

Short-Term Energy Supply/Demand Outlook

—Forecast through FY2009 and Analysis on Effects of Crude Oil Price, Economic Growth and Ambient Temperature Changes—

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Introduction

This report presents forecasts on energy supply and demand in Japan for FY2008 and FY2009. Because energy demand can be positioned as "derivative demand" arising out of economic activities (more fundamental demand), it is important to start by evaluating economic trends. The world economy has turned around for the worse since the so-called "Lehman Shock" in September 2008. The financial crisis that has originated from the United States has led to economic contraction in industrial countries and a fast slowdown after rapid growth in emerging countries. The Japanese economy has plunged into a downturn following its longest postwar expansion. As manufacturers have been adjusting production, employment fears have grown with consumer sentiment deteriorating. Energy demand has been accelerating a decline on sluggish production.

When producing the forecasts contained in this report, we first estimated a base case under various assumptions. Then we addressed uncertainties by repeating our estimation of different cases under different assumptions on variable factors, such as the crude oil price and ambient temperature. By comparing the latter estimates with the former (base case estimates), we quantitatively evaluated how each of these factors may affect energy supply and demand.

This report is organized as follows: Chapter 1 presents an outlook on economic and production trends through the end of FY2009, based on which we have estimated energy supply and demand. Assuming the economic and production trends outlined in Chapter 1, Chapter 2 presents estimates of energy supply and demand. These estimates constitute the base case in this report. Chapter 2 also describes a breakdown of energy supply and demand by energy source (based on industrial statistics) and the domestic primary energy supply and final energy consumption (based on energy balance sheets) for the base case. Finally, Chapter 3 presents the results of sensitivity analyses for three factors: the crude oil price, economic growth and ambient temperature.

1. OUTLOOK ON KEY ECONOMIC INDICATORS FOR FY2008 AND FY2009

1-1 Short-Term Outlook Framework (see Note)

When estimating energy supply and demand for the given period, we studied the evolutions of various factors that would impact on the energy supply and demand from a qualitative viewpoint, while using two econometric models -- a macroeconomic model and an energy supply and demand model.

Concerning the major economic indicators on which our estimates are based, we made the following assumptions: The world economy, which has considerably slowed down on the financial crisis originating from the U.S. mortgage problem, is dominantly expected to take several years to achieve full-fledged recovery. The key West Texas Intermediate (WTI) crude oil futures price, an international benchmark for crude oil prices, rose close to \$150/barrel in July 2008 before declining fast on the financial crisis. At present, the benchmark stands at around \$40/barrel. The CIF-based price of crude oil imports into Japan is assumed to average at the present level of \$47.5/barrel in FY2009 as oil demand remains sluggish globally. (For details, see "Prospects for the International Oil Market and Crude Oil Prices in 2009" by Ken Koyama, December 25, 2008). As for the exchange rate, we assume the dollar to hover around 90 yen. Regarding the ambient temperature that affects energy demand particularly in the consumer sector, we assume the summer and winter averages over the past 10 years for FY2009, based on the Japan Meteorological Agency's three-month forecast announced on November 25 that the second half of FY2008 would be a little warmer than average.

Note: The estimates in this report are based on information made available by December 18, 2008.

1-2 Macroeconomic Outlook

During FY2008, the Japanese economy saw a slump in exports and large drops in production and investment in response to the global economic slowdown. Japan's real GDP in FY2008 is expected to decline 1.0% from the previous year.

The world economy has dramatically slowed down on a financial crisis originating from the United States. Since Lehman Brothers and other major financial institutions plunged into financial difficulties in September 2008, financial markets in the world have remained in serious turmoil. In the United States where the financial crisis has originated, funds have lost liquidity on credit fears, leading to declines in investment and consumption. For example, auto sales depending on loans have run into a serious slump, throwing the Big Three U.S. automakers into a business crisis. In Europe, adverse effects of the financial crisis on the real economy have begun to emerge, including a tougher lending policy of financial institutions. Its exports that had been robust until recently are expected to decline on the slowdown of the world economy, particularly Central and Eastern European countries. Even Asia, where financial market turmoil has been relatively less serious, has also posted a dramatic economic slowdown due to its heavy dependence on exports to the United States. The Chinese economy, which had continued double-digit growth, posted a single-digit growth rate in the July-September quarter of 2008 for the first time in 11 quarters, indicating effects of the deteriorating environment for its exports. NIEs and ASEAN countries are likely to adjust production as their exports have turned down for manufactured products including electrical and electronic products and automobiles.

Under such world situation, business confidence has rapidly deteriorated in the Japanese economy. Given that Japan's latest economic expansion owed to a virtuous circle of expanding exports on high growth of the world economy including Asia, increasing production, rising investment and a further increase in production, the recent decline in exports is expected to reverse the circle during the

current recession. In anticipation of deteriorating earnings on shrinking overseas demand and the yen's appreciation, a number of manufacturers including automakers and steelmakers have begun to implement production and employment adjustments, reversing their earlier robust performances. Such employment and income environment deterioration has been combined with a stock market plunge to seriously affect consumer sentiment. Personal consumption is thus expected to slacken. Housing starts, though increasing in reaction to a sharp decline on an amendment to the Building Standard Law in June 2007, have failed to recover a level before the amendment. Slumping income and other problems regarding residential investment have been coupled with anticipation of lower housing prices to bring about an accumulation of condominium inventories. Private final consumption in FY2008 is thus expected to grow only 0.1% from the previous year and residential investment is projected to plunge 4.6%. As noted above, private companies have been forced to implement substantial production adjustments. Their capital investment sentiment has deteriorated fast under a tough earnings situation. As private enterprises have clearly moved to curb investment, the private sector's capital investment is expected to turn down with a substantial decline of 5.3%. Entire domestic private demand is estimated to work to reduce GDP by 1.1% for FY2008. Government final consumption is expected to increase 0.2% due to supplementary budgets in the second half of FY2008. But public fixed capital formation (public investment) is estimated to decline 4.1% despite some progress in public works in the second half. Total public demand is projected to work to cut GDP by 0.1%. Exports to Europe and North America have become sluggish and those to Asia have begun to signal a slowdown after firm growth that had continued until recently. Exports to the Middle East and Russia are likely to set back on a fast decline in crude oil prices. Automobile and electrical machinery exports, which had led Japan's economic expansion, are expected to decline substantially. Entire exports, though projected to plunge in future, are estimated to post a 0.7% increase for FY2008 due to a carryover from the previous year. Imports are predicted to decrease 1.8% on weak private consumption and lower demand for raw materials amid production cuts, even though the yen's appreciation has made imports more attractive. As a result, the contribution of entire foreign demand to GDP growth in FY2008 is estimated at 0.3%.

Japan's corporate goods price index had risen over a long time on hikes in prices of commodities including crude oil, before turning down on a decline in these commodity prices and the yen's appreciation in the second half of FY2008. The index for the whole of FY2008 is expected to post a 3.9% rise from the previous year. Consumer prices soared in the first half of FY2008 as natural resources and grain price hikes were passed on to prices of some consumer goods including foods. In the second half, however, they are believed to have turned down on weak consumption. For the whole of FY2008, the consumer price index is estimated to rise 1.3% from the previous year.

In FY2009 as well, we expect Japan to remain in an economic slump. Overseas conditions for our outlook follow. The U.S. economy is likely to continue a contraction on plunges in personal consumption and residential investment before hitting bottom in the second half of 2009. Even after hitting bottom, the U.S. economy is expected to keep slow growth with personal consumption remaining sluggish. European economies are also likely to plunge into a contraction due to stagnant domestic demand under a credit

crunch and deteriorating foreign demand. Asian economies are likely to decelerate growth substantially on a decline in exports to the United States and a domestic demand slump amid production adjustments. As major countries have come up with large-scale economic stimulus packages, the impacts of the financial crisis are expected to be subdued. But financial markets are likely to fall far short of being normalized. The world economy is expected to remain in doldrums for a long time. We expect that the crude oil price (the CIF-based price of crude oil imported into Japan) will remain at the present low level on a global slowdown in oil demand in FY2009, averaging at \$47.5/barrel (down 48.1% from the previous year). Given such overseas conditions, Japan's exports are likely to continue declining before turning up in late FY2009. We predict Japan's exports in FY2009 to decrease 2.7% from the previous year for the first drop in eight years. Japan's imports are expected to post a 2.9% fall as intermediate goods imports decline on production cuts. Total foreign demand is likely to work to reduce GDP by 0.1%.

As for domestic demand in FY2009, the employment and income environment is expected to deteriorate further on manufacturers' production adjustments. The government's planned fixed cash handout to consumers and some other factors are expected to support personal consumption. Given the employment and income environment deterioration, however, these factors are likely to fall short of boosting consumer sentiment. Private final consumption is projected to post a small increase of 0.2% from the previous year. People have lost interest in buying homes. The planned expansion of tax incentives for housing loan borrowers is expected to have only limited effects. Residential investment in FY2009 is thus projected to fall 0.6% from the previous year. Private capital investment is predicted to drop 5.0% for the second consecutive year of sharp decline as manufacturers growingly feel overcapacity on export and production drops and as their earnings deteriorate on the yen's appreciation and other factors. Domestic private demand is thus expected to work to reduce GDP by 0.9% in FY2009, indicating a continued domestic demand slump. Public investment, though expected to expand in rural regions under employment promotion measures, may be curbed under the pressure of fiscal difficulties. A slight increase of 0.7% is projected in public investment. Government final consumption is estimated to increase 0.9% on growing social security spending, in spite of cuts in government personnel expenditures. Public demand's contribution to GDP growth is expected at 0.2%. Given these estimates, we predict real GDP in FY2009 to contract 0.9% from the previous year for the second straight year of decline.

