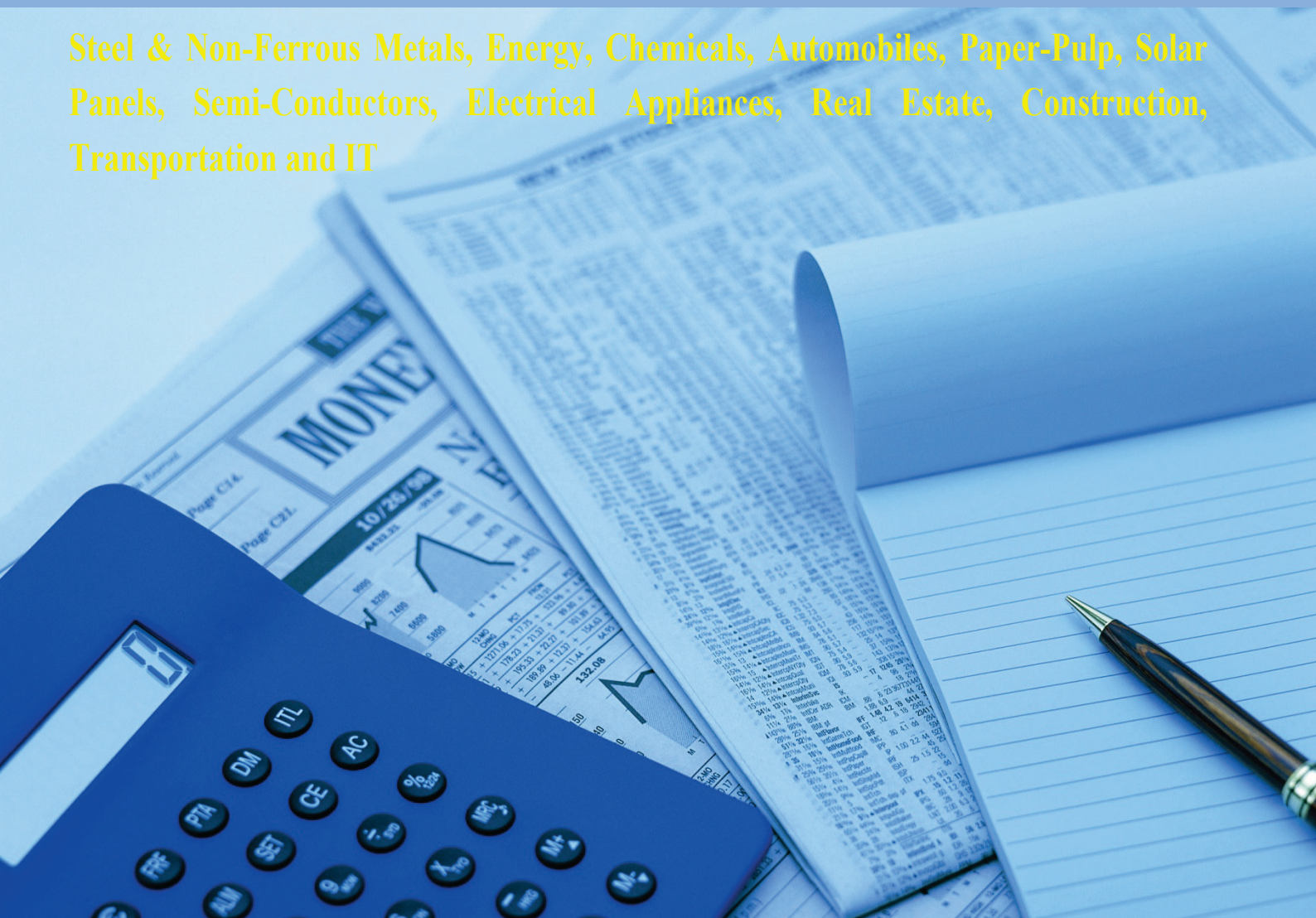


Analyses of Japanese Business & Environmental Policies

~ From Interviews with Top Securities Analysts ~

Steel & Non-Ferrous Metals, Energy, Chemicals, Automobiles, Paper-Pulp, Solar Panels, Semi-Conductors, Electrical Appliances, Real Estate, Construction, Transportation and IT



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**Steel & Non-Ferrous Metals, Energy, Chemicals, Automobiles, Paper-Pulp, Solar Panels,
Semi-Conductors, Electrical appliances, Real Estate, Construction, Transportation and IT**

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Climate Change Group

Institute for Global Environmental Strategies (IGES)

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Table of Contents

Preface	1
Interview Team.....	2
Executive Summary.....	3
Author's Remarks.....	6
Analyses of Sectors	
【Steel and Non-ferrous Metals】 Atsushi Yamaguchi/ UBS	9
【Energy】 Reiji Ogino/ Mitsubishi UFJ Morgan Stanley	21
【Chemicals】 Name Withheld on Request/ Foreign Securities Co.	31
【Automobile】 Tatsuo Yoshida/ UBS.....	38
【Paper/Pulp and Glass Sectors】 Hiroyuki Okaseri/ Mitsubishi UFJ Morgan Stanley.	47
Reference	
Reference 1: List of Questions to Securities Analysts.....	54
Reference 2: List of Companies Covered by the Interviewed Securities Analysts.....	56

Preface

Securities analysts are professionals at securities companies who analyse the capital markets and individual listed securities, and provide investment recommendations to investors. They typically belong to a research department or another similar department of a securities company. Although they belong to securities firms, securities analysts maintain a neutral position to make investment recommendations, as they are required to evaluate markets and companies from investors' standpoints. They analyse various types of information and make investment evaluations based on their highly specialised analytical skills, and such investment analyses and evaluations strongly influence investors and other market players. Investors and other market participants expect securities analysts to have in-depth knowledge and high-quality investment evaluations on individual stocks. Reflecting such demand, some security analysts have extensive work experience at companies in their fields. Moreover, securities analysts are ranked annually by several companies such as The NIKKEI VERITAS, based on voting by institutional investors.

In this series of interviews, the interview team spoke with top-ranking or top-class analysts in accordance with the 2010 Analyst Ranking according to The NIKKEI VERITAS. On this occasion, I would like to express my gratitude to all the analysts for taking time for interviews in their extremely busy schedules and for agreeing to make this report public.

This series of interviews was conducted to incorporate broad opinions into Japan's measures to deal with climate change and to help ensure that Japanese policies and measures are efficient and effective. The contents of the interviews have been discussed at several working groups such as "macro framework" and "monozukuri (manufacturing)" of the Medium- and Long-term Roadmap Subcommittee, of the Earth Environment Committee of the Central Environment Council at the Ministry of the Environment. Then, the contents of discussion will ultimately be reported to Mr. Ryu Matsumoto, the Minister of the Environment, via the Central Environment Council. I sincerely hope that the insights obtained from this series of interviews will be reflected in Japan's future environmental policies, and this will also trigger a constructive dialogue among the Ministry of the Environment, industries, and the financial sector for promoting the greening of the economy and finance.

