.4) |
| | Commercial | **48,747** (2.0) | **23,828** (-0.1) | **25,339** (1.8) | **49,167** (0.9) | **23,478** (-1.5) | **25,223** (-0.5) | **48,701** (-0.9) | **49,473** (1.6) |
| | Transportation | **91,710** (1.0) | **46,000** (-0.0) | **45,140** (-1.2) | **91,140** (-0.6) | **45,036** (-2.1) | **44,688** (-1.0) | **89,724** (-1.6) | **88,785** (-1.0) |
| By energy source (10^10kcal) | Coal, etc. | **38,621** (-2.5) | **19,203** (0.4) | **19,266** (-1.2) | **38,469** (-0.4) | **19,364** (0.8) | **19,594** (1.7) | **38,958** (1.3) | **38,484** (-1.2) |
| | Oil | **215,626** (-0.6) | **98,880** (0.4) | **114,562** (-2.2) | **213,442** (-1.0) | **95,611** (-3.3) | **111,402** (-2.8) | **207,013** (-3.0) | **204,201** (-1.4) |
| | Town gas | **26,393** (4.9) | **12,698** (5.9) | **15,841** (10.0) | **28,539** (8.1) | **13,769** (8.4) | **16,388** (3.5) | **30,157** (5.7) | **32,004** (6.1) |
| | Electricity | **87,121** (3.9) | **44,086** (0.2) | **44,464** (3.1) | **88,550** (1.6) | **44,689** (1.4) | **44,959** (1.1) | **89,648** (1.2) | **91,564** (2.1) |
| | Others | **4,490** (4.5) | **2,241** (1.7) | **2,346** (2.6) | **4,587** (2.2) | **2,309** (3.0) | **2,404** (2.5) | **4,713** (2.8) | **4,749** (0.8) |
| | Total | **372,251** (0.6) | **177,108** (0.7) | **196,479** (0.0) | **373,587** (0.4) | **175,742** (-0.8) | **194,747** (-0.9) | **370,489** (-0.8) | **371,002** (0.1) |
| Real GDP (Chained to year 2000, in billion yen) | | **527,856** (2.0) | **266,091** (2.0) | **274,351** (2.8) | **540,442** (2.4) | **271,069** (1.9) | **281,088** (2.5) | **552,157** (2.2) | **563,161** (2.0) |
| Indices of industrial production (Year 2000=100) | | **100.5** (4.1) | **99.8** (0.1) | **104.5** (3.1) | **102.1** (1.6) | **104.5** (4.8) | **106.8** (2.2) | **105.7** (3.5) | **108.2** (2.4) |
| Heating degree-days | | **965** (4.4) | **49** (23.0) | **1,067** (15.3) | **1,116** (15.6) | **64** (32.5) | **889** (-16.7) | **953** (-14.6) | **990** (3.8) |
| Cooling degree-days | | **491** (62.8) | **444** (-9.7) | **5** #DIV/0! | **449** (-8.7) | **377** (-15.1) | **3** (-49.0) | **379** (-15.5) | **415** (9.4) |

Sources: Actual results data prepared from IEEJ database and others; forecasts by IEEJ

Notes:

1. Bracketed figures indicate % changes year-on-year.
2. The industrial sector consumption includes non-energy uses.

Table 9: Outlook on Power Generation Mix (Base Case)
(Electric power utilities)

