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A new year's message from chairman Toyoda

Japan should forge ahead with a counter global warming policy irrespective of the possibility of an international accord.

Two major trends have emerged after the Lehman Shock and the subsequent global financial crisis to affect the world economy and energy and environmental issues in 2011. The first trend is multipolarization. We are now increasingly facing a multipolar world, though many people tend to see the current world from a simplistic U.S. versus China perspective, or a US-China bipolar structure. China does not appear ready to undertake global management as yet, as it puts the highest priority on establishing the social and political stabilities of the country that require healthy and robust economic growth.

There also are other influential emerging economies in the world including India, Brazil, Russia, and South Africa. Many research organizations forecast that India may grow faster than China in average growth rate for the period up to 2035. Korea is another country that deserves attention, though it is not exactly an emerging country as it has already joined the OECD. Korea is implementing its own strategic moves such as a world-wide expansion of Free Trade Agreement or driving infrastructure export through close cooperation between the government and private sectors.

The EU, meanwhile, is of course influential with its GDP matching that of the United States, although the euro is in trouble originating from the Greek financial crisis. The EU has been warning the world against excessive market fundamentalism for some years. Japan displayed its presence to the world with a sound argument at the Cancun conference on global warming, despite the world's concern over its weak political leadership. In summary, this multipolarized age has no true leader capable of global management: the G20 conference held in November 2010 was marked by centrifugal rather than centripetal forces, and the Doha round of the World Trade Organization talks still keeps drifting.

The second trend to note is what might be called a twisted balance of power in the political arena in developed countries including the United States, Australia, the United Kingdom, and Japan. Such twists naturally result in unstable national policies depriving the country of the ability to lead the world. Political systems of emerging economies, on the other hand, are not as stable as they appear. Their political stabilities are sustained by economic growth, and as such, their politics always have inherent instability. Thus, both developed and developing economies tend to put priorities first covering their own national interests.

Instability and uncertainty arising from the above two currents in global management may become even more prominent in 2011 as the United States, France, China, and other countries will all have elections on presidential or head-of-state posts in 2012. What, then, will these two trends imply for energy and environment-related industries in Japan and the world?

Regarding Japanese industries, an advantageous point is that Japan will have a vast market, encompassing not only China, but also India, Brazil, and other emerging economies as well as Middle East countries. Low-carbonization will surely accelerate growth of energy and environment markets in a number of segments in Japan, but the growth potential is significantly larger in the world market. Japan has a number of edges in energy and environment fields; there is notable potential for driving infrastructure export through the public-private partnership. Japanese firms, however, will have to change their business models much more to serve emerging economies, which account for a large portion of the fast-growing markets. They need to provide "good offerings with a low price tag" along with "excellent offerings with a high price tag."

One drawback to the above position is that there still is a long way to go to strike an accord even in COP17 talks on global warming. At the Cancun conference, the Japanese government opposed the simple extension of the Kyoto Protocol arguing that it would be against global interests primarily due to the absence of major economies as responsible participants, resulting in a position to open a new round of negotiations to include the two largest economies of the world in a new international framework. However, it remains to be seen if the world can work out a final agreement with the United States and China given their current domestic political situations. In other words, there will be significant uncertainty in energy and environment-related investments. A desirable path for Japan, therefore, irrespective of where the international accord is heading, will be for Japan to lead the way to a low-carbon society by conducting extensive R&D and promoting introduction of zero-emission energy such as nuclear and solar power generation, through close cooperation between the government and private sectors. In this effort, Japan should aim to achieve the domestic targets to "reduce energy-originated CO_2 by 30% from the 1990 level by 2030 without purchasing emission permits from abroad ", which was endorsed by the Cabinet in June 2010 in the Basic Plan to counter global warming. Furthermore, Japan should accelerate technology transfer and financial assistance by implementing bilateral credit schemes along with driving infrastructure export in the energy and environment fields. As for the industries in the world, in particular in Asia which is the growth center of the world, they could take the best use of Japanese technologies to promote energy conservation and reduce GHG emissions.

Judging from the world trends described above and worldwide expectations for governments and industries, we at The Institute of Energy Economics, Japan（IEEJ) should focus on the following three priority areas this year.

The first mission is to contribute to enhanced cooperation among international organizations, Japanese and world governments and industries, as one of the world-leading think tanks in energy and environment sectors. We have formed alliances with nearly 60 research

institutions throughout the world to advance a wide variety of research and investigations. In 2011, we will further galvanize international activities, wider and deeper, to provide precise and elaborate information and analyses by reinforcing our position as a world-renowned think tank.