The domestic corporate goods price index in FY2009 is expected to decline 3.2% from the previous year as raw materials and fuels import prices have dropped fast to exert downward pressures on domestic goods. The consumer price index is projected to fall 0.4%. Deflation is likely to emerge again on the CPI's downturn after a three-year hike.

1-3 Outlook on Production Activities in Different Sectors

In the first half of FY2008, production activities showed a rough downtrend including a fall in output of electronic components and devices since late 2007. But steel and automobile production remained buoyant. Production performances were thus mixed. In the second half when the global economic stagnation is growing clearer, all industrial sectors are seeing production drops. Particularly, large drops are

seen in steel and machinery production that had earlier been vigorous. The industrial production index in FY2008 is projected to post a 5.0% decline from the previous year.

In FY2009, the industrial production index is predicted to drop 5.4% from the previous year for the second straight year of decline. Production of both industrial materials and machines is likely to decline substantially as exports plunge on a slowdown of the world economy and as domestic demand decreases. Particularly, automobile production is expected to plunge sharply on a global sales slump. Given the automobile sector's broad base, a wide range of manufacturers is predicted to see sharp output declines. The following subsections describe the trends in production in major industrial sectors.

(1) Crude steel

Crude steel production in the first half of FY2008 remained high, driven by brisk exports. Production in the first half of FY2008 increased 3.0% over the same period in the previous year. In the summer of 2008, however, domestic demand for crude steel turned down on a decline in sales to manufacturing and construction sectors. As for foreign demand, exports to Asia including China and ASEAN were brisk. Particularly, special steel exports to Asia grew sharply. Since the financial crisis emerged, however, production has been expected to decline substantially in a wide range of steel-using manufacturers including automakers. Foreign steel demand as well as domestic demand is expected to plunge substantially. Crude steel production in FY2008 is expected to decrease 6.9% from the previous year to 113.12 million tons. Both domestic and foreign demand for steel production will decline sharply in FY2009 as the world economy fails to escape the slump. Domestic demand will decrease as demand slackens from construction, automobile, industrial machinery, electrical machinery and other sectors. A substantial fall in foreign demand will be inevitable on Asian economies' slowdown after their robust growth. Given these conditions, crude steel production is expected to decline further from FY2008. FY2009 crude steel output is projected at 103.59 million tons, down 8.4% from the previous year.

(2) Ethylene

Ethylene production in the first half of FY2008 decreased 7.3% from a year earlier due partly to a plant fire. Domestic demand for ethylene, which had been buoyant, has remained below the year-before level since July. Foreign demand has also slackened. In the second half, demand for synthetic resin and the like is expected to decline substantially on global production cuts for automobiles and other machines. Ethylene makers have been forced to implement production adjustments. Ethylene production in FY2008 is expected to post a substantial decline of 7.2% from the previous year to 7.01 million tons. In FY2009 as well, both domestic and foreign demand is expected to decline substantially. As petrochemical plants go on stream one after another in the Middle East, Japanese ethylene makers will face fiercer competition from foreign rivals. Ethylene production in FY2009 is projected to decline further below 7 million tons to 6.77 million tons, down 3.5% from the previous year.

(3) Paper and paperboard

In the first half of FY2008, firm growth came in production of coated printing paper for catalogues and leaflets for digital household electrical appliances, properties and the like. But newspaper output dropped on slack advertisement demand. Paperboard production also slumped on weak shipments. As a result, paper and paperboard production in the first half of FY2008 scored a small increase of 0.6% from the same period of the previous year. In the second half, catalogue demand has lost its earlier briskness and begun to decline as business confidence has deteriorated. Foreign demand has also turned down. Paper makers have growingly implemented production cuts, idling sophisticated facilities for exports to Asia and other foreign markets. Paper and paperboard production in FY2008 is expected to record a substantial decline of 4.1% from the previous year. In FY2009, paper demand will be remain slack at home and abroad. Coated paper and newspaper output will continue to decrease. Paperboard output will also decline on stagnation in cargo transportation demand. Paper and paperboard production in FY2009 is expected to decrease 2.7% from the previous year.

(4) Cement

Cement production in the first half of FY2008 logged a sharp decline of 6.1% from a year earlier as domestic demand plunged despite robust exports. Housing starts began to increase over the year-before level in reaction to a sharp decline that came on the amendment of the Building Standard Law in June 2007. But the reactionary gain in housing starts is expected to have only a limited impact on cement demand. Cement production in the whole of FY2008 is expected to fall 5.6% from the previous year for the third consecutive year of decline. In FY2009, cement exports will likely plunge on an Asian economic slowdown and the like. As for domestic demand for cement, private demand will slacken on such factors as an increase in condominium inventories. Public demand will remain subdued, although the government has reformed its policy of cutting down on public investment. Given these factors, cement production in FY2009 is expected to decline 3.4% from the previous year.

(5) Automobiles

Automobile production in the first half of FY2008 increased 5.6% from the same period of the previous year. While domestic sales remained slack, exports grew robustly to Asia as well as Russia and the Middle East that prospered on sharp hikes in natural resources prices. Since the summer, however, exports to North America and the EU have posted double-digit year-to-year drops. Exports to Asia in October slipped below a year-earlier level for the first time in 18 months after robust growth, indicating the impact of the global economic slowdown. Automakers have come up with plans to cut down on production. Automobile production in FY2008 is projected to record a substantial decline of 7.0% from the previous year to 10.96 million units. In FY2009, both domestic and foreign demand will remain slack. Domestic sales will nosedive on employment and income environment deterioration for passenger cars and on declining corporate earnings for trucks. Exports will fall on the North American market weakness and the Asian economic slowdown. Exports to Russia and the Middle East will turn down on a fast drop in crude oil prices. Given these factors, automobile production in FY2009 is expected to slip below 10 million units

to 9.93 million units, down 9.4% from the previous year.

(6) General and electrical machinery ^(See note.)

In the first half of FY2008, production indices declined for general machinery, information and telecommunications equipment, electronic parts and devices, and the like. Production was sluggish for mobile phones, digital cameras, personal computers and their components. Industrial machinery production also plunged on a decline in capital investment. As a result, the general and electrical machinery production index in the first half of FY2008 fell 1.9% from a year earlier. In the second half, the index is expected to drop further on the fast slowdown of the world economy. Domestic shipments of digital equipment have plunged and exports of such equipment are likely to slacken. Sluggish sales of automobiles using massive electronic parts will have spillover effects on the electric and electronic parts sector. Given these factors, the general and electrical machinery production index for the whole of FY2008 is expected to log a substantial decline of 6.0% from the previous year. In FY2009 as well, both domestic and foreign demand for general and electrical machinery will fall sharply on the slowdown of the world economy and the domestic economy. Demand for durable consumer goods will decline on deterioration of consumer sentiment. At home and abroad, demand will fall for flat-panel televisions and other digital consumer electronics, leading to lower demand for electronic parts and devices. As manufacturers feel overcapacity and see deterioration of their earnings, demand will plunge for machine tools and industrial machinery. As a result, the general and electrical machinery production index for FY2009 is expected to decrease 5.7% from the previous year.

Note: The "general and electrical machinery" covers general machinery, electrical machinery, information and telecommunications equipment, electronic parts and devices, precision machinery and metal products.

2. OUTLOOK ON ENERGY SUPPLY AND DEMAND IN FY2008 AND FY2009

2-1 Outlook on Domestic Primary Energy Supply

For FY2008, Japan's domestic primary energy supply is expected to decline 3.3% from the previous year due mainly to plunges in production and other economic activities. Among energy sources, coal supply in the fiscal year is expected to drop 2.9% on a steel production cut and a decline in capacity utilization rates for coal-fired thermal power plants. Oil supply in FY2008 is estimated to decline 5.2% from the previous year as decreases in production and transportation are coupled with a general shift away from oil to other fuels amid oil price hikes. Natural gas supply in FY2008 is projected to fall 1.1% from the previous year as a drop in demand from the power generation sector more than offsets an increase in town gas demand. Hydroelectricity supply in FY2008 is predicted to increase 2.2% from the previous year despite a drought in the first half as seen a year earlier, because capacity is set to increase in the second half (water availability in the second half is assumed at the average-year level). Nuclear electricity supply in FY2008 is expected to decline 2.1% from the previous year as far as the capacity utilization rate remains unchanged. Some plants have remained idled since the previous year. Energy-based carbon dioxide emissions in FY2008 are expected to decline 3.8% from the previous year.

For FY2009, coal supply is expected to log a sharp drop of 7.8% from the previous fiscal year as supply to the industrial sector falls on cuts in production of steel and other products and as supply to the power generation sector decreases on an increase in nuclear electricity generation. Oil supply in FY2009 is projected to decrease 6.3% from the previous year on sluggish production and transportation as well as a decline in supply to the power generation sector amid a rise in nuclear electricity generation. Natural gas supply in FY2009 is estimated to drop 5.4% from the previous year due to a downturn in town gas supply as well as a decline in supply to the power generation sector amid the rise in nuclear electricity generation. Hydroelectricity supply in FY2009 is expected to increase 15.3% from the previous year on a reaction to a drought in the first half of FY2008 and an increase in capacity. Water availability is assumed at the average-year level. Nuclear electricity supply in FY2009 is estimated to score a substantial increase of 19.8% as capacity is expected to increase, with the capacity utilization rate based on regular checkup schedules. Given all these factors, total domestic primary energy supply in FY2009 is expected to decrease 2.9% from the previous year. Carbon dioxide emissions are estimated to drop 6.9%.