Lastly, I would like to express my sincere gratitude to the officers of the Ministry of the Environment and those of the National Institute for Environmental Studies for supporting the purpose of this interview, becoming cooperatively involved in the interviews, and giving me constructive advice. I also would like to offer my heartfelt gratitude to Mr. Shuzo Nishioka, the Chair of the Medium- and Long-term Roadmap Subcommittee for having invited me to the meetings of the subcommittee.

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Institute for Global Environmental Strategies

Nagisa Ishinabe

Interview Team

This series of interviews was conducted by the following members.

Name	Professional Affiliation
Sei KATO	Deputy Director Climate Change Policy Division, Global Environment Bureau, Ministry of the Environment, Government of Japan
Teruya SARUTA	Deputy Director Environment and Economy Division, Environmental Policy Bureau Ministry of the Environment, Government of Japan
Takaharu SATO	Researcher Environment and Economy Division, Environmental Policy Bureau Ministry of the Environment, Government of Japan
Toshihiko MASUI	Chief Integrated Assessment Section Social and Environmental Systems Division National Institute for Environmental Studies
Junichi FUJINO	Senior Researcher Climate Policy Assessment Section Center for Global Environmental Research National Institute for Environmental Studies
Jusen ASUKA	Director Climate Change Group Institute for Global Environmental Strategies
Nagisa ISHINABE	Researcher Climate Change Group Institute for Global Environmental Strategies

Executive Summary

This report summarises the interviews conducted by the Ministry of the Environment, the National Institute for Environment Studies (NIES), and the Institute for Global Environmental Strategies (IGES) to obtain opinions and insights from twelve top-ranked or top-class analysts covering the following sixteen industrial sectors: steel and non-ferrous metals, energy, chemicals, automobiles, paper and pulp, glass, solar panels, semi-conductors, home electronics, AV equipment, real estate, construction, transportation, IT services and computer software. There were four main aspects covered by this series of interviews: (1) current business situations and medium to long-term perspectives of the Japanese industries, (2) international competitiveness of Japanese companies, and the possibility of carbon leakage and cost-transfer, (3) a degree of penetration of environmental management, corporate efforts to visualise reductions in CO₂ emissions and to fight against global warming, as well as the reaction of investors to these corporate environmentally-friendly activities, and (4) Japan's measures against global warming such as environmental taxes, emissions trading, the basic law for the prevention of global warming and the BOJ's recent efforts to stimulate green growth.

Regarding current business situations and medium to long-term perspectives of Japanese industries, many analysts have expressed a wistful resentment towards Japanese companies not being able to provide desired goods and services in emerging markets where demands are growing at a remarkable pace. From the viewpoint of securities analysts, many companies are having a hard time keeping up with current business trends, while boasting of their advanced technologies and excellent service capacity. Top management with leadership and employees with creativity and a spirit of commitment and competition, are missing from Japanese companies to create new business opportunities abroad. Japanese companies need drastic reorganisation and restructuring to overcome this harmful situation. Companies should also concentrate their human and financial resources on selected business lines, so that they can increase their price competitiveness through technological innovation, secure an investment capacity to benefit from a scale-merit, and maintain competitiveness in doing business internationally.

Due to intense competition with foreign companies, Japanese companies are losing their dominance in several sectors such as steel, chemicals, automobiles, semiconductors - all of which must compete in the global market. And yet, domestic sectors such as real estate, construction and transportation are also being forced to seek business opportunities abroad as a source of growth since domestic demand has been declining due to demographic changes and a decline in the attractiveness of Japan as a nation. However, even if Japanese companies make inroads into overseas markets, there has been a spate of failures due to the lack of business experience abroad. In addition, many experts in policy-reliant sectors, such as energy and solar panels, have voiced their concerns over the fragile framework of Japanese renewable energy policies. From their view-point, the current Japanese policy makes the Japanese solar market available to foreign companies, allowing them to dominate the market. This is because Japanese companies have not gained enough competitiveness in the market, and those foreign companies which enter the Japanese market already have gained competitiveness in price and technologies, that were developed in their homeland.

Cost-transfer is generally feasible in the steel sector, where unique technologies and a high level of competitiveness are maintained, especially in the domestic market. The energy sector has a fuel cost adjustment system by law, as well as the air transport/marine transport/air freight sectors where a fuel surcharge system has been put into practice. The cost price sliding scale method has been introduced to the construction sector, although its application has so far been limited to some projects. Cost transfer is also possible in the paper and pulp sector (the cardboard sub-sector) where

there are no imported products; and the glass industry sector, which is based on local production for local consumption in the light of the difficulty of transportation, despite its status as a global industry. However, in the sectors of automobiles, chemicals, paper and pulp (printed paper), solar cells, home electronics, real estate, and land transportation (trucking), it seems extremely difficult to pass the higher costs of raw materials ultimately on to consumers under the present circumstances in which there is not only a strong deflationary trend, but also severe price competition with foreign companies.

Carbon leakage will not occur in the domestic demand-oriented industry sectors such as energy, real estate, construction and transportation. In addition, it will not easily occur in the IT service sector where there is a prevailing business model that domestic companies have advantages in providing clients with solutions; the semiconductor and solar cell production equipment manufacturing sectors that have a basic policy of maintaining domestic production even if this results in higher costs; and the cardboard sub-sector where there is a prevailing business model of recycling resources domestically. However, there is a possibility of carbon leakage occurring in the sectors of steel, chemicals and automobiles, all of which will be strongly affected by carbon constraints, as well as in the home electronics sector where overseas OEM production has been promoted for years.

Environmental management as well as measures to combat global warming and efforts to visualize CO₂ reductions are all penetrating various sectors. However, under the current conditions, no kinds of environmental or socially responsible corporate activities are considered key factors influencing stock prices, since most investors are more directly interested in corporate profit-earning capacity and growth potential. For this reason, the majority of investors and security analysts hardly spend any time reading environmental or sustainability reports. In fact, two securities analysts, one covering the chemicals sector and the other covering the home electronics sector, have written reports on the impact of carbon constraints in those respective sectors, but investors did not seem to take any particular notice of forecasts regarding greenhouse gas reduction costs and their impact on earnings. Both Eco-funds and Social Responsibility Investments (SRIs) are considered an extremely minor presence, accounting for less than 1% of total investment funds in the market. Their influence is not strong enough to change the nature of the financial industry or the valuation methods. Some analysts expressed opinions that it is necessary for the prevention of confusion in the information or evaluation criteria to unify the form of sustainability reports and clarify the comparison criteria in order to popularize SRIs in future.