We will also pursue, as the second mission, investigations and analyses on how to turn the double crises of energy and global warming into opportunities as a breakthrough to revive the world economy. Global warming is of course an extremely tough challenge for governments and industries in the world, but it may well provide opportunities for a new leap forward. In the New Growth Strategies, the Japanese government noted the potential and specifically nominated the energy and environment industries as industries of vital importance. We have to think hard as to how we should transform our endeavors to alleviate global warming into enhancement of energy supply security and growth of the world economy through developing technologies of energy and environment industries.

In the above endeavor, we will have to focus on three points: speed and timetable of implementing countermeasures against global warming, appropriate policy measures and support, and ensuring transparency and equitability among countries in efforts on cutting GHG emissions. We believe that fulfilling these three points concurrently will lead to a new growth model, and as such, we will seek the best possible path and recommend pertinent policies through analyses of a number of issues including the Post-Kyoto framework. We will aim at advancing the so-called 3E (balancing Energy, Environment and Economy), by formulating a "3E version II", which will drive economic growth through optimum coordination of energy and environment. We will propose proper structures for industries, particularly those in Japan, considering the state of affairs in the world from such viewpoints.

As the third mission, we will reinforce analytical capabilities of our institution that should be objective, neutral and scientific. Energy and global warming challenges are taken up as political issues of high priority in every country, but emotional arguments tend to dictate political debate leading to populism policies in most countries. Such tendencies are noticeable in the EU, the United States, Australia and other developed countries as well as emerging countries, though the arguments of the latter are opposite to those of the former. Japan, of course, is no exception. That said, IEEJ should seek objective, neutral, and scientific analyses based on facts to enable us to provide policy proposals in a timely manner through integration of microanalyses of industries, technologies, and country risks, as well as macro economic analyses.

In this connection, IEEJ published "Asia/World Energy Outlook 2010" last November laying out detailed analyses for the period up to 2035 including those for economies such as China、India、ASEAN, and other areas. An outlook till 2050 is also provided in the report. It points out that although it is possible to achieve a 40% cut in global emissions from the 1990 level by using currently anticipated new technologies, we need to have further technological development to achieve a 50% reduction.

In 2011, the world economy is expected to recover and grow beyond pre-Lehman Shock levels in not only emerging economies but in many of the developed countries as well. Some developed countries, though, may still suffer from residual effects of the Lehman Shock and anti-recession packages may run out of steam, slowing down economic growth. As for energy and environment-related industries in the world, there are a number of opportunities to grab, not only domestically but also overseas as well. Through our research and analyses, IEEJ will be assisting those who take positive action with a forward-looking attitude.

Energy outlook for 2011

The Institute of Energy Economics, Japan (IEEJ) announced its outlook for 2011 at the Energy Symposium held on December 22. Dr. Ken Koyama, Director of IEEJ, presented his views that the crude oil price for 2011 in terms of the WTI futures would hover at around $85 USD per barrel. Mr. Shigeru Suehiro, Group Leader, the Econometric Data and Modeling Centre of IEEJ, also forecasts that Japan's primary energy consumption would decline slightly from the previous year by 0.2%. A summary of these reports is provided below.

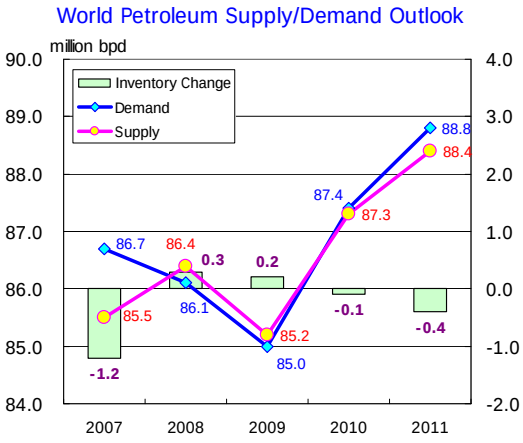
Oil price remains strong at around $85/Bbl

The WTI futures average for 2010 was $79.2 per barrel as of December 17. For the most part of 2010, crude oil continued to show "sideways trade" within a range from $68 per barrel to the low $80's per barrel. However, the oil price began to move beyond this range from November onward, exceeding even $90 per barrel momentarily.

Factors behind this include world economic and financial conditions, petroleum supply/demand fundamentals and an influx of funds into the oil futures market. In particular, recent price hikes are presumably attributable to the following factors: liquidity trade driven by the quantitative easing of monetary conditions in the U.S. and elsewhere, global economic growth and increased demand for oil mainly in emerging economies, and the potential demand increase in the Northern Hemisphere as winter is approaching Market perception is changing with comments by key players that can be interpreted as "acceptance of high prices"

For the Reference Case projection, the following assumptions are made on the international petroleum market trends in 2011:

(1) The world economy will maintain growth at around 4% driven by emerging countries and remain on the recovery track, with no economic downturn experienced in developed countries.
(2) The liquidity trade since 2010 will continue, shoring up or pushing up crude oil and other commodity prices.
(3) Global petroleum demand will increase by around 1.4 million barrels per day year-on-year.
(4) Non-OPEC crude oil production will increase by about 0.6 million barrels per day year-on-year, while OPEC's NGL output will maintain the increasing trend.