2-2 Outlook on Final Energy Consumption

In FY2008, Japan's final energy consumption is expected to decrease 3.6% from the previous year. In the industrial sector, energy demand is plunging on sluggish production. Particularly, industrial materials producers are reducing output considerably. The industrial sector's final energy consumption in FY2008 is thus projected to fall 4.4% from the previous year. In the residential sector, energy consumption per household has almost leveled off because the diffusion of household appliances has been close to saturation and as the energy efficiency of appliances has improved. In the beginning of FY2008, heating and hot-water demand declined as the spring climate was warmer than in the previous year. Summer air-conditioning demand decreased as ambient temperatures were lower. Winter heating demand is expected to increase in anticipation of a colder winter. But final energy consumption in the residential sector in the whole of FY2008 is expected to fall 0.4% from the previous year. In the commercial sector, spring heating and summer air-conditioning demand decreased. Although heating demand is expected to increase in the second half of FY2008, energy consumption is likely to fall on declining business operations in the services industry. Final energy consumption in the commercial sector in the whole FY2008 is projected to decline 2.3% from the previous year. Automobile fuel consumption, which accounts for nearly 90% of final energy consumption in the transportation sector, has been decreasing due to the saturation of vehicle ownership and improvements in fuel efficiency. As this trend is likely to coincide with a fall in transportation demand, final energy consumption in the transportation sector in FY2008 is estimated to drop 4.5% from the previous year.

In FY2009, economic activities will stagnate with production continuing to decrease. Final energy consumption in the industrial sector in the fiscal year is expected to decline 4.1% from the previous year as both industrial materials and machinery makers cut production. As we assume a temperature pattern based on the average over the last 10 years (a lightly hotter summer and a slightly warmer winter than in FY2008), air-conditioning demand in the consumer sector is expected to decrease slightly from the previous year.

Final energy consumption in the residential sector in FY2009 is expected to fall 0.4% from the previous year as energy savings make progress on income environment deterioration. Consumption in the commercial sector is projected to decline 0.6% on slack business operations in the services industry. Final energy consumption in the transportation sector in FY 2009 is estimated to drop 2.8% as automobile fuel consumption continues to fall on stagnant transportation demand and fuel efficiency improvements. Given all these factors, Japan's total final energy consumption in FY2009 is expected to decrease 2.8% from the previous year.

2-3 Outlook on Energy Sales

(1) Electricity

For FY2008, electricity sales (by electric power utilities) are expected to decrease 1.2% from the previous year as sales to the industrial sector plunge on slack production, though with those to the consumer sector leveling off.

In the household sector, the number of all-electric households has increased steadily. At the end of the first half of FY2008, the number exceeded three million. Despite such expansion of base-load demand, heating demand decreased in April and May when ambient temperatures were higher than a year earlier. Air-conditioning demand dropped on lower ambient temperatures in August and September. As a result, household electricity demand in the first half of FY2008 declined 0.6% from a year earlier. In the second half of the year, air-conditioning demand fell in September and early October when ambient temperatures were lower than a year earlier. But heating demand is expected to increase on projected lower ambient temperatures this winter. Given all these factors, household electricity demand in the whole of FY2008 is expected to increase 0.3% from the previous year.

Industrial sector electricity demand increased slightly in the first half of FY2008 when production operations were roughly sluggish. Commercial sector electricity demand decreased slightly as a large decline in spring heating demand more than offset a rise in air conditioning demand in July. Meanwhile, there were moves to switch from private power generation to purchases in response to fuel price hikes. Non-household electricity demand (including specified-scale demand), dominated by the industrial and commercial sectors, in the first half of FY2008 increased 0.3% from a year earlier. Electricity demand from large-scale industrial users in the first half of the fiscal year rose 1.7% from a year earlier on significant growth in demand from nonferrous metal and paper-pulp manufacturers. All major industrial sectors other than textiles scored growth. In the second half of FY2008, manufacturers have been implementing production adjustments on global economic deterioration, as indicated by year-to-year electricity demand drops at automotive equipment and steel product manufactures in October. Production operations are expected to remain slack in future. Non-household electricity demand (including specified-scale demand) in the whole of FY2008 is projected to decline 1.8%. Demand from large-scale industrial users is estimated to decrease 3.0%.

In FY2009, heating and air-conditioning demand is expected to post no major change from the previous year as an average temperature pattern for the past 10 years (a slightly hotter summer and a

warmer winter than in the previous year) is presumed. Due to an increase in all-electric households and a rise in time consumers spend at home amid a recession, however, household sector electricity demand in the year is predicted to increase 0.4% from the previous year. Non-household electricity demand (including specified-scale demand) in FY2009 is expected to decrease 1.9 percent from the previous year on sluggish production and declining services operations, although fuel price drops are likely to prompt a switch to private power generation. Electricity demand from large-scale industrial users in FY2009 is expected to decline 3.8% from the previous year as demand from machinery makers is projected to decrease 5.3% on sluggish overseas demand for automobiles and digital machines and as that from steelmakers is predicted to fall 5.2% on substantial production cuts. Given these factors, Japan's total electricity sales in FY2009 are expected to decrease 1.2% from the previous year for the second straight year of decline.

(2) Town gas:

For FY2008, town gas sales (by gas utilities) are expected to limit growth from the previous fiscal year to 0.5% as demand from the industrial sector has been affected by production adjustments in the second half after relatively firm growth in the first half.

In the household sector, the number of contracted households has been growing at an annual rate of about 1%, but consumption per household has been decreasing due to a decrease in the number of persons per household and improvements in energy efficiency of gas equipment. Moreover, early spring ambient temperatures were higher than a year earlier, bringing about a decline in heating and hot-water demand. As a result, town gas sales in the first half of the fiscal year decreased 1.5% from a year earlier. In the second half when demand increases usually, heating and hot-water demand is expected to increase amid a colder winter than a year earlier. Town gas sales in the whole of FY2008 are expected to increase 0.3% from the previous year.

Demand in the first half declined 2.7% from a year earlier at the commercial sector and 1.5% at the "other" sector (hospitals, public facilities, etc.) as air-conditioning demand fell on lower summer ambient temperatures. In the second half expected to include a cold winter, demand is predicted to increase. In the whole of FY2008, demand is expected to decrease 1.2% from the previous year at the commercial sector and 0.4% at the "other" sector.

Industrial sector demand for town gas in the first half of FY2008 increased 3.8% from a year earlier. New town gas customers emerged on companies' switch from oil to town gas for environmental reasons and crude oil price spikes, while long-existing customers expanded their capacity utilization rates even amid weak production operations. For the second half of the fiscal year, we expect that the switch from oil to town gas will stagnate, with production adjustments' impact emerging amid the economic slowdown. Industrial sector demand for town gas in the whole of FY2008 is expected to increase 1.3% from the previous year.

In FY2009, the household sector will see a firm increase in the number of town gas contracts, but town gas consumption per household will continue to fall due to a growing shift to electricity. Given the impact of projected ambient temperatures (a slightly hotter summer and a warmer winter than in FY2008),

demand from the household sector in FY2009 is predicted to decrease 0.6% from the previous year. Despite the recession and the impact of temperature change, town gas demand is predicted to increase 0.1% at the commercial sector and 0.4% at the “other” sector on firm growth in gas air-conditioning and gas cogeneration systems. In the industrial sector, existing town gas customers are expected to reduce their capacity utilization rates on production adjustments under the recession. New town gas customers are likely to decline as a switch from oil to town gas has run its course. Industrial sector demand for town gas in FY2009 is expected to fall 1.3% from the previous year. Given these factors, town gas sales as a whole in FY2009 are estimated to decline 0.8% from the previous year, the first drop since FY1977.

(3) Oil

For FY2008, fuel oil sales are projected to decline 5.7% from the previous year as the industrial sector cuts production and switches from oil to other energy sources and as sales of gasoline and diesel oil for automobiles decrease.

Sales of gasoline, used mainly as automobile fuel, have decreased since a peak reached in FY2004 due to fuel efficiency improvements and shorter travel distances as well as travel restraints amid rising prices over the recent years. In April when an extra gasoline tax was eliminated temporarily, gasoline sales scored a double-digit increase from a year earlier due to extra demand after consumption restraints in March and before restraints in May. In the other months, however, gasoline sales declined from a year earlier. Gasoline sales in the first half of FY2008 decreased 4.7% from a year earlier. Gas oil sales in the first half of the fiscal year declined 3.9% from a year earlier due to slightly weaker cargo transportation demand and a decrease in ownership for diesel cars and trucks. Demand for automobile fuel is likely to decline in the second half of the fiscal year despite falling gasoline prices as the absence of growth in vehicle ownership amid a slump in new vehicle sales is coupled with improvements in vehicle fuel efficiency and slack transportation demand. In the whole of FY2008, sales are expected to decrease 5.0% from the previous year for gasoline and 3.9% for gas oil.

Sales of naphtha, a raw material for petrochemical products, in the first half of FY2008 declined 5.3% from a year earlier on a plunge in ethylene production and diversification of petrochemical materials including a switch to LPG. In the second half of the fiscal year, ethylene production will continue falling. Naphtha sales in the whole of FY2008 are expected to drop 5.6% from the previous year. Kerosene sales in the first half of this fiscal year posted a significant decline of 11.9% from a year earlier due to a warmer spring than in the previous year and a switch from kerosene to electricity and town gas in both the consumer and industrial sectors. For the second half of the fiscal year, in which about 70% of annual demand is usually expected, we can anticipate a heating demand increase and a kerosene demand recovery on price drops. However, kerosene sales throughout the year are expected to drop 5.5% from the previous year.