When comparing environmental taxes and the emissions trading system, environmental taxes tend to be preferred. The main cited reasons for this preference are: (1) The amount of environment taxes is predictable and there is no risk of a transaction failure; (2) As with the consumption tax, environmental taxes will be booked as just a new form of national taxation. In addition, in the event of the failure of any carbon credit transaction, the party in charge has no accountability to the shareholders and other stakeholders; and (3) As for the emissions trading system, there are many troublesome issues to be resolved, including transaction price setting and clarification of the responsible departments or divisions within a company. In contrast, environmental taxes will allow the existing management style to be maintained. With regard to national border tax adjustments for environmental taxes, most of our interviewees expressed a negative view since the adjustments might trigger greater international restrictions on the Japanese economy, which has no other choice but to rely on international trade. The majority opinion was that Japan should absolutely collaborate with foreign countries (especially with the United States and Europe).

Japan's policies and measures need to be sharp and dynamic enough to clearly convey the government's will and intention and also need to be economically rational enough to clarify the risks and returns. These characteristics are essential for the creation of new industries and markets, and regaining the force of Japanese stock. In order to maintain the competitive advantage of Japanese manufacturing into the future, consistent policies and a long-term commitment are

essential so that long-term R&D efforts can be rewarded. Some analysts have voiced the opinion that policies should be adopted in such a manner as to promote self-sustaining technology development in competitive markets. According to these analysts, any specific technological component should not be overly valued, since policy-reliant technology often stays in a half-baked state. In addition, synergistic collaboration among the industry, academia and government has been anticipated by several analysts who recognise that the adoption of many policies has demonstrated little understanding of their impact on business so far.

With regard to the Basic Law for the Prevention of Global Warming, only a few analysts knew of its existence or the contents in the first place. Even if the scope is expanded to entire industries, only a fairly limited number of people have come to understand the contents. Thus the level of recognition of this law must be said to be very limited. As for the BOJ's new loan programme for the environmental and energy fields, the industrial world has shown a mixed response as follows: Some industry sectors such as solar cells and semiconductors have shown their appreciation for the new loan programme, while some other industry sectors such as chemicals, construction and home electronics point out that what Japanese companies need under this climate of interest rates that are already extremely low is not yet another new low-interest loan scheme, but business opportunities. In contrast to these low-interest schemes that affect only the bottom line, some have voiced the need for policies that can drive growth in top-line items such as sales and market share. Still others have asserted that for the sake of promoting innovative corporate activities in the environmental field, the Japanese government should set up sovereign wealth funds to enable the government itself to inject capital or equity into companies, just as the Chinese and Singapore governments do.

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Author's Remarks

Similar interviews have been conducted by the Emissions Trading Subcommittee and the Mid- & Long-term Roadmap Subcommittee of the Central Environment Council at the Ministry of Environment, etc., with industry groups and individual companies. The additional value of this series of interviews is that this has made it possible to listen to neutral opinions free from any self-interest or the vested interests of any one company or industrial group and the evaluation of Japanese companies in the capital markets.

The neutrality of securities analysts' opinions is assured by the organisational structure in which securities analysts maintain their independence from the Investment Banking Department¹ and any other departments that are involved with corporate clients, and also due to the analyst-evaluation system. Top securities analysts have hundreds of meetings annually with investors in Japan and abroad, and they convey the business conditions, strategies and investment recommendations of individual companies both at home and abroad. In this way, they are in a position to form an opinion of the state of the capital market. I used to be an investment banker, and in those days, I witnessed situations in which the opinions of top analysts or their evaluations influenced investor behaviour and determined stock prices in the capital market on occasions such as initial public offerings (IPOs). Through this experience, I have realised their strong influence over the capital market. The opinions of top securities analysts mirror the voice of the capital market and investors.

The capital market tends to be criticised as being influenced by short-term profits. Yet the reality is that companies are all evaluated under the same environment, and both stocks and bonds are traded day after day. I believe that Japan's current condition in terms of its society, economy, international competitiveness and employment can be seen through interviews with securities analysts and that these revelations can serve as a reference for the Japanese government to seek a good balance between the environment and the economy when deciding on the national policies.

This series of interviews has revealed that there are double or triple dilemmas that make it very difficult for both the government and companies to take action to build a low-carbon society in Japan, even though they desire to move so. As expected, the vicious cycle of politics and economics can be cited as one of the greatest challenges. How is it possible for companies to take the initiative when the government does not take action? The answer is that only a few companies have the financial capacity, human resources or guts to dare do so. Take the smart grid for example. There is no reason for electric power companies to aggressively invest in this next-generation power network, because this investment will not result in anything except a new cost factor under current circumstances in which policies related to renewable energy are not yet in the final stage of formulation. Will Japanese IT companies then be able to take the same initiatives as US-based Google Inc. and Microsoft Corporation? The answer is that it will be difficult, given the fact that Japanese companies are in general less profitable and their financing is worse. Besides, the matter is not confined to capital strength. In a typical Japanese IT company where a solutions department is not separated from a hardware department, both the power of ideas and mobility are organisationally depleted. This situation is leading to the loss of excellent human resources and a further decline in earnings. And these problems are not limited to the smart grid.

¹ The Investment Banking Department refers to a department that provides advice on corporate mergers and acquisitions (M&A) or stock/bond issuances. This department's professional staff members are called investment bankers. Meanwhile, security analysts belong to the Research Department. As a firewall exists between the Investment Banking Department and the Research Department, it is usually impossible for investment bankers and security analysts to contact each other.

Next-generation vehicles such as hybrid and electric cars are essential to the construction of a low-carbon society. Under current conditions, however, the profitability of next-generation vehicles is extremely low because Japanese automakers have set their sales prices on the basis of affordable price levels from the viewpoint of the consumers. In addition, these models can hardly be described as selling well around the world, as the purchaser segment is concentrated on certain car enthusiasts in Japan, the US and Europe. Under these circumstances, if automakers try to increase R&D expenditures and sales volume for next-generation vehicles, investors in the capital market will consider these efforts by manufacturers as an excessive investment in a low-profit business and as a result their stocks will be sold. Therefore, if automakers, whose business operations are on a global scale, are forced to adopt a business model that is not effective on the world stage, the transfer of Japanese company operations to foreign countries will be accelerated. In a situation where corporate production models that sell well differ from the models required for the sake of environment, should Japan adopt a universal standard or establish an advanced standard to lead the world? Being unable to answer this question, the Japanese government has not yet adopted any assertive policies under the propositions that domestic employment should be maintained and a low-carbon society established.