In this case, although demand for OPEC crude oil will increase by about 0.2 million barrels per day from the 2010 level, the supply capacity there will remain to be well above demand. In the 2011 international petroleum market, crude oil prices will swing while moving to a higher range of fluctuation than in 2010. As a result, the annual average price of WTI crude oil will reach around $85 (±$10) per barrel. It should be noted that the crude oil price may approach the upper $90's per barrel or even higher in the short term in the liquidity trade, depending on the financial climate and supply/demand balance. However, due to a sense of caution against excessive swings retained among market players, price fluctuations will remain confined between certain upper and lower limits.

The international oil market conditions involve a wide spectrum of uncertainties and risk factors concerning not just demand but also international politics, economics and finance. Crude oil prices are expected to see another year of violent fluctuations in 2011. Given below are expected major factors of fluctuations.

Under the "high price scenario," it is assumed that (1) The global economy will achieve robust growth driven mainly by emerging countries, while developed countries will head for full recovery as well; (2) Monetary easing will significantly increase the influx of money in the oil futures market; (3) As a result, global oil demand will also rise about 1.8 million barrels per day year-on-year; and (4) Oil production increase in non-OPEC countries will be slower than expected, intensifying the sense of tightness. In this scenario, the crude oil prices will rise, pushing the 2011 annual average price of WTI to around $95 (±$10) per barrel. Any risk event can put additional upward pressures on these prices.

Under the "low price scenario,"(1) The global economy will face downside risks from the first half of 2011 onward, increasing concerns over a double dip; (2) Money will flow out of the futures markets due to a decline in risk tolerance, (3) The world oil demand will increase by only 0.8 million barrels per day year-on-year; (4) The non-OPEC supply will increase faster than expected, especially in Iraq where production could expand more than predicted and (5) In the futures markets, selling pressures should dominate in response to the deteriorated economic and financial situation and the loosening of the world petroleum supply/demand balance. In this case, crude oil prices will drop, resulting in an annual WTI average of around $75 (±$10) per barrel in 2011. It is expected that any price decline will cause OPEC to seek production reduction, which will help shore up prices to some extent.

Japan's energy consumption decreases slightly

The global economy has overcome the worst time of the downturn immediately after the financial crisis and is now on a recovery track. Likewise, the Japanese economy has seen a rapid recovery of production and consumption brought by a rebound in exports and the government's stimulus packages. However, in the U.S. and Europe the pace of recovery is slowing down somewhat, with the effects of economic measures waning and with fiscal risks hanging over Europe. Under such a situation, economic recovery in China and other parts of Asia stands out. In Japan, the manufacturing sector has achieved a steep recovery thanks to increasing exports to Asia and domestic consumption; the latter was shored up by government stimulus measures—such as the eco-points system on purchase of home appliances, and tax cuts and subsidies for eco-friendly cars— along with a record hot summer in 2010. Energy demand has generally turned to positive growth, driven by production recovery and weather factors. However, there are signs that Japan's economic recovery is stalling due to the stronger yen and a steep dive of consumption in the aftermath of the expiring stimulus measures.

Economic outlook of Japan

The Japanese economy in FY 2010 has seen an export-driven rebound in production in response to the recovery of the global economy, and capital investment has finally turned into positive growth. In the first half, personal consumption grew significantly because of last-minute purchases before termination of eco-car subsidies and other incentive programs, along with heat waves. The enthusiasm however rapidly shrank in late autumn in the aftermath of the increase. On balance, the economy as a whole is on a mild recovery track. The real GDP for FY 2010 is estimated to go up 3.2% from the previous year to post positive growth for the first time in three years, although this figure includes the one-time upward effect

(1.9%) coming from the major decline in January-March 2010. Industrial production has increased considerably in the first half of FY 2010 mainly in the sectors benefitting from stimulus policies, such as automobiles and electric machinery. Even with a major slowdown expected in the second half, the Index of Industrial Production (IIP) for the entire FY 2010 is forecast to show significant recovery, up 8.5% from the previous year.

In FY 2011, industrial production is expected to achieve a modest growth reflecting increasing exports and recovery in investment, despite a potential slip following termination of stimulating policies; IIP is expected to grow by 2.4% from the previous year. Although private consumption will grow only slightly as a reaction to the previous year's boom, housing investment is expected to return to positive growth for the first time in seven years, partly supported by the eco-points system to encourage eco-buildings. However, with economic recovery in both internal and external demand likely to slow down, GDP will grow only by 1.4% in 2011. These projections are made on the assumption that the crude oil price (CIF Japan) will stay at $85 per barrel on average for FY 2011, which is slightly above the current level.