Demand for Fuel oil A from the industrial and consumer sectors has been significantly affected by a shift from Fuel oil to town gas and a switch from private power generation to purchases on higher fuel oil prices. Moreover, demand from the agricultural and fishery sectors has decreased. Demand from the

shipping sector has also declined as ships have become larger and switched to Fuel oil C. As a result, Fuel oil A sales in the first half of FY2008 logged a significant drop of 13.2% from the same period of the previous year. The downward trend is expected to persist in the second half of the fiscal year, even though an increase is anticipated in heating demand. Fuel oil A sales in the whole of FY2008 are expected to decline 12.1% from the previous year due to slack production and a switch to other fuels. Demand for Fuel oil C as power generation fuel in the first half of the fiscal year scored a substantial increase of 19.8% from a year earlier as oil thermal power generation expanded due to low nuclear power generation and a fall in hydroelectricity output under a drought. Since the industrial sector switched from Fuel oil A or C to other fuels and restricted private power generation, however, Fuel oil C sales as a whole in the first half limited a year-to-year increase to 5.1%. In the second half, Fuel oil C demand will fall substantially on slack production in the industrial sector and greater nuclear power generation in the electricity sector. Fuel oil C sales in the whole of FY2008 are expected to drop 5.7% from the previous year. LPG sales in the first half of FY2008 fell 5.8% from a year earlier despite an increase in sales for town gas as those for household and industrial sectors slipped below year-earlier levels. In the second half, hot-water demand in the household sector will increase slightly, but sales for the industrial sector and chemical materials will decline. LPG sales in the whole of FY2008 are expected to drop 3.7% from the previous year.

In FY2009, gasoline sales are expected to fall 2.5% from the previous year as fuel efficiency improvements on a shift to minivehicles coincide with a downturn in ownership of gasoline-powered vehicles. Gas oil sales are expected to fall 3.2% as demand declines from the transportation sector hit by slack cargo traffic, as well as from construction and industrial sectors. Naphtha sales are predicted to decrease 2.7% on an ethylene production slump. Kerosene sales in fiscal 2009 are projected to decline 3.5% from the previous year as a warmer winter than in the previous year is expected to reduce heating demand and as households depend more heavily on electricity for heating. Fuel oil A price drops are expected to lead to a rise in demand for private power generation. But Fuel oil A sales as a whole are likely to decrease 6.3% on a serious slump in production and transportation operations. Demand for Fuel oil C from the power generation sector is expected to fall significantly on an increase in nuclear power generation. Fuel oil C demand from industrial and other sectors are likely to continue declining. Fuel oil C sales as a whole in FY2009 are predicted to decline 16.2% from the previous year. Given these factors, total fuel oil sales in FY2009 are expected to decrease 4.7% from the previous year. LPG sales in FY2009 are expected to drop 2.7% from the previous year due to declining demand for LPG for industrial operations and chemical materials, as well as household demand affected by ambient temperature changes.

3. EVALUATING POSSIBLE IMPACTS OF FACTORS AFFECTING ENERGY SUPPLY AND DEMAND IN FY2009

To evaluate possible impacts of factors that may affect energy supply and demand, we have performed a sensitivity analysis on our forecasts for FY2009. 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 impacts of such change to be measured

quantitatively. In this case, we have focused on the crude oil price and the real GDP, which appear to be very uncertain over the short term, in order to identify how variations in these factors may affect our forecasts of economic activities and energy supply and demand in FY2009. In addition, we have quantitatively evaluated possible impacts of ambient temperature changes, which tend to affect energy demand.

3-1 Possible Impacts of Crude Oil Price Changes

Crude oil prices have declined fast on the financial crisis in a turnaround from a long-lasting upward trend. Futures crude oil prices as well as future world economic conditions are uncertain. The CIF-based crude oil import price that we assumed for the base case is based on "Prospects for the International Oil Market and Crude Oil Prices in 2009" by Ken Koyama. We have assumed that the mean crude oil price in FY2009 will be \$47.5/barrel, the same level as seen at the end of 2008. We have evaluated the possible impacts of a higher or lower crude oil price, based on analyses of the higher and lower crude oil price cases in the above paper. For the higher-price case, the mean crude oil price for FY2009 is assumed at \$67.5/barrel, \$20 higher than in the base case. For the lower-price case, the mean price is put at \$37.5/barrel, \$10 lower than in the base case.

Note: Impacts of a global economic slowdown on the Japanese economy is not taken into account here. Purely, we have focused on impacts of the crude oil price change alone.

(1) Higher-price case

A crude oil price that is \$20/barrel higher than in the base case will reduce the FY2009 real GDP growth by 0.1 percentage point from the base case, resulting in a 1.0% contraction. The higher crude oil price will increase the consumer price index by 0.1 percentage point from the base case. As for the impact on energy consumption, the higher crude oil price will widen a loss in domestic primary energy supply in FY2009 by 0.5 percentage point from the base case to 3.4%. It will also widen a loss in final energy consumption by 0.6 point from the base case to 3.4%.

The higher crude oil price will slow down economic growth to cut final energy consumption growth by 0.7 percentage point from the base case each in the industrial and transportation sectors. The impact will be less on final energy consumption in the consumer sector, cutting growth by 0.5 percentage point from the base case. In terms of energy sales, the higher crude oil price will directly affect fuel oil sales, leading to a decrease of 5.8%, 1.2 percentage points wider than in the base case. Town gas sales, though affected by the economic slowdown, will benefit from a switch from oil to town gas under the higher crude oil price. The higher crude oil price will thus widen a fall in town gas sales by only 0.5 percentage point from the base case. Electricity sales will remain unaffected.

(2) Lower-price case

A crude oil price that is \$10 lower than in the base case will increase the FY2008 real GDP growth by 0.1 percentage point, resulting in a 0.8% contraction. As for the impact on energy consumption, the

lower crude oil price will narrow a decline in domestic primary energy supply by 0.3 percentage point from the base case to 2.6%. A fall in final energy consumption will be narrowed by 0.4 point to 2.4%.

3-2 Possible Impacts of Economic Growth Changes

The Japanese economy now structurally depends on exports, being sensitive to the trend of the world economy. The world economy is expected to remain slack in 2009. A downside risk is great. Emerging countries and Asian economies, though decelerating their growth, will post higher growth than industrial countries. If financial and export conditions deteriorate more than expected, however, their growth may decline further. If proposed large-scale economic stimulus packages are successful, faster economic recovery may be achieved. Depending on world economic recovery, the Japanese economy could escape a contraction. The following describes our evaluation of how energy supply and demand can be affected by lower or higher economic growth based on analyses of lower and higher economic growth cases. The lower-growth case assumes a GDP growth rate of minus 1.9% that is 1 percentage point lower than in the base case. The higher-growth (zero-growth) case assumes a growth rate of 0.1% that is 1 percentage point higher than in the base case.

(1) Lower-growth case

A GDP growth rate that is 1 percentage point lower than in the base case will widen a decline in domestic primary energy supply in FY2009 from the previous year by 0.6 percentage point from the base case to 3.6%. The lower growth will also widen a decline in final energy consumption by 0.6 point from the base case to 3.4%. The impact of the lower growth will have a relatively greater impact on the industrial sector than on other sectors, working to widen a consumption loss in the sector by 0.8 point from the base line. As for energy sales, the lower growth will have a greater impact on fuel oil sales than on electricity sales, working to widen the fuel oil sales decline by 0.8 percentage point. The additional energy consumption decline will be less than the growth drop of 1.0 percentage point.

(2) Zero-growth case

A GDP growth rate that is 1 percentage point higher than in the base case will narrow a decline in domestic primary energy supply in FY2009 from the previous year by 0.6 percentage point from the base case to 2.3%. The higher growth will also narrow a decline in final energy consumption by 0.6 point from the base case to 2.2%. As in the lower-growth case, the energy consumption change will be less than the growth change of 1.0 percentage point.

3-3 Possible Impacts of Temperature Changes

The ambient temperature tends to affect energy demand, particularly air-conditioning and hot-water demand in the consumer sector. Because the ambient temperature has been quite volatile in recent years as indicated by an exceptionally hot summer and a warm winter, there is a growing need to evaluate how ambient temperature changes affect energy demand. Although the base case is based on the

average temperature over the past 10 years, we have focused on the summer (July to September) and winter (January to March) seasons, in which any irregularity in the ambient temperature may produce a significant impact, and have evaluated the possible impacts on the energy supply and demand of an ambient temperature that is 1°C higher in summer or 1°C lower in winter.

(1) Ambient temperature rise of 1°C in summer (July to September)

If the mean ambient temperature is 1°C higher than in the average year, it will increase domestic primary energy supply and final energy consumption by 1.4% and 0.7%, respectively, from the average year case. In the household sector, the higher ambient temperature will cause an increase in air-conditioning demand to be offset partially by a decrease in hot-water demand, resulting in a 1.1% increase in final energy consumption. The impact on the commercial sector will be greater than on the household sector, because of larger air-conditioning demand and smaller hot-water demand. The higher ambient temperature will increase final energy consumption by 2.7% in the commercial sector. The higher ambient temperature will increase final energy consumption by 0.5% in the transportation sector as fuel consumption increases due to greater air-conditioning demand. As for energy sales, the higher ambient temperature will increase electricity sales by 2.6% due to a rise in air-conditioning demand. The higher ambient temperature will also increase town gas sales by only 0.4% as an increase in air-conditioning demand mainly in the commercial sector is partially offset by a decline in hot-water demand in the household and commercial sectors. The higher ambient temperature will increase fuel oil sales by 1.0% by expanding not only gasoline consumption by automobiles but also Fuel oil C consumption for greater power generation.