This problem is not limited to next-generation vehicles, but a similar problem is seen in the case of carbon fiber. Carbon fiber is a type of new raw material that can be used as a substitute for steel and thus has the potential to contribute to weight savings in the manufacture of automobiles. Carbon fiber may also provide chemical and raw material manufacturers with new business opportunities. If an automotive weight saving policy is rigorously promoted, the relevant R&D process will be accelerated and the practical use of carbon fiber in ordinary vehicles will also be advanced. However, few people expect that such a rigorous standard is likely to be introduced in Japan ahead of Europe. As a result, the willingness of the chemical and raw materials industries to invest remains at a level concomitant to the current conditions, as does the pace of technological innovation.

The tides of global business and money as well as climate change are global phenomena that no one company and no one country alone is unable to cope with. This global landscape has made it more difficult for Japan to strike a balance between the environment and the nation's economy. Consensus in the international community is essential in order to cope with the global capital market and climate change issues. And yet it seems to me that, as of now, the first thing that Japan needs to do is to have an organic dialogue between the government and the industrial world in order to strike a balance between the environment and the economy. Companies and industry groups do not necessarily take a positive stance or express constructive opinions at committees in the Ministry of Environment and the like. On the flip side, the Ministry of Environment can be said to be somewhat insensitive to the actual conditions in which companies are torn between the capital market and government policies, being tossed up and down and worn out.

As an example, take the transfer of technology to Asia in the steel sector. The steel sector has reportedly been providing several Asian nations, including China, with iron and steel-making technology through the framework of the Asia-Pacific Partnership on Clean Development and Climate. However, these kinds of activities are not appreciated in the capital market because, from the viewpoint of investors, the Japanese steel makers are themselves causing a decline in competitiveness by transferring their technology to cost-competitive Asian nations. Adding insult to injury, the steel sector remains firmly opposed to their obligations to reduce greenhouse gas emissions within Japan and exhibits such defiant behaviour in the Ministry's committees. This is the reason why even the Ministry of Environment hardly recognises the steel sector's aspirations behind these activities, that is to say they wish to be trusted and well-respected in the environmental field as a result of their transfer of environmentally beneficial technologies.

I believe that policies need to have the capability to influence companies through markets based on a thorough knowledge of the principles of action in the capital market in order to ameliorate their dilemmas and promote more constructive action. Only a convincing story influences the capital markets. If it were not for attractive growth prospects that can appeal to investors, money would flow out and the companies would fall into decay. From the viewpoint of security analysts, the outlook for Japanese industries is not necessarily bright. However, this does not mean there is no hope. The

Japanese government is strongly urged to propose and implement a clear vision and dynamic and easily understandable strategies that can influence the markets. Meanwhile, Japanese companies are strongly urged to break from the past and acquire future-oriented insights.

These social and corporate advancements in both consciousness and strategies will not be achieved in a short time or by a small number of volunteers. From now onward, it is essential for each citizen to consider the current conditions of their own national government and companies as well as the inevitable climate change issues; discuss with other citizens as to what kind of nation, society and environment they want to leave to the next generation; and influence politics and economics. This report was written for a large readership. I will be happy if this report reaches as many people as possible if only to a limited extent, and if the contents serve as a reference when measures for politics, economics and climate change issues are being discussed.

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Steel and Non-ferrous Metals

Atsushi Yamaguchi/ UBS

The Steel Industry and the Environment

- ✓ Japanese steel makers, especially Nippon Steel Corporation, have been working on environmental issues with a high sense of mission, partly because they take pride in having assumed national policy industry status through the ages. From the viewpoint of the capital markets and investors, these manufacturers have made unnecessary or unprofitable investments in the environmental field. In fact, in some cases they have received negative criticism from investors for making excessive investments in an unprofitable division. Even under these circumstances, steel makers have been developing technology to reduce the environmental load as much as possible, and they have been promoting investments in energy conservation even though these may be unprofitable, with the hope that they will be trusted and well-respected in the environmental field. Such efforts should be praised. Nevertheless, both global warming and climate change have actually continued, and it is also true that steel makers emit a large amount of CO₂ during their manufacturing process. Therefore, it is essential for the steel sector to work on some sort of measures to reduce CO₂ emissions jointly with the Japanese government or the Ministry of the Environment. If steel makers are not engaged in a constructive dialogue with the Ministry of the Environment, such inaction will penalise the steel sector as well as Japan as a whole.
- ✓ When former Prime Minister Hatoyama announced the 25% carbon reduction target by 2020, the steel sector was greatly startled by his pledge. Once a blast furnace is fired up, the operation lasts for at least 20 years. A 15 ~ 20% carbon reduction could be achieved by 2050, if the following actions are taken: (1) end-of-life, old-type facilities are sequentially replaced with cutting-edge facilities such as the next-generation coke oven called Scope 21¹; (2) the use of scrap iron is promoted; (3) the manufacturing process is improved; and (4) research and development of a melting and smelting reduction furnace are promoted and the deliverables gain widespread use. However, the 25% carbon reduction target by 2020 seems to be extremely difficult to achieve, unless innovative technology is introduced or blast furnaces are totally shut down. It costs about JPY1 trillion to construct a blast furnace-coherent steel mill. In addition, the closing of a coherent steel mill has an adverse impact on the employees of affiliated companies and their families. In this sense, such closures would mean the destruction of a steel manufacturing community. The Japanese government is being called on to implement policies and measures that strike a balance between the industry and the environment, for the sake of protecting jobs, among other reasons. On the other hand, under the current circumstances where the national income has kept falling, it is also fully understandable that the Japanese government faces difficulties in implementing tax cuts, research grants and other measures that require financial resources. The solutions will not be found easily, but this is an extremely important challenge upon which the existence of the Japanese steel industry depends. As a result of this hearing, I myself would like to give serious consideration to this problem and propose my ideas to the Japanese government.

¹ Scope 21 refers to technology that enhances the properties of coke and triples productivity by reforming coal through rapid pre-heating treatment at a high temperature. The first commercial model has been introduced at the Oita Works of Nippon Steel Corporation, and the second model is now planned to be introduced at the Nagoya Works.

Potential for the Reduction of CO₂ Emissions in the Steel Sector

- ✓ Highly feasible action or technologies for the steel sector to reduce CO₂ include (1) the development and manufacturing of low environmental load-type coke ovens as represented by Scope 21, (2) the use of scrap iron, (3) improvements in energy efficiency during the steel manufacturing process, (4) the development and use of ITmk3² and other types of the melting and smelting reduction furnaces³, and (5) the development and use of the carbon capture and storage (CCS). Environment-responsive technologies can also be said to be cost-reducing technologies. Therefore, aging facilities and equipment should be sequentially replaced with cutting-edge ones.
- ✓ Coal is an abundant energy source that can be extracted around the world, and its use will be continuously promoted. For this reason, I believe that methods of producing and utilizing coke, which does not generate as much CO₂, should be proactively researched and developed. With regard to scrap iron, the scrap generated within a plant (return scrap) can be identified as to its chemical content and can thus be directly put into a blast furnace and recycled without any difficulty. But scrap purchased from outside often contains impurities. In particular, scrap iron from automobiles contains copper, which oxidizes steel, and thus this scrap iron should not be directly put into a converter furnace. Accordingly, blast-furnace steel makers will require technological innovation and capital investment in order to effectively utilize scrap iron that contains impurities. Despite such time-consuming issues, scrap iron is a precious resource, and it should be recycled here in Japan. To this end, we must redress the current situation whereby nearly 10 million tons of scrap iron are exported to Asian nations, including China. As for CCS, I have hope for the future advancement of this technology.