Energy outlook for 2020/2011

1) Primary energy supply and final energy consumption

The total annual energy consumption in FY 2010 is estimated to increase by 2.8% from the previous year. Energy consumption in the industrial sector will grow by 3.9% in line with economic recovery, and that in the residential/commercial sector will rise by 2.6% mainly driven by the significant increase in space cooling due to the hot summer. In the transportation sector, it is also expected to increase by 1.1% for factors such as high temperature and more active movement of goods. The total primary energy supply (TPES), including the energy consumption in the transformation sector such as power generation, is estimated to grow by 4.1% from the previous year. Energy-originated CO_2 emissions will increase by 3.7%, reflecting the growth in energy consumption.

The final energy consumption in FY 2011 is forecast to decrease by 0.2% mainly due to fall in the demand for space cooling after the year of high demand, despite continued economic recovery. Energy consumption in the industrial sector will increase by 1.3% amid mild growth in production, while that in the transportation sector will decline by 2.4% primarily because of improvements in automotive fuel efficiency and transport efficiency. In the residential/commercial sector, energy consumption will decrease by 0.9% due to the impact of weather overcoming the recovery of service activities. The TPES is projected to decline by 0.1%, while CO_2 emissions will show a meager decrease of 0.8%; which are mainly attributable to the unusual weather in 2010 and the increase in nuclear power generation.

It should be noted that the above analysis does not take into account the policies currently being discussed, namely, Global Warming Tax, the mandatory purchase of all power generated by renewable energies, the domestic emissions trading system and changes to the expressway toll system.

2) Demand outlook by energy type

- Electricity sales for FY 2010 are estimated to increase by 5.4% from the previous year due to recovery in industrial production, fuel switching from oil and demand increase for space cooling. In FY 2011, the annual growth will be limited to 0.2% because a decline is expected in the residential/commercial sector under the easing impact of normal weather, and slower shift to electricity under milder economic recovery.