(2) Ambient temperature drop of 1°C in winter (January to March)

If the mean ambient temperature is 1°C lower than in the average year, it will increase domestic primary energy supply and final energy consumption by 1.2% and 1.0%, respectively, from the average year case. In the consumer sector, a lower ambient temperature and a lower water temperature will increase heating demand and hot-water demand, respectively. Final energy consumption will increase by 3.1% in the household sector and by 1.9% in the commercial sector. As for energy sales, the lower ambient temperature will increase electricity sales by 1.4% and fuel oil sales by 0.9% on greater heating demand. The lower ambient temperature will also increase town gas sales by 2.6%. This increase is larger than for other energy sources because town gas demand expands on greater heating and hot-water demand.

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Table 1: Overview (Base Case)

		FY2006	FY2007 (Actual)			FY2008 (Forecast)			FY2009
		Actual	1H	2H	Total	1H	2H	Total	Forecast
Key economic indicators	GDP (Chained to year 2000, in billion yen)	552,273 (2.3)	276,682 (2.1)	286,129 (1.7)	562,811 (1.9)	276,922 (0.1)	280,495 (-2.0)	557,417 (-1.0)	552,395 (-0.9)
	Private demand	414,406 [1.7]	207,314 [1.0]	209,931 [0.1]	417,245 [0.5]	205,662 [-0.6]	205,301 [-1.6]	410,963 [-1.1]	405,769 [-0.9]
	Public demand	117,014 [-0.2]	56,679 [0.0]	61,235 [0.3]	117,913 [0.2]	56,263 [-0.2]	60,985 [-0.1]	117,248 [-0.1]	118,261 [0.2]
	External demand	21,570 [0.8]	12,904 [1.1]	15,245 [1.3]	28,149 [1.2]	15,209 [0.8]	14,640 [-0.2]	29,848 [0.3]	29,158 [-0.1]
	Corporate goods price index (Year 2005=100)	102.6 (2.0)	104.2 (1.6)	105.7 (3.0)	104.9 (2.3)	110.4 (6.0)	107.6 (1.8)	109.0 (3.9)	105.5 (-3.2)
	Consumer price index (Year 2005=100)	100.2 (0.3)	100.3 (-0.1)	100.8 (0.7)	100.5 (0.3)	102.1 (1.8)	101.7 (0.9)	101.9 (1.3)	101.5 (-0.4)
	Index of Industrial Production (Year 2005=100)	105.3 (4.6)	105.5 (2.4)	110.5 (2.8)	108.0 (2.6)	105.3 (-0.2)	99.9 (-9.6)	102.6 (-5.0)	97.0 (-5.4)
	Crude steel production (in '000t)	117,745 (4.5)	59,799 (3.0)	61,712 (3.4)	121,512 (3.2)	61,508 (2.9)	51,615 (-16.4)	113,123 (-6.9)	103,588 (-8.4)
	Ethylene production (in '000t)	7,661 (1.5)	3,745 (2.8)	3,814 (-5.1)	7,559 (-1.3)	3,472 (-7.3)	3,542 (-7.1)	7,014 (-7.2)	6,766 (-3.5)
	Exchange rate (Yen/US\$)	116.9 (3.3)	119.3 (3.4)	109.2 (-8.0)	114.2 (-2.3)	106.1 (-11.1)	95.0 (-13.0)	100.5 (-12.0)	90.0 (-10.5)
	Crude oil CIF price (US\$/Bbl)	63.7 (14.4)	67.9 (-0.3)	88.0 (48.4)	77.9 (22.4)	119.7 (76.3)	63.5 (-27.8)	91.6 (17.5)	47.5 (-48.1)
	Heating degree-days	865 (-22.5)	56 (-12.7)	940 (17.5)	996 (15.2)	36 (-36.5)	1,006 (7.0)	1,042 (4.6)	985 (-5.5)
	Cooling degree-days	377 (-16.1)	434 (15.3)	3 -	437 (16.1)	398 (-8.2)	2 (-26.0)	401 (-8.3)	421 (5.2)
	Key energy indicators	Primary energy supply (10 ¹⁰ kcal = KTOE)	533,849 (-0.9)	258,987 (-0.8)	275,944 (1.1)	534,931 (0.2)	253,815 (-2.0)	263,300 (-4.6)	517,115 (-3.3)
Final energy consumption (10 ¹⁰ kcal = KTOE)		365,627 (-1.3)	172,431 (-1.2)	190,530 (-0.3)	362,961 (-0.7)	167,878 (-2.6)	182,060 (-4.4)	349,938 (-3.6)	340,191 (-2.8)
Industrial sector		176,675 (0.3)	85,020 (0.1)	91,182 (-0.6)	176,202 (-0.3)	83,790 (-1.4)	84,607 (-7.2)	168,397 (-4.4)	161,490 (-4.1)
Consumer sector		99,311 (-4.1)	42,988 (-3.7)	56,411 (3.2)	99,399 (0.1)	41,493 (-3.5)	56,630 (0.4)	98,122 (-1.3)	97,647 (-0.5)
Transportation sector		89,641 (-1.2)	44,423 (-1.2)	42,937 (-3.9)	87,360 (-2.5)	42,596 (-4.1)	40,823 (-4.9)	83,419 (-4.5)	81,054 (-2.8)
Electricity sales (billion kWh)		922.3 (1.0)	473.0 (2.0)	481.8 (5.0)	954.7 (3.5)	473.2 (0.1)	470.1 (-2.4)	943.3 (-1.2)	932.1 (-1.2)
Town gas sales (million m ³ /10,000kcal)		33,763 (4.0)	16,526 (5.0)	19,370 (7.5)	35,896 (6.3)	16,712 (1.1)	19,380 (0.1)	36,092 (0.5)	35,813 (-0.8)
Fuel oil sales (1,000kl)		223,849 (-5.2)	101,775 (-2.6)	116,638 (-2.3)	218,412 (-2.4)	96,809 (-4.9)	109,203 (-6.4)	206,012 (-5.7)	196,373 (-4.7)
Energy-based CO ₂ emissions (million t-CO ₂)		1,186 (-1.4)			1,218 (2.7)			1,172 (-3.8)	1,090 (-6.9)

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

Notes:

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

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Table 2: Macroeconomic Outlook (Base Case)

	FY2006 Actual	FY2007 (Actual)			FY2008 (Forecast)			FY2009 Forecast
		1H	2H	Total	1H	2H	Total	
Real GDP (Chained to year 2000, in billion yen)	552,273 (2.3)	276,682 (2.1)	286,129 (1.7)	562,811 (1.9)	276,922 (0.1)	280,495 (-2.0)	557,417 (-1.0)	552,395 (-0.9)
Private demand	414,406 (2.2)	207,314 (1.3)	209,931 (0.1)	417,245 (0.7)	205,662 (-0.8)	205,301 (-2.2)	410,963 (-1.5)	405,769 (-1.3)
Private final consumption expenditure	305,580 (1.1)	152,669 (0.8)	155,529 (0.9)	308,198 (0.9)	153,278 (0.4)	155,173 (-0.2)	308,451 (0.1)	308,979 (0.2)
Private residential investment	18,387 (-0.2)	8,601 (-6.9)	7,396 (-19.2)	15,997 (-13.0)	7,711 (-10.3)	7,544 (2.0)	15,255 (-4.6)	15,159 (-0.6)
Private capital investment	87,823 (5.6)	42,867 (3.8)	46,957 (0.9)	89,824 (2.3)	42,138 (-1.7)	42,948 (-8.5)	85,086 (-5.3)	80,838 (-5.0)
Public demand	117,014 (-0.9)	56,679 (0.2)	61,235 (1.3)	117,913 (0.8)	56,263 (-0.7)	60,985 (-0.4)	117,248 (-0.6)	118,261 (0.9)
Government final consumption expenditure	95,679 (1.1)	48,230 (1.3)	49,537 (3.0)	97,767 (2.2)	48,377 (0.3)	49,549 (0.0)	97,926 (0.2)	98,803 (0.9)
Public fixed capital formation	21,113 (-8.8)	8,316 (-6.3)	11,567 (-5.5)	19,882 (-5.8)	7,756 (-6.7)	11,318 (-2.1)	19,074 (-4.1)	19,212 (0.7)
Net exports of goods & services	21,570 (26.4)	12,904 (28.5)	15,245 (32.2)	28,149 (30.5)	15,209 (17.9)	14,640 (-4.0)	29,848 (6.0)	29,158 (-2.3)
Goods & services exports	82,136 (8.3)	43,273 (8.0)	46,521 (10.6)	89,794 (9.3)	45,490 (5.1)	44,918 (-3.4)	90,408 (0.7)	87,936 (-2.7)
Goods & services imports	60,566 (3.1)	30,369 (1.2)	31,276 (2.4)	61,645 (1.8)	30,282 (-0.3)	30,278 (-3.2)	60,560 (-1.8)	58,779 (-2.9)
Nominal GDP (billion yen)	510,925 (1.5)	254,189 (1.6)	261,669 (0.4)	515,858 (1.0)	250,495 (-1.5)	258,008 (-1.4)	508,503 (-1.4)	505,057 (-0.7)
Industrial production index (Year 2000=100)	105.3 (4.6)	105.5 (2.4)	110.5 (2.8)	108.0 (2.6)	105.3 (-0.2)	99.9 (-9.6)	102.6 (-5.0)	97.0 (-5.4)
Tertiary industry activity index (Year 2000=100)	109.0 (1.7)	109.6 (1.5)	110.9 (0.8)	110.2 (1.1)	109.0 (-0.5)	108.6 (-2.0)	108.8 (-1.2)	107.7 (-1.0)
Domestic corporate goods price index (Year 2005=100)	102.6 (2.0)	104.2 (1.6)	105.7 (3.0)	104.9 (2.3)	110.4 (6.0)	107.6 (1.8)	109.0 (3.9)	105.5 (-3.2)
Consumer price index (Year 2005=100)	100.2 (0.3)	100.3 (-0.1)	100.8 (0.7)	100.5 (0.3)	102.1 (1.8)	101.7 (0.9)	101.9 (1.3)	101.5 (-0.4)
Exchange rate (Yen/US\$)	116.9 (3.3)	119.3 (3.4)	109.2 (-8.0)	114.2 (-2.3)	106.1 (-11.1)	95.0 (-13.0)	100.5 (-12.0)	90.0 (-10.5)
Crude oil CIF price (US\$/Bbl)	63.7 (14.4)	67.9 (-0.3)	88.0 (48.4)	77.9 (22.4)	119.7 (76.3)	63.5 (-27.8)	91.6 (17.5)	47.5 (-48.1)

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

Notes:

1. Bracketed figures indicate year-to-year percentage changes.
2. The contributions to GDP growth may not add up to the total, due to inventory fluctuations and minor data deviations.