Carbon Fiber

- ✓ Carbon fiber poses a great threat to steel. At present, this fiber is so expensive that its practical application in ordinary vehicles is hardly feasible, but if the price level falls at some time in the future, the demand for carbon fiber will surely increase, given its characteristics of light weight, high-temperature resistance and ease of processing.

Blast Furnaces vs. Electric Furnaces

- ✓ Steel manufactured using electric furnaces is primarily used as a building material. H-section steel beams and the like can also be theoretically manufactured by electric furnaces. However, in reality many electric furnace steel makers produce only a limited range of types of steel to avoid having their products overlap with blast furnace steel makers, since the former are smaller than the latter in terms of the capacity and they are also under the umbrella of the latter. In addition, few electric furnace steel makers have a financial capacity and management structure that is powerful enough to boldly become involved in the manufacturing of blast furnace steel. Therefore, unlike in the US, it is

² ITmk3 refers to technology that enables high-end steel to be manufactured using low-grade ore and steam coal, instead of coke, in a short period of time. This technology is expected to replace the blast furnace process as the third generation steel manufacturing process. It has been developed by Kobe Steel, Ltd., and its first commercial model plant is under construction in Minnesota, US.

³ The melting and smelting reduction furnace refers to a type of technology that can utilize low-grade iron ore in powder form and use untapped energy resources (biomass, general waste, low-quality coal, peat, and waste plastic, etc.) that have so far been unused and discarded. It is also a technological alternative to the smelting furnace. This technology was actively developed in Japan and elsewhere in the 1990s, but thereafter its development has been wound down. In recent years, however, this technology has been attracting attention again in the wake of the growing awareness of environmental issues.

considered to be extremely difficult for electric furnace steel makers to drive out blast furnace steel makers in Japan.

- ✓ Among electric furnace steel makers, Tokyo Steel is the only one that has been successfully manufacturing some blast furnace steel products. But this case can be said to be extremely rare in Japan. Tokyo Steel is an independent company with good financial standing. The top executive is a free-thinker and attracts first-class human resources and the company has high growth potential. However, it is unlikely that Tokyo Steel will acquire any electric furnace steel maker and spearhead any intra-sector reorganization, at least for a while, since the management does not seem to be embracing the idea of promoting M&A within the sector or pursuing the expansion of its scale of operations.
- ✓ Tokyo Steel constructed a thin steel sheet plant, and this new domestic plant started running at full production in the current term. Blast furnace steel makers might not be able to set higher prices than those set by Tokyo Steel if the price level of iron scrap falls below the cost of pig iron as it does now.
- ✓ The proportion of electric furnace steel makers is higher in foreign countries than in Japan. Taking the US for example, this situation reflects the harsh reality that US-based blast furnace steel makers have faced. Under the strong influence of their labor unions, their pension liabilities and other labour costs continue to increase, which has meant that American blast furnace steel makers are unable to invest in cutting-edge facilities and technologies. This insufficient capital investment has resulted in the erosion of their competitiveness. However, their lobbying campaigns have succeeded in obtaining from the US government a protective trade policy in favour of steel products. As a result, they have been running their businesses complacently and lack any sense of crisis. Meanwhile, electric furnace steel makers started to use inexpensive iron scrap, have promoted technological innovation and drastically cut waste to create an efficient earnings structure. Consequently, blast furnace steel makers have lost market share to electric furnace steel makers. On the other hand, Japanese blast furnace steel makers have been making continuous capital investments and maintained their competitiveness. At the same time, they have been attracting first-class talent, while working hard to continuously improve their competitiveness and technological competence through friendly competition. As a result, no adverse changes in their market share have occurred. In addition, competition with foreign steel makers has intensified due to the appreciation of the yen, which has made a substantial increase in productivity essential. As a result, Japanese steel makers have made greater progress in energy savings compared to American and other foreign counterparts.

Technology Transfer to Asia

- ✓ The steel sector has been providing several Asian nations including China with iron-making technology through the framework of the Asia-Pacific Partnership on Clean Development and Climate. However, some investors negatively interpret this type of corporate activity as self-depreciating, since, from the viewpoint of these investors, Japanese steel makers are causing a decline in competitiveness with their own hands by transferring their technology to Asian nations, which are more cost-competitive than Japan partly due to the strength of the yen against Asian currencies. In other words, from the viewpoint of critics, these companies are abandoning their own source of wealth. Actually, there were some cases where these activities were called into question at briefing sessions for investors or other similar meetings. It is true that environmental funds and similar eco-focused funds have been set up, but in essence the favourite stocks for investors are companies that make profits on the strength of their environmental technology. In this sense, steel makers are hardly the favourite of investors. The stance of emphasising measures against global warming and promoting the spread of technology is good behaviour from the viewpoint of environmental advocates, but it is not appreciated in the capital market.

Current Conditions in the Steel Industry

- ✓ The Japanese steel sector is currently facing a major turning point. From now on, it will become even more difficult to make profits due to price competition in emerging markets as well as the environmental response. From 2002 to 2004, Japanese steel makers benefited from the boom in China. This is because domestic steel production in China could not keep up with the then rapidly growing domestic demand. But Chinese steel makers are now making progress towards self-sufficiency, except for some types of high-grade steel. Therefore, it can be said that the honeymoon between Japanese steel makers and their Chinese counterparts has come to an end. Looking forward, Japanese steel makers are unlikely to face problems in terms of quantity, because demand is expected to grow in tandem with the growth of the Asian market. And yet price competition is more intense elsewhere in the world, especially in emerging countries, than in Japan, resulting in narrow profit margins. In addition, there are many negative factors affecting steel makers, including the high corporate taxes in Japan, foreign currency exchange rates (strong yen), skyrocketing resource prices, and new environmental regulations. Investors take a harsh view of this situation and the share price of Japanese steel makers is currently showing a downward trend.