Table-1 Short-term Energy Outlook of Japan

		FY2008 (Actual)	FY2009 (Actual) 1st Half	FY2009 (Actual) 2nd Half	FY2009 (Actual) Total	FY2010 (Estimation) 1st Half	FY2010 (Estimation) 2nd Half	FY2010 (Estimation) Total	FY2011 (Forecast)
Economic Indicators	GDP (2000 price billion Yen)	**539,484** (-4.1)	**256,318** (-6.6)	**270,418** (2.1)	**526,735** (-2.4)	**267,554** (4.4)	**276,259** (2.2)	**543,812** (3.2)	**551,369** (1.4)
	Private Demand	**402,723** [-2.7]	**188,945**	**193,970**	**382,915** [-3.7]	**194,561**	**199,625**	**394,186** [2.3]	**400,850** [1.4]
	Public Demand	**116,011** [-0.2]	**58,453**	**63,440**	**121,893** [1.1]	**59,208**	**62,983**	**122,191** [0.1]	**121,898** [-0.2]
	Overseas Demand	**21,336** [-1.2]	**8,205**	**11,885**	**20,091** [0.3]	**13,501**	**13,209**	**26,710** [0.9]	**28,313** [0.1]
	Corporate Goods PI (2005=100)	**108.3** (3.2)	**102.9** (-6.9)	**102.3** (-3.5)	**102.6** (-5.2)	**102.9** (0.0)	**102.8** (0.5)	**102.9** (0.3)	**103.1** (0.2)
	CPI (2005=100)	**101.7** (1.1)	**100.5** (-1.6)	**99.6** (-1.6)	**100.0** (-1.6)	**99.6** (-0.9)	**98.9** (-0.7)	**99.2** (-0.8)	**98.6** (-0.7)
	IIP (2005=100)	**94.4** (-12.7)	**80.6** (-23.4)	**91.4** (9.3)	**86.0** (-9.0)	**94.3** (17.1)	**92.3** (1.0)	**93.3** (8.5)	**95.5** (2.4)
	Crude Steel (1,000t)	**105,500** (-13.2)	**43,329** (-29.6)	**53,119** (20.7)	**96,449** (-8.6)	**55,424** (27.9)	**54,634** (2.9)	**110,058** (14.1)	**111,909** (1.7)
	Ethylene (1,000t)	**6,520** (-13.7)	**3,514** (1.2)	**3,704** (21.5)	**7,219** (10.7)	**3,327** (-5.3)	**3,837** (3.6)	**7,165** (-0.8)	**7,359** (2.7)
	Exchange Rate (Yen/$)	**100.5** (-12.0)	**95.4** (-10.0)	**90.2** (-5.0)	**92.8** (-7.6)	**88.9** (-6.8)	**83.0** (-7.9)	**86.0** (-7.4)	**85.0** (-1.1)
	Crude Oil CIF ($/Bbl)	**89.9** (15.4)	**61.8** (-48.4)	**76.3** (27.1)	**69.1** (-23.2)	**78.6** (27.2)	**83.1** (8.8)	**80.9** (17.1)	**85.0** (5.1)
	Heating Degree day	**899** (-9.8)	**35** (-2.2)	**920** (6.6)	**955** (6.2)	**78** (124.1)	**946** (2.8)	**1,024** (7.2)	**979** (-4.4)
	Cooling Degree Day	**398** (-8.8)	**328** (-17.6)	**0** -	**329** (-17.5)	**559** (70.2)	**1** (217.5)	**560** (70.4)	**419** (-25.2)
Energy Indicators	Total Primary Energy (10^10kcal = KTOE)	**511,426** (-4.9)	**230,951** (-10.6)	**259,048** (2.3)	**489,999** (-4.2)	**249,040** (7.8)	**261,277** (0.9)	**510,317** (4.1)	**509,596** (-0.1)
	Final Energy Consumpt (10^10kcal = KTOE)	**338,952** (-6.4)	**153,196** (-8.6)	**176,227** (2.8)	**329,423** (-2.8)	**163,136** (6.5)	**175,650** (-0.3)	**338,786** (2.8)	**337,959** (-0.2)
	Industry	**160,461** (-8.9)	**72,686** (-13.5)	**82,166** (7.5)	**154,852** (-3.5)	**78,581** (8.1)	**82,374** (0.3)	**160,955** (3.9)	**162,979** (1.3)
	ResCom	**94,236** (-4.4)	**39,431** (-3.3)	**52,691** (-1.4)	**92,122** (-2.2)	**41,987** (6.5)	**52,519** (-0.3)	**94,506** (2.6)	**93,622** (-0.9)
	Transport	**84,255** (-3.6)	**41,079** (-3.8)	**41,370** (-0.5)	**82,449** (-2.1)	**42,568** (3.6)	**40,757** (-1.5)	**83,325** (1.1)	**81,359** (-2.4)
	Electricity (billion kWh)	**920.8** (-3.6)	**436.2** (-7.8)	**453.2** (1.2)	**889.4** (-3.4)	**476.2** (9.2)	**461.3** (1.8)	**937.5** (5.4)	**939.4** (0.2)
	City Gas (million cm/10,000kcal)	**34,505** (-3.9)	**15,299** (-8.5)	**18,539** (4.2)	**33,837** (-1.9)	**16,574** (8.3)	**18,758** (1.2)	**35,332** (4.4)	**36,098** (2.2)
	Petroleum Products (1,000kl)	**201,060** (-7.9)	**89,875** (-7.2)	**105,059** (0.8)	**194,934** (-3.0)	**91,755** (2.1)	**101,963** (-2.9)	**193,718** (-0.6)	**190,040** (-1.9)
	CO_2 (Energy source) (million t-CO_2)	**1,138** (-6.7)			**1,075** (-5.5)			**1,114** (3.7)	**1,106** (-0.8)
	(FY1990=100)	**107.4**			**101.5**			**105.2**	**104.4**

Source: Various Japanese statistics. Forecast is made by IEEJ.

Note: 1. Numbers in parentheses show annual growth rates, while those for GDP show contributions.

2. Sectoral GDP will not necessarily add up to the total.

3. Energy consumption of the industiral sector includes non-energy use.

Table-2 Outlook of Primary Energy Supply

	FY2008	FY2009 (Actual)			FY2010 (Estimation)			FY2011
	(Actual)	1st Half	2nd Half	Total	1st Half	2nd Half	Total	(Forecast)
Primary Energy Supply (10^10Kcal)								
Coal	**117,016** (-4.0)	**50,348** (-18.5)	**57,245** (3.7)	**107,593** (-8.1)	**57,101** (13.4)	**58,543** (2.3)	**115,644** (7.5)	**116,850** (1.0)
Oil	**223,573** (-8.1)	**97,259** (-11.4)	**112,371** (-1.2)	**209,630** (-6.2)	**99,872** (2.7)	**109,375** (-2.7)	**209,247** (-0.2)	**205,204** (-1.9)
Natural Gas	**92,686** (-0.3)	**42,272** (-9.0)	**47,987** (3.7)	**90,259** (-2.6)	**46,837** (10.8)	**50,802** (5.9)	**97,639** (8.2)	**98,022** (0.4)
Hydro	**16,797** (1.7)	**9,651** (-3.9)	**7,310** (8.2)	**16,961** (1.0)	**11,376** (17.9)	**6,878** (-5.9)	**18,254** (7.6)	**17,617** (-3.5)
Nuclear	**54,325** (-2.2)	**28,232** (6.3)	**30,644** (10.3)	**58,876** (8.4)	**30,253** (7.2)	**31,940** (4.2)	**62,193** (5.6)	**64,335** (3.4)
Others	**7,029** (-5.8)	**3,189** (-13.3)	**3,491** (4.2)	**6,680** (-5.0)	**3,601** (12.9)	**3,739** (7.1)	**7,340** (9.9)	**7,569** (3.1)
Total	**511,426** (-4.9)	**230,951** (-10.6)	**259,048** (2.3)	**489,999** (-4.2)	**249,040** (7.8)	**261,277** (0.9)	**510,317** (4.1)	**509,596** (-0.1)