Table 3: Outlook on Industrial Activities (Base Case)

		FY2006	FY2007 (Actual)			FY2008(Forecast)			FY2009
		Actual	1H	2H	Total	1H	2H	Total	Forecast
Production (1,000t)	Crude steel	117,745 (4.5)	59,799 (3.0)	61,712 (3.4)	121,512 (3.2)	61,508 (2.9)	51,615 (-16.4)	113,123 (-6.9)	103,588 (-8.4)
	Ethylene	7,661 (1.5)	3,745 (2.8)	3,814 (-5.1)	7,559 (-1.3)	3,472 (-7.3)	3,542 (-7.1)	7,014 (-7.2)	6,766 (-3.5)
	Cement	73,169 (-1.0)	34,906 (-0.7)	35,694 (-6.1)	70,600 (-3.5)	32,778 (-6.1)	33,879 (-5.1)	66,656 (-5.6)	64,368 (-3.4)
	Paper/Paperboard	31,078 (0.0)	15,523 (0.1)	15,891 (2.1)	31,414 (1.1)	15,612 (0.6)	14,511 (-8.7)	30,123 (-4.1)	29,307 (-2.7)
	Automobiles (1,000unit)	11,501 (5.6)	5,481 (-0.9)	6,309 (5.7)	11,790 (2.5)	5,791 (5.6)	5,171 (-18.0)	10,962 (-7.0)	9,928 (-9.4)
Indices of industrial production (Year 2000=100)	Foods	97.9 (-1.6)	102.5 (2.6)	97.7 (1.8)	100.1 (2.2)	104.0 (1.5)	95.6 (-2.1)	99.8 (-0.3)	98.7 (-1.1)
	Textiles (excl. chemical fiber)	94.1 (-4.3)	89.6 (-6.1)	87.6 (-5.6)	88.6 (-5.9)	81.8 (-8.7)	77.9 (-11.0)	79.8 (-9.8)	74.2 (-7.1)
	Iron & steel	104.1 (4.3)	105.3 (3.3)	108.1 (1.8)	106.7 (2.5)	107.2 (1.8)	91.5 (-15.3)	99.3 (-6.9)	90.0 (-9.4)
	Chemicals (incl. chemical fiber)	103.5 (4.0)	102.0 (0.4)	104.3 (-1.0)	103.2 (-0.3)	101.2 (-0.8)	100.6 (-3.6)	100.9 (-2.2)	99.4 (-1.4)
	Ceramics, stone and clay products	101.4 (1.0)	101.2 (1.9)	100.9 (-2.6)	101.0 (-0.4)	97.9 (-3.3)	91.8 (-9.0)	94.8 (-6.1)	89.9 (-5.2)
	Pulp, paper and paper products	100.5 (0.0)	100.0 (-0.2)	103.4 (2.6)	101.7 (1.2)	101.4 (1.4)	94.5 (-8.6)	97.9 (-3.7)	95.4 (-2.6)
	Non-ferrous metals	103.9 (2.8)	103.3 (0.7)	106.6 (1.3)	105.0 (1.0)	100.3 (-2.9)	100.1 (-6.1)	100.2 (-4.5)	96.8 (-3.4)
	Transport equipment	107.0 (7.0)	106.6 (5.0)	122.0 (8.4)	114.3 (6.8)	111.9 (5.0)	102.5 (-15.9)	107.2 (-6.2)	97.9 (-8.7)
	Electrical machinery and others	108.3 (6.4)	109.3 (2.8)	114.1 (3.4)	111.7 (3.1)	107.2 (-1.9)	102.7 (-9.9)	105.0 (-6.0)	99.0 (-5.7)
	Industrial production total	105.3 (4.6)	105.5 (2.4)	110.5 (2.8)	108.0 (2.6)	105.3 (-0.2)	99.9 (-9.6)	102.6 (-5.0)	97.0 (-5.4)

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

Notes:

1. Bracketed figures indicate year-to-year percentage changes.
2. "Electrical machinery and others" includes: general machinery; electrical machinery; information and telecommunications equipment; electronic parts and devices; precision instruments; and metallic products.

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

		FY2006	FY2007 (Actual)			FY2008 (Forecast)			FY2009
		Actual	1H	2H	Total	1H	2H	Total	Forecast
Electricity demand (billion kWh)	Household demand	278.3 (-1.1)	135.2 (0.4)	154.5 (7.6)	289.7 (4.1)	134.4 (-0.6)	156.1 (1.0)	290.5 (0.3)	291.7 (0.4)
	Industrial demand (incl. specified scale demand)	644.0 (1.9)	337.7 (2.7)	327.3 (3.9)	665.0 (3.3)	338.8 (0.3)	314.0 (-4.1)	652.8 (-1.8)	640.4 (-1.9)
	Total (incl. specified scale demand)	922.3 (1.0)	473.0 (2.0)	481.8 (5.0)	954.7 (3.5)	473.2 (0.1)	470.1 (-2.4)	943.3 (-1.2)	932.1 (-1.2)
	(Regrouped)	307.7 (4.5)	161.2 (4.4)	159.1 (3.8)	320.3 (4.1)	164.0 (1.7)	146.6 (-7.9)	310.6 (-3.0)	298.7 (-3.8)
	Large-scale industrial users	31.2 (5.4)	16.4 (5.2)	16.3 (4.0)	32.7 (4.6)	16.5 (0.9)	15.6 (-4.1)	32.1 (-1.6)	31.7 (-1.3)
	Chemicals	55.6 (4.3)	28.4 (2.6)	29.0 (3.7)	57.4 (3.1)	28.9 (1.9)	25.6 (-11.5)	54.6 (-4.9)	51.8 (-5.2)
	Iron & steel	79.2 (6.2)	41.9 (5.4)	41.2 (4.5)	83.1 (4.9)	42.8 (2.3)	36.8 (-10.6)	79.6 (-4.1)	75.4 (-5.3)
	Machinery	259.1 (5.5)	136.0 (5.0)	134.9 (4.2)	270.9 (4.6)	138.9 (2.1)	122.7 (-9.0)	261.6 (-3.4)	249.9 (-4.5)
Total									

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

Notes:

1. Bracketed figures indicate year-to-year percentage changes.
2. The data includes specified supplies by electricity enterprises.
Captive consumption at Tobata Co-operative Thermal Power Company, Inc. and Oita Co-operative Thermal Power Co., Inc. is treated as specified supplies.

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

		FY2006	FY2007 (Actual)			FY2008 (Forecast)			FY2009
		Actual	1H	2H	Total	1H	2H	Total	Forecast
Town gas sales (million m ³)	Household	9,765 (-1.6)	3,805 (-4.0)	6,067 (4.6)	9,872 (1.1)	3,748 (-1.5)	6,154 (1.4)	9,902 (0.3)	9,844 (-0.6)
	Commercial	4,786 (-2.2)	2,540 (1.3)	2,405 (5.5)	4,944 (3.3)	2,471 (-2.7)	2,415 (0.4)	4,886 (-1.2)	4,891 (0.1)
	Industrial	16,452 (11.3)	8,790 (11.3)	9,362 (9.5)	18,152 (10.3)	9,123 (3.8)	9,265 (-1.0)	18,388 (1.3)	18,151 (-1.3)
	Others	2,761 (-3.4)	1,392 (1.3)	1,535 (10.7)	2,927 (6.0)	1,371 (-1.5)	1,545 (0.7)	2,916 (-0.4)	2,927 (0.4)
	Total	33,763 (4.0)	16,526 (5.0)	19,370 (7.5)	35,896 (6.3)	16,712 (1.1)	19,380 (0.1)	36,092 (0.5)	35,813 (-0.8)

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

Notes:

1. Bracketed figures indicate year-to-year percentage changes.
2. Converted at 1m³=41.8605MJ (10,000kcal).

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

		FY2006 Actual	FY2007 (Actual)			FY2008 (Forecast)			FY2009 Forecast
			1H	2H	Total	1H	2H	Total	
Fuel oils sales (1,000kl)	Gasoline	60,552 (-1.4)	30,551 (-0.6)	28,526 (-4.3)	59,076 (-2.4)	29,103 (-4.7)	27,045 (-5.2)	56,149 (-5.0)	54,722 (-2.5)
	Naphtha	50,078 (1.4)	23,519 (0.3)	25,029 (-6.0)	48,548 (-3.1)	22,267 (-5.3)	23,552 (-5.9)	45,819 (-5.6)	44,599 (-2.7)
	Jet fuel	5,453 (6.3)	2,792 (14.0)	3,058 (1.8)	5,850 (7.3)	2,842 (1.8)	2,911 (-4.8)	5,753 (-1.7)	5,620 (-2.3)
	Kerosene	24,504 (-13.3)	6,092 (-12.9)	16,580 (-5.3)	22,672 (-7.5)	5,132 (-15.8)	16,302 (-1.7)	21,434 (-5.5)	20,690 (-3.5)
	Gas oil	36,606 (-1.4)	17,705 (-1.7)	17,852 (-4.0)	35,557 (-2.9)	17,015 (-3.9)	17,166 (-3.8)	34,181 (-3.9)	33,100 (-3.2)
	Fuel oil-A	23,961 (-13.7)	9,537 (-15.2)	11,832 (-6.9)	21,369 (-10.8)	8,280 (-13.2)	10,501 (-11.2)	18,781 (-12.1)	17,606 (-6.3)
	Fuel oil-B, C	22,697 (-16.0)	11,581 (-0.0)	13,760 (23.8)	25,341 (11.7)	12,171 (5.1)	11,726 (-14.8)	23,896 (-5.7)	20,036 (-16.2)
	For power generation	9,383 (-20.3)	6,028 (28.2)	8,212 (75.5)	14,240 (51.8)	7,223 (19.8)	6,733 (-18.0)	13,956 (-2.0)	10,691 (-23.4)
	For other uses	13,314 (-12.6)	5,553 (-19.3)	5,548 (-13.8)	11,101 (-16.6)	4,948 (-10.9)	4,993 (-10.0)	9,940 (-10.5)	9,345 (-6.0)
	Total	223,849 (-5.2)	101,775 (-2.6)	116,638 (-2.3)	218,412 (-2.4)	96,809 (-4.9)	109,203 (-6.4)	206,012 (-5.7)	196,373 (-4.7)
LPG sales (1,000t)	18,695 (-0.1)	8,837 (1.2)	9,821 (-1.5)	18,658 (-0.2)	8,328 (-5.8)	9,641 (-1.8)	17,968 (-3.7)	17,481 (-2.7)	

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

Note:

1. Bracketed figures indicate year-to-year percentage changes.

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

		FY2006	FY2007 (Actual)			FY2008 (Forecast)			FY2009
		Actual	1H	2H	Total	1H	2H	Total	Forecast
Domestic primary energy supply (10 ¹⁰ kcal)	Coal	113,812 (-1.1)	59,361 (4.6)	59,932 (5.1)	119,293 (4.8)	60,137 (1.3)	55,706 (-7.1)	115,843 (-2.9)	106,830 (-7.8)
	Oil	243,355 (-5.1)	111,916 (-1.7)	131,385 (1.4)	243,301 (-0.0)	108,807 (-2.8)	121,893 (-7.2)	230,701 (-5.2)	216,240 (-6.3)
	Natural gas	86,059 (9.2)	44,621 (6.8)	48,356 (9.2)	92,977 (8.0)	44,739 (0.3)	47,235 (-2.3)	91,974 (-1.1)	87,027 (-5.4)
	Hydroelectricity	19,426 (14.1)	10,032 (-17.7)	6,490 (-10.3)	16,522 (-14.9)	9,914 (-1.2)	6,965 (7.3)	16,879 (2.2)	19,456 (15.3)
	Nuclear	63,859 (-0.4)	29,490 (-10.1)	26,037 (-16.1)	55,527 (-13.0)	26,559 (-9.9)	27,821 (6.9)	54,380 (-2.1)	65,132 (19.8)
	Others	7,338 (0.3)	3,567 (-1.4)	3,744 (0.6)	7,311 (-0.4)	3,658 (2.6)	3,680 (-1.7)	7,338 (0.4)	7,272 (-0.9)
	Total	533,849 (-0.9)	258,987 (-0.8)	275,944 (1.1)	534,931 (0.2)	253,815 (-2.0)	263,300 (-4.6)	517,115 (-3.3)	501,956 (-2.9)
Real GDP (Chained to year 2000, in billion yen)		552,273 (2.3)	276,682 (2.1)	286,129 (1.7)	562,811 (1.9)	276,922 (0.1)	280,495 (-2.0)	557,417 (-1.0)	552,395 (-0.9)
GDP intensity (Energy supply/GDP) (Year 2000=100)		91.4 (-3.1)			89.8 (-1.7)			87.7 (-2.4)	85.9 (-2.0)
CO ₂ emissions (million t-C)		1,186 (-1.4)			1,218 (2.7)			1,172 (-3.8)	1,090 (-6.9)

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

Notes:

1. Bracketed figures indicate year-to-year percentage changes.
2. "Others" include geothermal energy, new energies, etc.

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

		FY2006 Actual	FY2007 (Actual)			FY2008 (Forecast)			FY2009 Forecast
			1H	2H	Total	1H	2H	Total	
By sector (10 ¹⁰ kcal)	Industry	176,675 (0.3)	85,020 (0.1)	91,182 (-0.6)	176,202 (-0.3)	83,790 (-1.4)	84,607 (-7.2)	168,397 (-4.4)	161,490 (-4.1)
	Consumer	99,311 (-4.1)	42,988 (-3.7)	56,411 (3.2)	99,399 (0.1)	41,493 (-3.5)	56,630 (0.4)	98,122 (-1.3)	97,647 (-0.5)
	Househol	54,074 (-3.8)	21,428 (-2.8)	33,290 (3.9)	54,718 (1.2)	20,784 (-3.0)	33,706 (1.3)	54,490 (-0.4)	54,275 (-0.4)
	Commercial	45,237 (-4.4)	21,560 (-4.6)	23,121 (2.1)	44,681 (-1.2)	20,709 (-3.9)	22,924 (-0.9)	43,632 (-2.3)	43,372 (-0.6)
	Transportation	89,641 (-1.2)	44,423 (-1.2)	42,937 (-3.9)	87,360 (-2.5)	42,596 (-4.1)	40,823 (-4.9)	83,419 (-4.5)	81,054 (-2.8)
By energy source (10 ¹⁰ kcal)	Coal, etc.	38,668 (1.8)	19,440 (1.8)	20,824 (6.4)	40,264 (4.1)	20,023 (3.0)	18,864 (-9.4)	38,887 (-3.4)	36,830 (-5.3)
	Oil	203,980 (-3.9)	91,252 (-3.9)	104,079 (-4.5)	195,331 (-4.2)	85,911 (-5.9)	98,856 (-5.0)	184,766 (-5.4)	178,745 (-3.3)
	Town gas	30,795 (7.3)	14,771 (4.4)	17,885 (7.4)	32,656 (6.0)	14,944 (1.2)	17,868 (-0.1)	32,812 (0.5)	32,462 (-1.1)
	Electricity	87,081 (0.7)	44,407 (1.4)	45,021 (4.1)	89,428 (2.7)	44,364 (-0.1)	43,777 (-2.8)	88,142 (-1.4)	87,041 (-1.2)
	Others	5,103 (2.1)	2,561 (3.4)	2,721 (3.6)	5,282 (3.5)	2,636 (2.9)	2,695 (-0.9)	5,331 (0.9)	5,112 (-4.1)
	Total	365,627 (-1.3)	172,431 (-1.2)	190,530 (-0.3)	362,961 (-0.7)	167,878 (-2.6)	182,060 (-4.4)	349,938 (-3.6)	340,191 (-2.8)
Real GDP (Chained to year 2000, in billion yen)		552,273 (2.3)	276,682 (2.1)	286,129 (1.7)	562,811 (1.9)	276,922 (0.1)	280,495 (-2.0)	557,417 (-1.0)	552,395 (-0.9)
Industrial production index (Year 2000=100)		105.3 (4.6)	105.5 (2.4)	110.5 (2.8)	108.0 (2.6)	105.3 (-0.2)	99.9 (-9.6)	102.6 (-5.0)	97.0 (-5.4)
Heating degree-days		865 (-22.5)	56 (-12.7)	940 (17.5)	996 (15.2)	36 (-36.5)	1,006 (7.0)	1,042 (4.6)	985 (-5.5)
Cooling degree-days		377 (-16.1)	434 (15.3)	3 #DIV/0!	437 (16.1)	398 (-8.2)	2 (-26.0)	401 (-8.3)	421 (5.2)

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

Notes:

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

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

		FY2006	FY2007 (Actual)			FY2008 (Forecast)			FY2009
		Actual	1H	2H	Total	1H	2H	Total	Forecast
Input (10 ¹⁰ kcal)	Thermal power	121,509 (-1.1)	66,036 (13.8)	73,041 (15.1)	139,077 (14.5)	68,602 (3.9)	66,837 (-8.5)	135,438 (-2.6)	117,647 (-13.1)
	Coal	49,537 (-3.8)	24,907 (4.5)	27,174 (5.7)	52,081 (5.1)	25,290 (1.5)	25,820 (-5.0)	51,109 (-1.9)	44,758 (-12.4)
	Oil, etc.	20,128 (-17.1)	13,024 (42.2)	17,240 (57.2)	30,264 (50.4)	15,294 (17.4)	13,528 (-21.5)	28,822 (-4.8)	21,810 (-24.3)
	Crude oil (as part of oil)	5,776 (-21.6)	4,086 (79.8)	6,567 (87.5)	10,653 (84.4)	4,851 (18.7)	4,693 (-28.5)	9,544 (-10.4)	6,769 (-29.1)
	Bunker C (as part of oil)	9,015 (-22.8)	6,096 (47.9)	8,093 (65.4)	14,189 (57.4)	7,289 (19.6)	6,523 (-19.4)	13,812 (-2.7)	10,466 (-24.2)
	Natural gas	51,844 (10.0)	28,105 (12.3)	28,627 (6.8)	56,732 (9.4)	28,018 (-0.3)	27,489 (-4.0)	55,507 (-2.2)	51,079 (-8.0)
	Hydro-power	17,671 (12.9)	9,115 (-18.3)	5,854 (-10.1)	14,969 (-15.3)	8,933 (-2.0)	6,289 (7.4)	15,222 (1.7)	17,831 (17.1)
	Nuclear	63,859 (-0.4)	29,490 (-10.1)	26,037 (-16.1)	55,527 (-13.0)	26,559 (-9.9)	27,821 (6.9)	54,380 (-2.1)	65,132 (19.8)
	Others	1,203 (-2.8)	551 (-8.8)	566 (-5.5)	1,117 (-7.1)	628 (13.9)	645 (13.9)	1,272 (13.9)	1,365 (7.3)
	Total	204,242 (0.2)	105,192 (2.5)	105,498 (3.8)	210,690 (3.2)	104,721 (-0.4)	101,592 (-3.7)	206,313 (-2.1)	201,975 (-2.1)
Power output (10 ¹⁰ kcal)	82,758 (0.5)	42,477 (2.6)	42,884 (3.7)	85,361 (3.1)	42,512 (0.1)	41,740 (-2.7)	84,252 (-1.3)	83,157 (-1.3)	

Sources: Actual results data and forecasts prepared from IEEJ database

Note: Bracketed figures indicate year-to-year percentage changes.