Strengths of the Japanese Steel Industry

- ✓ The strengths of the Japanese steel industry are, most of all, its high-grade steel and supply chain management. The development and production of high-grade steel takes time and a large amount of money, including R&D expenditures. For this reason, the demand for Japanese high-grade steel from Korean and Chinese companies remains strong, although Korea-based POSCO and China-based Baoshan Iron & Steel Co., Ltd., among others, are improving their steel-making technology. In addition, an increasing number of companies will need the high-grade special steel wire rod and the magnetic steel sheet, etc., made by Japanese steel makers along with the manufacturing of hybrid cars, automotive weight reductions, and the spread of smart grids in the electricity infrastructure. It is also necessary to remember that supply chain management by Japanese steel makers, in other words, their actual performance in researching, developing and supplying steel that meets the customers' needs, has played a significant role and it has become one of the foundations underpinning the strength of the Japanese manufacturing industry, including the automobile sector. Japanese steel makers not only sell materials, but also provide customers with additional services such as after-sales care in a conscientious and meticulous manner. This finely-tuned response is the hallmark and strength of Japanese steel makers. These additional services may become a very important differentiator in emerging countries as well.

Competition with Korean and Chinese Steel Makers

- ✓ The strategy and strength of Korean steel makers represented by POSCO and Hyundai Steel Company is to cheaply manufacture steel in volume (general-purpose products) that can expect the largest volume in terms of demand at a slightly lower level than top quality products. The current strategy of Korean and Chinese steel makers is to attract top-class engineers, pursue management efficiency and mass-produced steel at low cost. In addition, the price competitiveness of Korean makers has been enhanced in the wake of the recent depreciation of the Won⁴. Thus Japanese steel makers need to differentiate themselves by providing added value rather than price competitiveness. Korean and Chinese steel makers gather the best and the brightest in their respective nations for the purpose of promoting industrial development. Therefore, if they make concerted efforts, in the coming years they may be able to manufacture products similar to those of high-grade steel, which is

⁴ For reference, Korean steel makers will not pose a threat to Japanese steel makers if the weak Won trend eases up. The disadvantage Japan faces due to exchange rates is not likely to be reversed any time soon, because the strong yen trend is also expected to continue.

the specialty of Japanese steel makers. However, as mentioned above, high-grade steel requires considerable R&D expenditures. Besides, it cannot be said to be a volume product with high growth potential based on global demand. Therefore, it is not clear if they are able to adopt a strategy similar to their Japanese counterparts.

- ✓ In the case of China, as described in the phrase “There are policies at the top, while there are measures at the bottom,” it seems to me that the government’s high environmental goals are losing touch with the realities in the field. When I visited steel mills and other sites in China, unlike in Japanese companies, I could not find any efforts being made that are essential to reducing CO₂ emissions and taking environmental protection measures. On the contrary, in bad cases, I witnessed scenes where filthy water and other waste were being discharged directly into the environment. In the global market, Japanese-made products must compete on an equal footing with products made in a country where there are no real environmental costs such as in the situation just described. For this reason, the profits of Japanese steel makers are under pressure from intense cost competition, particularly when products are exported to emerging countries.

Automobile Industry and the Steel Industry

- ✓ Currently, around 20% of ordinary steel and around 60% of specialty steel are consumed by the automobile industry. In terms of shipments by blast furnace steel makers, some 30~40% of their products are shipped to the automobile industry. Automakers are not only the largest customers of Japanese blast furnace and specialty steel makers, but also strategic business partners with whom close relationships have been maintained starting from the R&D stage and with whom the development of high functional materials has been ongoing. With regard to steel for the automobile industry, not only have considerable R&D expenditures been invested, but the standard of facilities and equipment is also high. Therefore, a decline in the volume of steel production for the automobile industry affects the profit of blast furnace and specialty steel makers more adversely than a corresponding decline for any other industry.
- ✓ Before and after the financial crisis, major changes occurred in both the automobile market and the steel market. Before the financial crisis, North America was the core of the global automobile market, and Japan’s exports of automobiles (especially luxury cars for the US market) increased as well. With regard to specialty steels that are indispensable materials for automobiles, there is a substantial difference in quality between Japanese-made ones and foreign-made ones. Accordingly, Japanese specialty steel has been exported in the form of knock-down exports in addition to merchandise exports. As a result, Japanese blast furnace steel makers have increased their reliance on the North American market, and Japan’s high-grade steel production has stayed on an upward trend. Under these circumstances, the sharp decline in global demand (especially in the North American market) after the financial crisis had a major impact on crude steel production in Japan. However, the spillover effects hit ordinary steel much later compared to specialty steel, since Japanese automakers procure such steel locally from Japanese-American joint-venture steel makers for the manufacturing of locally-produced cars (with local blast furnace steel makers being in charge of the upstream process). Japanese blast furnace steel makers have been refraining from exporting their steel directly to the North American automobile industry in the light of past trade conflicts. Instead, they supply steel to North America-based Japanese automakers via joint ventures with local steel makers.
- ✓ Since the financial crisis, the demand for automobiles has been driven by the Asian market. Japanese-made ordinary steel can be exported directly to Asia, and thus Japanese blast furnace steel makers have been increasing thin steel sheet production in response to the growing demand for automobiles in the region. In China, car purchases are gradually becoming popular among the middle class, and there is a possibility that this ongoing motorization is expanding drastically. Furthermore, European, Japanese, American and Korean automakers, all of whom use high-grade steel, are increasing their production. In this respect, the Chinese market is different from the Indian market where low-end cars, such as the NANO made by Tata Motors Limited, are predominant.

- ✓ With regard to the European market, Japanese automakers have been shifting production overseas in the midst of the ongoing trend towards a stronger yen. As for specialty steel, Japanese steel makers will be able to cope with this shift to some extent by exporting knock-down sets⁵. However, as for steel products for the European market, Japan's steel exports face difficulties due to problems in terms of the delivery period and costs, etc. Accordingly, there is a structural concern that a smaller volume of Japanese steel (especially ordinary steel) might be used if localisation advances. There is also a possibility that steel production for the US and European markets might become hollowed out, in addition to the sluggish demand.
- ✓ Recently, Nissan Motors started production in Thailand of the all-new model Micra (known as MARCH in Japan), which is defined as a world strategic model. However, this production shift is considered to have had only a limited impact on the Japanese steel sector. This is because the exports of steel to be used as a material for automobiles can be exported to Thailand. But if the production shifted to the US or Europe, instead of Thailand, that would cause a real decline in the demand for Japanese-made steel and thus have a huge impact.
- ✓ The main challenge for the Japanese steel sector is to figure out how to increase the exports of steel in response to the inroads by automakers into overseas markets. Steel makers have been dispatching employees overseas in response to these inroads by automakers into overseas markets so that they can quickly assess and respond to local customer needs. They have also been investigating the movements of Korean and other competitors.
- ✓ Japanese automakers used to sell the same model of cars, such as the Accord, CAMRY, and pickup trucks to name a few, in the global market in accordance with their strategy. But now they have changed their strategy to narrow down the car models for each region in order to respond to more regional demand in emerging countries that keep on growing at a rapid pace. For example, they ensure profitability by selling premium-grade cars, while at the same time promoting the manufacturing and sales of low-end cars that can be provided at low cost in emerging countries. As a result, automakers have been promoting local production in cost-competitive foreign countries. In response, steel makers have also been striving to provide a stable supply of steel in local markets. Meanwhile, in the developed countries, stricter environmental criteria are due to be established, and thus automotive weight saving and other measures are required. In response, steel makers have been carrying out research and development on lighter steels.