| | | FY2004 | FY2005 (Actual) | | | FY2006 (Forecast) | | | FY2007 |
|---|---|---|---|---|---|---|---|---|---|
| | | Actual | 1H | 2H | Total | 1H | 2H | Total | Forecast |
| Input (10^10kcal) | Thermal power | **120,494** (-1.8) | **60,506** (2.7) | **63,981** (3.9) | **124,487** (3.3) | **59,630** (-1.4) | **65,550** (2.5) | **125,181** (0.6) | **120,396** (-3.8) |
| | Coal | **49,410** (6.4) | **25,816** (7.7) | **27,605** (8.5) | **53,421** (8.1) | **25,089** (-2.8) | **27,892** (1.0) | **52,981** (-0.8) | **52,168** (-1.5) |
| | Oil, etc. | **20,765** (-11.9) | **10,156** (-2.7) | **13,902** (34.7) | **24,058** (15.9) | **9,584** (-5.6) | **14,521** (4.5) | **24,106** (0.2) | **20,629** (-14.4) |
| | Crude oil (as part of oil) | **5,707** (3.7) | **2,511** (-9.8) | **4,860** (66.3) | **7,371** (29.2) | **2,654** (5.7) | **4,888** (0.6) | **7,542** (2.3) | **6,301** (-16.5) |
| | Fuel oil-C (as part of oil) | **9,989** (-19.5) | **5,051** (0.4) | **6,624** (33.7) | **11,675** (16.9) | **4,351** (-13.9) | **7,143** (7.8) | **11,494** (-1.6) | **9,379** (-18.4) |
| | Natural gas | **50,319** (-4.5) | **24,534** (-0.0) | **22,474** (-12.8) | **47,008** (-6.6) | **24,957** (1.7) | **23,137** (2.9) | **48,094** (2.3) | **47,599** (-1.0) |
| | Hydro-power | **19,322** (-0.7) | **9,943** (-11.0) | **6,042** (-25.9) | **15,985** (-17.3) | **11,256** (13.2) | **7,286** (20.6) | **18,542** (16.0) | **18,769** (1.2) |
| | Nuclear | **60,724** (17.7) | **31,984** (0.2) | **33,537** (16.4) | **65,521** (7.9) | **33,526** (4.8) | **31,759** (-5.3) | **65,285** (-0.4) | **74,197** (13.7) |
| | Others | **1,280** (-1.9) | **620** (-2.5) | **636** (-1.2) | **1,256** (-1.9) | **767** (23.6) | **786** (23.6) | **1,553** (23.6) | **1,678** (8.1) |
| | Total | **201,820** (3.5) | **103,053** (0.4) | **104,196** (5.1) | **207,249** (2.7) | **105,179** (2.1) | **105,381** (1.1) | **210,560** (1.6) | **215,041** (2.1) |
| Power output (10^10kcal) | | **80,732** (3.4) | **40,839** (-0.0) | **41,524** (4.1) | **82,363** (2.0) | **41,741** (2.2) | **42,107** (1.4) | **83,848** (1.8) | **85,730** (2.2) |

Source: Actual results data and forecasts prepared from IEEJ database.

Note: Bracketed figures indicate % changes year-on-year.