Table 10: Effects of Crude Oil Price Changes

		FY2008	FY2009					
			Base case	Base case	Crude price variations			
					Higher-price case		Lower-price case	
			+20\$/bbl	Change from base case	▲10\$/bbl	Change from base case		
Key economic indicators	Real GDP (Chained to year 2000, in billion yen)	557,417 (-1.0)	552,395 (-0.9)	551,755 (-1.0)	-640 《	552,720 (-0.8)	325 《 0.1	
	Private demand	410,963 [-1.1]	405,769 [-0.9]	405,149 [-1.0]	-621 [-0.1]	406,084 [-0.9]	315 [0.1]	
	Public demand	117,248 [-0.1]	118,261 [0.2]	118,108 [0.2]	-153 [-0.0]	118,339 [0.2]	78 [0.0]	
	External demand	29,848 [0.3]	29,158 [-0.1]	29,292 [-0.1]	134 [0.0]	29,090 [-0.1]	-68 [-0.0]	
	Industrial production index (Year 2000=100)	102.6 (-5.0)	97.0 (-5.4)	96.8 (-5.6)	-0.2 《 -0.2》	97.1 (-5.3)	0.1 《	
	Corporate goods price index (Year 2005=100)	109.0 (3.9)	105.5 (-3.2)	105.9 (-2.8)	0.4 《 0.4》	105.2 (-3.4)	-0.2 《	
	Consumer price index (Year 2005=100)	101.9 (1.3)	101.5 (-0.4)	101.6 (-0.3)	0.1 《	101.4 (-0.5)	-0.0 《	
	Crude oil CIF price (US\$/Bbl)	91.6 (17.5)	47.5 (-48.1)	67.5 (-26.3)	20.0 《	37.5 (-59.1)	-10.0 《	
	Key energy indicators	Primary energy supply (10 ¹⁰ kcal = KTOE)	517,115 (-3.3)	501,956 (-2.9)	499,373 (-3.4)	-2,583 《	503,566 (-2.6)	1,610 《
Final energy consumption (10 ¹⁰ kcal = KTOE)		349,938 (-3.6)	340,191 (-2.8)	337,920 (-3.4)	-2,271 《	341,616 (-2.4)	1,426 《	
Industrial sector		168,397 (-4.4)	161,490 (-4.1)	160,284 (-4.8)	-1,206 《	162,243 (-3.7)	753 《	
Consumer sector		98,122 (-1.3)	97,647 (-0.5)	97,150 (-1.0)	-497 《	97,982 (-0.5)	335 《	
Transportation sector		83,419 (-4.5)	81,054 (-2.8)	80,486 (-3.5)	-568 《	81,392 (-2.4)	338 《	
Electricity sales (billion kWh)		943.3 (-1.2)	932.1 (-1.2)	931.9 (-1.2)	-0.2 《	932.2 (-1.2)	0.0 《	
Town gas sales (million m ³ /10,000kcal)		36,092 (0.5)	35,813 (-0.8)	35,650 (-1.2)	-163 《	35,923 (-0.5)	110 《	
Fuel oil sales (1,000kl)		206,012 (-5.7)	196,373 (-4.7)	193,969 (-5.8)	-2,404 《	197,867 (-4.2)	1,494 《	
LPG sales (1,000t)		17,968 (-3.7)	17,481 (-2.7)	17,414 (-3.1)	-67 《	17,529 (-2.4)	48 《	
CO ₂ emissions (energy-based) (million tons)		1,172 (-3.8)	1,090 (-6.9)	1,084 (-7.5)	-6 《	1,094 (-6.6)	4 《	

Notes:

- Single-bracketed figures indicate year-to-year percentage changes. Double-bracketed figures indicate percentage point differences from the base case. Square-bracketed figures in the GDP section indicate contributions to GDP growth.
- Contributions to GDP growth may not add up to the total due to minor data deviations.
- The industrial sector consumption includes non-energy uses.

Table 11: Effects of Economic Growth Changes

		FY2008	FY2009					
			Base case	GDP growth variations				
				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)	557,417 (-1.0)	552,395 (-0.9)	546,818 (-1.9)	-5,578 《-1.0》	557,971 (0.1)	5,576 《1.0》	
	Private demand	410,963 [-1.1]	405,769 [-0.9]	400,976 [-1.8]	-4,794 [-0.9]	410,541 [-0.1]	4,771 [0.9]	
	Public demand	117,248 [-0.1]	118,261 [0.2]	118,011 [0.1]	-250 [-0.0]	118,518 [0.2]	257 [0.0]	
	External demand	29,848 [0.3]	29,158 [-0.1]	28,624 [-0.2]	-534 [-0.1]	29,706 [-0.0]	548 [0.1]	
	Industrial production index (Year 2005=100)	102.6 (-5.0)	97.0 (-5.4)	95.6 (-6.8)	-1.4 《-1.4》	98.5 (-4.0)	1.4 《1.4》	
	Corporate goods price index (Year 2005=100)	109.0 (3.9)	105.5 (-3.2)	104.9 (-3.7)	-0.6 《-0.5》	106.0 (-2.7)	0.6 《0.5》	
	Consumer price index (Year 2005=100)	101.9 (1.3)	101.5 (-0.4)	101.5 (-0.4)	0.0 《-0.0》	101.4 (-0.5)	-0.0 《0.0》	
	Crude oil CIF price (US\$/Bbl)	91.6 (17.5)	47.5 (-48.1)	47.5 (-48.1)	- 《0.0》	47.5 (-48.1)	- 《0.0》	
Key energy indicators	Primary energy supply (10 ¹⁰ kcal = KTOE)	517,115 (-3.3)	501,956 (-2.9)	498,660 (-3.6)	-3,297 《-0.6》	505,220 (-2.3)	3,264 《0.6》	
	Final energy consumption (10 ¹⁰ kcal = KTOE)	349,938 (-3.6)	340,191 (-2.8)	338,200 (-3.4)	-1,991 《-0.6》	342,162 (-2.2)	1,971 《0.6》	
	Industrial sector	168,397 (-4.4)	161,490 (-4.1)	160,152 (-4.9)	-1,338 《-0.8》	162,813 (-3.3)	1,323 《0.8》	
	Consumer sector	98,122 (-1.3)	97,647 (-0.5)	97,301 (-0.8)	-346 《-0.4》	97,991 (-0.1)	344 《0.4》	
	Transportation sector	83,419 (-4.5)	81,054 (-2.8)	80,748 (-3.2)	-306 《-0.4》	81,358 (-2.5)	304 《0.4》	
	Electricity sales (billion kWh)	943.3 (-1.2)	932.1 (-1.2)	926.7 (-1.8)	-5.4 《-0.6》	937.5 (-0.6)	5.4 《0.6》	
	Town gas sales (million m ³ /10,000kcal)	36,092 (0.5)	35,813 (-0.8)	35,553 (-1.5)	-260 《-0.7》	36,070 (-0.1)	257 《0.7》	
	Fuel oil sales (1,000kl)	206,012 (-5.7)	196,373 (-4.7)	194,694 (-5.5)	-1,679 《-0.8》	198,021 (-3.9)	1,648 《0.8》	
	LPG sales (1,000t)	17,968 (-3.7)	17,481 (-2.7)	17,389 (-3.2)	-92 《-0.5》	17,572 (-2.2)	91 《0.5》	
	CO2 emissions (energy-based) (million tons)	1,172 (-3.8)	1,090 (-6.9)	1,081 (-7.7)	-9 《-0.8》	1,099 (-6.2)	9 《0.8》	

Notes:

1. Bracketed figures indicate year-to-year percentage changes, except contributions to GDP growth.
2. Contributions to GDP growth may not add up to the 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)	
	Change in demand	% change	Change in demand	% change
Domestic primary energy supply (10 ¹⁰ kcal)	1,668	(1.3)	1,587	(1.2)
Final energy consumption (10 ¹⁰ kcal)	575	(0.7)	962	(1.0)
Industrial sector	52	(0.1)	131	(0.3)
Household sector	105	(1.1)	608	(3.1)
Commercial sector	304	(2.7)	222	(1.9)
Transportation sector	114	(0.5)	-	(0.0)
Electricity sales (million kWh)	6,541	(2.6)	3,479	(1.4)
Town gas sales (million m ³ /10,000kcal)	31	(0.4)	276	(2.6)
Fuel oil sales (1,000kl)	460	(1.0)	499	(0.9)
LPG sales (1,000t)	-68	(-1.8)	119	(2.5)

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

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