Medium- and Long-term Steel Demand and Supply Forecast (up to 2020)

- ✓ Domestic demand for crude steel will decline up to 2020 in the wake of the decline in population (the declining birth rate) and changes in values and lifestyles, for example the loss of the status of owning a car and indifference to its convenience, as well as the deterioration in domestic demand for capital investment and so on. However, global demand for iron, especially in Asia's emerging economies such as those of China, India, Indonesia and Viet Nam will continue to increase, and global demand is estimated to reach about 1.8 billion tons in total by 2020, or if the demand in developed countries recovers, the aggregated figure is expected to reach 2.0 billion tons. The estimated figure of 1.8 billion tons is based on each country's steel consumption per capita. For example, China's steel consumption per capita currently stands at 600 kg in coastal areas (urban areas) or the same level as in Japan, but the corresponding figure in inland areas is just 200 ~ 300 kg at present. If this figure increases to the level of 400 ~ 500 kg, that alone will increase consumption by about 0.3 billion tons. In India, steel consumption per capita currently stands at 70 kg. If this figure increases to 200 kg, that alone will increase consumption by about 0.1 ~ 0.2 billion tons. Similar phenomena are expected to occur in other emerging countries, and these figures come to a grand total of 1.8 billion tons. For reference, crude steel production and statistical consumption (domestic production + imports – exports + stock + reserves) were about 1.2 billion tons in FY2009,

⁵ Knock-down sets implies that components using Japanese specialty steel will be exported around the world.

and according to the UBS Global Steel Team the corresponding figures are estimated at about 1.3 billion tons for 2010, about 1.4 billion tons for 2011, and about 1.5 billion tons for 2012.

Supply and Demand Trends in China

- ✓ China's crude steel production accounted for nearly 50% of the world's total in 2009. As this figure suggests, Chinese market trends have a great influence on the international market. Until 2004, China was the world's largest steel importing country, but in 2005 it reversed this status to become the world's largest exporting country and since then this new status has been maintained. After the financial crisis, China's domestic demand was more robust, compared to developed countries, resulting in decreased exports from China. But more recently exports have been back on an upward trend. This is because China's domestic demand has been slowing while the international market has been expanding. By industry sector, the construction sector accounts for a large portion of China's steel consumption. However, the Chinese government plans to shift from construction-centric economic growth to consumption-centered economic growth. Therefore, the automobile sector and the home electronics sector are expected to account for a larger share of steel consumption from now on. At this stage, cold-rolled steel mills tend to have insufficient production capacity, which is not enough to produce the high-grade steel for luxury cars in China. Accordingly, Japanese blast furnace steel makers will continue to receive business inquiries at high levels for the coming one or two years.

Securing of Iron Ore and Coking Coal

- ✓ How to ensure the stable supply of iron ore and coal as raw materials for steel making is one of the tough challenges the Japanese steel industry has been facing. Japanese steel makers have been negotiating with mining companies for the purpose of increasing the proportion of their own mining. However, only a small number of promising mines are on sale, and mines that seem relatively promising are being acquired at extraordinarily high prices by Chinese companies, supported by their government. Japanese steel makers have not been aggressive in acquiring mines so far. More recently, in the wake of soaring prices for raw materials, this non-aggressive attitude has been weighing on the business management of Japanese steel makers. For comparison, Korea-based POSCO produces about 30% of its coal in its home country, and India-based Tata Motors produces almost 100% of the steel it requires at home. Japanese steel makers have not aggressively participated in iron ore futures or derivatives trading. From here on, however, they seem to be destined to participate in such trading in order to hedge their earnings risk for one thing, given the shortening of the time for negotiations on raw materials supply. In this regard, however, careful attention is required when participating in commodity futures and derivatives trading, because even professionals sometimes fail in these transactions.

Inroads into Overseas Markets

- ✓ Currently, there is not even a single steel maker that does not seek to make inroads into overseas markets. This means they are most likely to cease investment here in Japan, and that is directly linked to domestic employment issues. The Japanese government should also take this situation seriously. In particular, the overseas sales ratio of blast furnace steel makers increased by 10 ~ 20% after the financial crisis. For example, Nippon Steel, JFE and some other makers now rely on overseas markets to secure nearly 50% of their total sales. Non-ferrous metal makers also rely on overseas markets to secure about 50% of their total sales. However, in many cases, profit margins tend to be declining in overseas markets due to the more intensive price competition there than in the domestic market.

Passing Higher Costs on to Other Parties

- ✓ Japanese steel makers have a strong price bargaining power. This is because Japanese-made high-grade steel is essential for Japan's manufacturing industry to maintain its competitiveness. Historically, Japanese steel makers succeeded in passing almost 100% of the portion of increased costs on to other parties. In some cases, they succeeded in passing more than 100% of the increases in raw material costs on to other parties (in other words, they earned higher profits by raising prices). However, those were the good old days when the supply-demand balance was tight and the yen remained at low levels. Just for reference, with regard to steel makers, their management efficiency, including efficiency of employment conditions, can be said to be fairly high. It is therefore considered to be difficult to make these aspects shoulder the burden of higher costs.
- ✓ In general, it tends to be more difficult to pass higher costs on to automakers than on to shipbuilders, etc. Figures reported in newspaper articles and other sources do not necessarily present the real picture. When compared with the contents of financial statements that are disclosed one year later than media reporting, the figures reported by the media are usually higher than the actual figures. According to the most recent media reporting, steel makers are supposed to have raised their selling price to automakers by JPY19,000 (per ton), but a similar trend to that mentioned above may actually hold true. In any case, the actual result will not be known until the relevant financial reports are released one year later.
- ✓ Even if steel makers can pass higher costs on to their customers, the customers cannot necessarily ultimately pass the higher prices on to the consumers. Steel is used in a wide range of applications, including cans for canned coffee. Has the price of canned coffee been raised because the price of steel increased? No, we've never heard of such a story. That is to say, each of the various parties involved, including wholesalers, retailers and distributors, absorbs the increased prices bit by bit.