- City gas sales in FY 2010 are estimated to grow by 4.4% from the previous year, reflecting the significant increase in industrial demand and greater demand for space cooling in the commercial/residential sector. Sales will expand by 2.2% in FY 2011, since a robust increase is forecast in the industrial and commercial demand, offsetting the negative weather factor.

- In FY 2010, petroleum products saw a continued major decline in demand primarily caused by fuel switching to electricity and city gas. However, their annual sales amounts are estimated to fall only by 0.6% from the previous year for factors such as economic recovery and slight growth in automotive fuel (gasoline and diesel gas oil) because of hot weather. In FY 2011, the downward trend is forecast to continue, with a 1.9% annual decline projected as a result of the progressing fuel switching, improved automotive fuel efficiency, and the disappearance of the weather factor.

3) Sensitivity Analysis on major factors

- In the case where the crude oil import price is $10 per barrel higher than the level assumed in the Reference Case, the real GDP growth rate will be 0.02% lower than the projected figure and the TPES 0.2% lower. Among demand sectors, the industrial sector will show a relatively large fall affected by economic slowdown. By energy source, the higher crude oil price will have a significant impact on demand for petroleum and city gas, while it will slightly increase electricity sales. This is because higher crude oil prices will make electricity relatively cheap, urging energy consumers to shift from kerosene heating to electric air conditioners and industrial users to purchase commercial power instead of using their own generation.

- If the real GDP growth rate is 1.0% lower than assumed in the Reference Case, the TPES will be 0.5% lower. Energy demand does not change as much as economic growth. The industrial sector will be affected more than any other sector. The impact will be felt most by city gas, for which industrial demand has grown in recent years.

- If the average temperature in summer (July to September) were 1°C higher than an average year, the TPES would go up by 0.3% per year. Among different sectors, the rise in demand will be greater in the business/commercial sector, which provides major demand for space cooling, while the increase will be relatively small in the household

sector. Demand will also go up in the transportation sector due to deterioration of fuel efficiency caused by the heavier use of car air conditioners. By energy source, electricity will show the largest increase, while city gas will show a small increase, although its sensitivity to the influence has grown these days with wider use of gas-fired space cooling systems.

- If the average temperature in winter (January to March) is 1°C lower than an average year, it will send the TPES 0.3% higher for the whole year. Among all the sectors, demand will significantly grow in the household sector due to greater demand for space heating and hot water supply, in contrast to the case assuming a hotter summer. In terms of energy sources, city gas and LPG will see a major increase in demand.

Energy Committee Highlights

Cabinet sets out policies to counter global warming

At the Ministerial Committee meeting on the Global Warming Issue called by Prime Minister Naoto Kan on December 28, decisions were made on the implementation policies of countering climate change, in light of the domestic debate on bill of the Basic Law for Prevention of Global Warming and the outcome of the COP16 meeting held in Cancun in December.

1) Domestic emissions trading scheme put on hold;

The meeting decided three major polices to counter global warming, based on discussions in various council meetings, vice ministerial meetings and the DPJ project team investigation as outlined below:

(1) Anti-global warming tax (environment tax)
An anti-global warming tax will be introduced from fiscal 2011 for the purpose of securing funds to implement CO2 emission mitigation measures.

(2) Feed-in tariffs for renewable energy
Policy to mandate purchase of all renewable energy generated electricity will be introduced from fiscal 2012. Measures to reduce burdens on power-intensive industries shall be considered upon implementation.

(3) Domestic emissions trading scheme
Introduction of a domestic emissions trading scheme will be carefully reconsidered. The mechanism should be further examined, particularly in relation to concerns regarding excessive interference to industries while encouraging money games.

Decisions were also made on other basic policies seeking to achieve the emission reduction targets by employing bilateral crediting schemes and reviewing specific actions on forest sink.