Table 10: Effects of Crude Oil Price Changes

| | | FY2006 | FY2007 | | | | |
|---|---|---|---|---|---|---|---|
| | | | | Crude price variations | | | |
| | | Base case | Base case | High-price case | | Low-price case | |
| | | | | +10$/bbl | Changes from base case | -10$/bbl | Changes from base case |
| Key economic indicators | Real GDP | **552,157** | **563,161** | **562,090** | **-1,071** | **564,235** | **1,074** |
| | (Chained to year 2000, in billion yen) | (2.2) | (2.0) | (1.8) | (-0.2) | (2.2) | (0.2) |
| | Private demand | **415,298** | **424,192** | **423,115** | **-1,077** | **425,271** | **1,079** |
| | [Contribution to GDP] | [2.0] | [1.6] | [1.4] | [-0.2] | [1.8] | [0.2] |
| | Public demand | **117,719** | **117,870** | **117,762** | **-109** | **117,981** | **111** |
| | [Contribution to GDP] | [-0.3] | [0.0] | [0.0] | [-0.0] | [0.0] | [0.0] |
| | External demand | **19,878** | **21,797** | **21,912** | **115** | **21,681** | **-116** |
| | [Contribution to GDP] | [0.5] | [0.3] | [0.4] | [0.0] | [0.3] | [-0.0] |
| | Indices of industrial production | **105.7** | **108.2** | **107.9** | **-0.3** | **108.5** | **0.3** |
| | (Year 2000=100) | (3.5) | (2.4) | (2.2) | (-0.3) | (2.7) | (0.3) |
| | Corporate goods price index | **101.2** | **101.5** | **101.8** | **0.3** | **101.2** | **-0.3** |
| | (Year 2000=100) | (2.9) | (0.3) | (0.6) | (0.3) | (-0.1) | (-0.3) |
| | Consumer price index | **100.4** | **100.6** | **100.8** | **0.2** | **100.5** | **-0.2** |
| | (Year 2005=100) | (0.4) | (0.2) | (0.4) | (0.2) | (0.1) | (-0.2) |
| | Crude oil CIF price | **64.7** | **58.0** | **68.0** | **10.0** | **48.0** | **-10.0** |
| | (US$/Bbl) | (16.6) | (-10.3) | (5.2) | (15.5) | (-25.8) | (-15.5) |
| Key energy indicators | Primary energy supply | **539,535** | **542,476** | **541,258** | **-1,218** | **543,832** | **1,356** |
| | (10^10kcal = KTOE) | (-0.5) | (0.5) | (0.3) | (-0.2) | (0.8) | (0.3) |
| | Final energy consumption | **370,489** | **371,002** | **369,929** | **-1,073** | **372,206** | **1,204** |
| | (10^10kcal = KTOE) | (-0.8) | (0.1) | (-0.2) | (-0.3) | (0.5) | (0.3) |
| | Industrial sector | **177,807** | **177,718** | **177,025** | **-693** | **178,493** | **775** |
| | | (-0.1) | (-0.0) | (-0.4) | (-0.4) | (0.4) | (0.4) |
| | Consumer sector | **102,959** | **104,499** | **104,421** | **-78** | **104,587** | **87** |
| | | (-1.5) | (1.5) | (1.4) | (-0.1) | (1.6) | (0.1) |
| | Transportation sector | **89,724** | **88,785** | **88,483** | **-302** | **89,126** | **342** |
| | | (-1.6) | (-1.0) | (-1.4) | (-0.3) | (-0.7) | (0.4) |
| | Electricity sales | **929.9** | **952.5** | **952.3** | **-0.2** | **952.7** | **0.2** |
| | (billion kWh) | (1.8) | (2.4) | (2.4) | (-0.0) | (2.4) | (0.0) |
| | Town gas sales | **34,117** | **35,983** | **35,946** | **-37** | **36,021** | **38** |
| | (million $m^3$/10,000kcal) | (5.1) | (5.5) | (5.4) | (-0.1) | (5.6) | (0.1) |
| | Fuel oil sales | **227,987** | **222,429** | **221,448** | **-981** | **223,515** | **1,086** |
| | (1,000kl) | (-3.5) | (-2.4) | (-2.9) | (-0.4) | (-2.0) | (0.5) |
| | LPG sales | **18,772** | **18,853** | **18,810** | **-43** | **18,921** | **67** |
| | (1,000t) | (0.3) | (0.4) | (0.2) | (-0.2) | (0.8) | (0.4) |

Notes:

1. Bracketed figures indicate % changes year-on-year, except GDP contributions.
2. GDP contributions may not add up to total due to minor data deviations.
3. The industrial sector consumption includes non-energy uses.