2) Petroleum and coal tax to be raised in fiscal 2011 to serve as environment tax

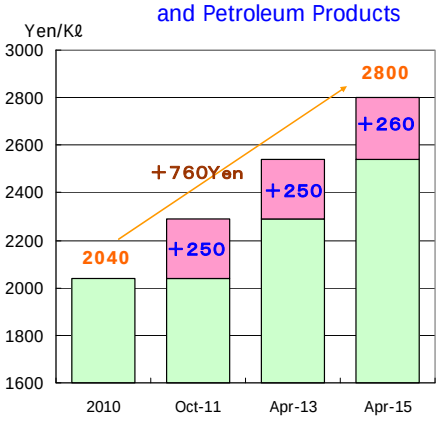
Prior to the ministerial meeting, on December 16, the Cabinet approved the tax reform outline, which underpinned the introduction of an environmental tax from fiscal 2011. It will be levied in the form of a 50 percent increase of the existing petroleum and coal tax. In avoidance of sharp increases in tax burden, its introduction will be phased over four years starting in October 2011, towards the goal of increasing tax revenues by approximately 240 billion Yen.

The increased tax rates are calculated as an additional 300 yen per ton of CO_2, and reflect different emissions from respective energy sources. An additional 760 yen will be imposed per kiloliter of crude oil and petroleum products (current rate: 2,040 yen per kiloliter); 780 yen per

ton of LNG and LPG(1,080 yen per ton); and 670 yen per ton of coal (700 yen per ton). The tax revenue will be incorporated into the energy resources special account to be allocated for energy conservation / efficiency measures and renewable energy-related measures. With no prospects for new fiscal resources to replace approximately 2.5 trillion yen, the on-going provisional tax rates on gasoline and diesel gas oil will be maintained, despite the DPJ pledges to abolish them in its manifesto.

Plans to launch a domestic emissions trading scheme in 2013 were shelved with the freezing of discussions on its introduction, based on a proposal from the DPJ project team that "it should be discerned how much burden should be imposed on industry, how the preceding domestic measures would be effective, and how much progress would be made on an international framework in which all major economies should participate."

Petroleum/Coal Tax on Crude Oil and Petroleum Products



Some sections of the bill of the Basic Law for Prevention of Global Warming will be revised to incorporate the above decisions. The bill, stipulating the national target to reduce CO_2 emissions by 25 percent compared to the 1990 levels in 2020, will be put before lawmakers again after two consecutive abolitions in Diet deliberations.

At the ministerial meeting, Prime Minister Naoto Kan revealed that Japan would encourage the international community to employ per capita CO_2 emissions as national reduction targets. Reports say that Prime Minister Kan believes that under the Kyoto method of allocating national reduction obligations, the equitability of reduction allocations is difficult to judge, and unclear to the general public. On January 7, Vice Minister Minamikawa of the Ministry of the Environment stated in his inaugural press conference that "multilateral negotiations preparing for the COP17 meeting to be held in South Africa will be focused on establishing a new legal framework (to replace the Kyoto Protocol)" and that he wished to "endeavor to present to the world Japan's contribution" towards the formulation of a post-Kyoto framework.

Energy News in Japan & Asia

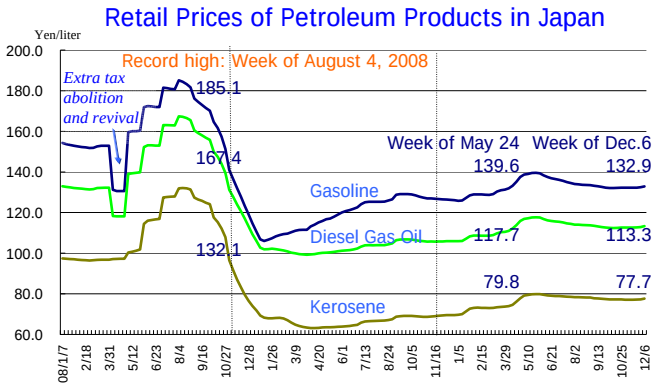
Retail margin of petroleum products deteriorated in 2010

According to the survey by the Oil Information Center of IEEJ, retail margin of petroleum products in the Japanese oil market deteriorated in 2010. Facing severe market competition, Japanese oil companies shifted their wholesale pricing system in October 2008 from a crude oil cost-based monthly pricing to a market-linked formula on a weekly basis. However, as the domestic market continued to be sluggish, oil companies suffered significant losses in the fiscal year 2009.

In April 2010, these companies began to reform the pricing system by adding "brand fees." This, together with capacity cut down, has substantially improved earnings of oil companies in the first half of fiscal 2010. But improvements were limited within the refining margins without bringing any corresponding rises in retail margins, thus keeping retailers' earnings at a deteriorated level.

The WTI futures remained in the narrow range of $70–80/barrel before an abrupt rise to $85–90/barrel in December. In Japan, the average gasoline retail price rose moderately from January 2010 and peaked at 139.6 yen per liter in late May. Then it slowly fell over a period

before turning upwards in the second half of November. As of December 6, gasoline price stood at 132.9 yen per liter. Kerosene and diesel oil prices moved more or less in line with gasoline prices. More precisely, however, the price decline from peak to bottom in 2010 was much wider for gasoline at 6.7 yen per liter compared with 2.1 yen for kerosene and 4.4 yen for diesel oil, showing that gasoline is exposed to more intense retail competition.



The supply/demand balance of petroleum products was relatively tight in the first half of 2010 because of a cold wave in April and large-scale refinery shut-downs for maintenance in May and June. Then came the summer with record-high temperatures. Continued holiday discounts on the expressway toll as well as robust eco-vehicle sales before termination of the promotion subsidy boosted demand for gasoline and diesel oil. However, the incremental demand was brought by one-time factors rather than any full-fledged economic recovery. The underlying demand trend for petroleum products remained sluggish in the background. To cope with this, oil companies are reducing refining capacity. They also aim at better penetration of the reformed pricing system, which is becoming increasingly controversial.

The Oil Information Center views that the upward movement of crude oil prices forebodes future moderate rises in gasoline, kerosene and diesel oil prices in the future. Among others, kerosene prices are now entering a heating season and dependent heavily on weather conditions, while colder-than-usual winter is being experienced elsewhere in Japan this year.

Novel ship designs by IHI to reduce GHG by 30%

IHI Marine United Inc. (IHIMU), a shipbuilding subsidiary of IHI Corporation, announced on December 2, 2010 that the company completed conceptual designs for an energy-saving tanker and a bulk carrier that can reduce up to 30% of energy consumption compared with conventional vessels.

Dubbed "eFuture Series", the design employs a unique "whale-back" shape with an inwardly inclined bow flare to reduce wave and wind resistances, as well as a proprietary propulsion system based on advanced double reverse revolution propellers to significantly improve propulsive performance. Earlier on, IHIMU had completed a design for a container vessel with the same concept.

In addition to the special propulsion system as above, the new design also adopts a semi-circular duct and a rudder bulb specially developed to improve the propulsive efficiency. Furthermore, the conventional single unit slow-speed engine has been replaced with smaller, twin high-speed engines to save engine room space as well as fuel consumption by 17%. For the generation unit to power various facilities, a combination of a steam turbine and an exhaust gas turbine are installed to recover and reuse the exhaust gas and heat from the main engines. In addition, a shaft generator system and a motor are also equipped to utilize any surplus power for propulsion, thereby to achieve an additional 11% in energy conservation. The whale-back bow and other technologies are expected to yield 2% or so of energy saving. The IHIMU managing Director, Yoshio Otagaki, said the company would keep on with its effort to develop products and technologies that lead to a reduced environmental footprint including a view to actual application to existing orders in stock.

APERC Letter

APEC Peer Review on Energy Efficiency (PREE) in Chinese Taipei

The Peer Review on Energy Efficiency (PREE) for Chinese Taipei received approval by the APEC Energy Working Group (EWG) in late November 2010. The work was carried out by a Review Team of experts from member economies and international institutions jointly selected by the host economy and APERC, conducting interviews with a range of people knowledgeable of energy efficiency issues in the host economy. Besides Chinese Taipei, PREEs have been conducted in New Zealand, Chile, Viet Nam, Thailand, Peru, and Malaysia.

Nine experts of the review team conducted PREE in Chinese Taipei from 22 to 27 August 2010. They reported that Chinese Taipei has robust policies, programs, laws and action plans, which align objectives of improving energy efficiency with broader goals such as economic growth, economic productivity, energy security and de-carbonisation of the economy. However, the team realizes that it lacks a "strategy" that should formulate operational programs and action plans coherent with the existing framework specifying responsibilities of agencies to achieve certain actions by certain dates.

Chinese Taipei recently announced bold targets of decreasing energy intensity, annual energy efficiency improvement and carbon emissions reduction. While these targets are set out for the economy as a whole, the Review Team suggests that it is more practicable and effective if targets for energy intensity or efficiency improvement are more specifically set out for certain sectors or sub-sectors. As a part of these efforts, appropriate indicators should be developed to enable monitoring and assessment of progress of policies and measures.

A key observation of the Review Team is that energy prices in Chinese Taipei, particularly electricity tariff, are very low, or arguably "too low" to provide an adequate incentive for households and businesses to use them more efficiently. To improve energy efficiency, an economy-wide pricing policy, for example an energy or carbon tax or emissions trading scheme, needs to be introduced in Chinese Taipei, which would internalize externality costs incurred for production, transmission and use of energy.

The final report of the PREE for Chinese Taipei is available at http://www.ieej.or.jp/aperc/PREE.html.

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