Table 11: Effects of Economic Growth Changes

| | | FY2006 | FY2007 | | | | |
|---|---|---|---|---|---|---|---|
| | | | | GDP growth variations | | | |
| | | Base case | Base case | Low-growth case | | High-growth case | |
| | | | | GDP 1 point lower | Change from base case | GDP 1 point higher | Change from base case |
| Key economic indicators | Real GDP (Chained to year 2000, in billion yen) | **552,157** (2.2) | **563,161** (2.0) | **557,751** (1.0) | **-5,410** (-1.0) | **568,560** (3.0) | **5,400** (1.0) |
| | Private demand [Contribution to GDP] | **415,298** [2.0] | **424,192** [1.6] | **419,133** [0.7] | **-5,060** [-0.9] | **429,230** [2.5] | **5,038** [0.9] |
| | Public demand [Contribution to GDP] | **117,719** [-0.3] | **117,870** [0.0] | **117,731** [0.0] | **-139** [-0.0] | **118,016** [0.1] | **146** [0.0] |
| | External demand [Contribution to GDP] | **19,878** [0.5] | **21,797** [0.3] | **21,586** [0.3] | **-211** [-0.0] | **22,013** [0.4] | **216** [0.0] |
| | Indices of industrial production (Year 2000=100) | **105.7** (3.5) | **108.2** (2.4) | **106.9** (1.2) | **-1.3** (-1.2) | **109.5** (3.7) | **1.3** (1.2) |
| | Corporate goods price index (Year 2000=100) | **101.2** (2.9) | **101.5** (0.3) | **101.0** (-0.3) | **-0.5** (-0.5) | **102.0** (0.8) | **0.5** (0.5) |
| | Consumer price index (Year 2005=100) | **100.4** (0.4) | **100.6** (0.2) | **100.4** (0.0) | **-0.2** (-0.2) | **100.8** (0.4) | **0.2** (0.2) |
| | Crude oil CIF price (US$/Bbl) | **64.7** (16.6) | **58.0** (-10.3) | **58.0** (-10.3) | **-** (0.0) | **58.0** (-10.3) | **-** (0.0) |
| Key energy indicators | Primary energy supply (10^10kcal = KTOE) | **539,535** (-0.5) | **542,476** (0.5) | **539,959** (0.1) | **-2,517** (-0.5) | **544,971** (1.0) | **2,495** (0.5) |
| | Final energy consumption (10^10kcal = KTOE) | **370,489** (-0.8) | **371,002** (0.1) | **369,363** (-0.3) | **-1,639** (-0.4) | **372,629** (0.6) | **1,627** (0.4) |
| | Industrial sector | **177,807** (-0.1) | **177,718** (-0.0) | **176,671** (-0.6) | **-1,048** (-0.6) | **178,757** (0.5) | **1,039** (0.6) |
| | Consumer sector | **102,959** (-1.5) | **104,499** (1.5) | **104,232** (1.2) | **-268** (-0.3) | **104,765** (1.8) | **266** (0.3) |
| | Transportation sector | **89,724** (-1.6) | **88,785** (-1.0) | **88,460** (-1.4) | **-324** (-0.4) | **89,107** (-0.7) | **322** (0.4) |
| | Electricity sales (billion kWh) | **929.9** (1.8) | **952.5** (2.4) | **948.8** (2.0) | **-3.7** (-0.4) | **956.1** (2.8) | **3.6** (0.4) |
| | Town gas sales (million $m^3$/10,000kcal) | **34,117** (5.1) | **35,983** (5.5) | **35,838** (5.0) | **-145** (-0.4) | **36,128** (5.9) | **144** (0.4) |
| | Fuel oil sales (1,000kl) | **227,987** (-3.5) | **222,429** (-2.4) | **220,927** (-3.1) | **-1,502** (-0.7) | **223,911** (-1.8) | **1,482** (0.7) |
| | LPG sales (1,000t) | **18,772** (0.3) | **18,853** (0.4) | **18,743** (-0.2) | **-111** (-0.6) | **18,963** (1.0) | **110** (0.6) |

Notes:

1. Bracketed figures indicate % changes year-on-year, except GDP contributions.
2. GDP contributions may not add up to total due to minor data deviations.
3. The industrial sector consumption includes non-energy uses.

Table 12: Effects of Temperature Changes

| | | 1°C rise in summer (July-September) | | 1°C fall in winter (January-March) | |
|---|---|---|---|---|---|
| | | Changes in demand | % change | Changes in demand | % change |
| Domestic primary energy supply (10^10kcal) | | **1,789** | (1.3) | **1,848** | (1.3) |
| Final energy consumption (10^10kcal) | | **632** | (0.7) | **1,127** | (1.1) |
| | Industrial sector | **93** | (0.2) | **214** | (0.5) |
| | Residential sector | **106** | (1.1) | **655** | (3.3) |
| | Commercial sector | **327** | (2.5) | **258** | (2.0) |
| | Transportation sector | **106** | (0.5) | **-** | (0.0) |
| Electricity sales (million kWh) | | **6,029** | (2.4) | **3,658** | (1.4) |
| Town gas sales (million $m^3$/10,000kcal) | | **53** | (0.6) | **308** | (2.8) |
| Fuel oil sales (1,000kl) | | **511** | (1.0) | **563** | (0.9) |
| LPG sales (1,000t) | | **-57** | (-1.3) | **125** | (2.4) |

Note: The industrial sector consumption includes non-energy uses.

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