Passing Higher Costs on to Other Parties Latest Status (Automobiles)

- ✓ According to the Nikkei newspaper dated 19 May 2010, negotiations between steel makers and automakers seem to have come to an agreement to review steel prices every six months, instead of once a year. However, in the light of the fact that price negotiations are still ongoing, most tied steel prices seem to have remained at the price level seen in the latter half of the previous fiscal year. Steel makers had initially intended to make the price negotiations a quarterly event, but after receiving objections from the automakers, they are seemingly trying to strike a compromise to make it a semi-annual event. In fact, the prices for wire harness and aluminium parts are mostly reviewed every six months as they use copper, the market for which is highly volatile. Therefore, the current negotiations are highly likely to be settled so that tied steel prices will also be reviewed every six months.
- ✓ As demand for thin steel sheet for use in automobiles is brisk in Asia, there is potential for raising the price of steel for use in the main body of automobiles. In the first place, if the price of steel for use in the main body of automobiles cannot be raised, Japanese steel makers will face heavy losses. In April 2010, Korea-based POSCO also announced a rise in the price of thin steel sheet. The new price is at the same level as Japan's target export price for the April-June period, and Japan's export price seems to have increased to the level of POSCO's selling price by June 2010. POSCO's new price is assumed to be around 30% higher than Japan's tied price for FY2009.

Passing Higher Costs on to Other Parties Latest Status (Shipbuilding)

- ✓ A steel price hike for use in shipbuilding will be difficult. Back in April 2010, the domestic steel plate price for shipbuilding use was higher than both POSCO's domestic price in Korea and Japan's export price. Thus Japanese shipbuilders requested that Japan's relatively expensive steel prices in international terms should be reduced. Then POSCO raised the relevant price, which increased the possibility that Japan's prices for steel plate exports might also be raised. And yet the Japanese domestic price cannot be described as relatively inexpensive even after POSCO raised the relevant price. Therefore, it seems to be difficult for Japanese steel makers to pass higher materials costs for steel plate on to domestic shipbuilders. For comparison, in Korea, Dongkuk Steel, Hyundai Steel, and POSCO have been expanding their production capacity for steel plate with the intention of enhancing their capacity to close to the level of self-sufficiency by 2011. Moreover, demand is expected to decline in Korea. Accordingly, the Japanese shipbuilding sector is more likely to diversify sources for the procurement of steel plate. Therefore, Japanese blast furnace steel makers may not be able to raise the steel plate price in order to protect their home market. Steel plate export prices to countries other than Korea have been on an upward trend, but the quantities have been small.

Carbon Leakage

- ✓ It is difficult to construct a coherent steel mill in a foreign country, partly because the steel industry requires huge amounts of investment and is subject to regulations. With regard to acquisitions, some countries also impose restrictions on foreign investment, because this issue is closely related to national defense. For this reason, it is not easy for blast furnace steel makers to make inroads into overseas markets. Since both the American and European markets have matured, the idea of making new investments there is not rational. In the case of acquisitions in the US and EU, anecdotal evidence indicates that the process is not going smoothly since target companies may have stable shareholders or powerful labour unions, which could become of some concern after the acquisition. With regard to acquisitions in Asian countries, there are also many concerns, including regional conflicts. At heart, no country wants its steel industry to be controlled by foreign companies. Right from the start, there are many obstacles to the plans of any blast furnace maker wanting to construct a blast furnace plant in a foreign country. Even if all its major customers, such as automakers, make inroads in overseas markets, the required volume of steel is about 0.2 million tons per factory for each company. In contrast, one blast furnace plant produces 3 million tons of steel. The difference is about 2.8 million tons. It is not realistic for any blast furnace steel maker to make inroads overseas by following an automaker that has constructed a new factory overseas, unless it can ensure substantial access to other customers.

Environmental Taxes, the Emissions Trading System, and Tariffs (Border Adjustment Tax)

- ✓ When comparing environmental taxes and the emissions trading system, environmental taxes are considered to be preferred by the industrial world. Corporate management has become challenging as the market has been affecting various factors such as exchange rates, share prices, and resource prices. Virtually no company wants any new difficult-to-predict external factor causing price fluctuations to be added to these. Such a new and innovative system as the emissions trading system seems to be mentally unacceptable, especially to blast furnace steel makers, because they must maintain their manufacturing process for 20 years once a blast furnace is fired up. For example, the steel sector had objected to the end, before the one-year based accounting rule was changed to the quarterly-based one. In addition, it cannot be denied that the emissions trading system involves an

element of a kind of money game. It is therefore understandable that the steel sector objects to this system.

- ✓ In my opinion, Japan should avoid purchasing carbon credits from abroad, because this would mean a drain on national wealth.
- ✓ With regard to the idea of imposing a kind of tariff called a “border adjustment tax” on imported goods in order to equalize carbon restrictions on domestic and foreign companies, this taxation system may adversely affect export-reliant Japan, since partner countries might take advantage of this scheme to impose higher border adjustment taxes on Japanese-made products. For this reason, I do not necessarily support the idea of protecting domestic industries by means of tariffs, including the border adjustment tax.

Overseas Model Cases that could be Emulated

- ✓ The Korean government has been able to quickly conclude a Free Trade Agreement (FTA) with the European Union. This will help Korean automakers promote their automobile exports. In contrast, FTA negotiations have been progressing only at a snail’s pace in Japan. The Japanese government should develop a favourable environment for exports, just as Korea has. Japan’s agriculture might be put in a difficult position, but it is industry that drives Japan’s economic growth.
- ✓ The British government announced a corporate tax cut and a value-added tax (VAT⁶) hike simultaneously, and thereby showed a policy of strengthening the international competitiveness of the nation’s industries while at the same time securing financial resources for the government. In Japan, Prime Minister Naoto Kan called for the improvement of Japan’s financial standing by raising the consumption tax rate. But his approval rating has been falling, presumably due to a lack of communication with the public and the industrial world, or due to the lack of marketing efforts. I would like the Japanese government, just like the British government, to effectively implement policies that will lead to more capital investment at home, while at the same time improving the financial balance.
- ✓ Currently, the British government has been dispatching many government officials to the US in order to protect its national interests in response to the British-based oil major BP’s oil spill incident in the Gulf of Mexico. In contrast, when Toyota Motor was in the middle of being bashed in the US due to its recall problems, it did not seem that the Japanese government (Ministry of Land, Infrastructure, Transport and Tourism) proposed or implemented any mitigation measures to cope with the situation. I would rather see the Japanese government taking more action to protect Japanese companies and industries. Otherwise, it might not be possible to stop the continued drain of excellent companies to foreign countries. We cannot rule out the possibility that such a situation is proceeding quietly and that it will be too late by the time the government notices.

Expected Role of the Japanese Government

- ✓ CO₂ emissions restrictions, tax systems and other standards need to be on an equal footing with the rest of the world for Japan-based global companies such as steel makers and automakers to maintain their international competitiveness in the global market, while at the same time continuing their production operations here in Japan in the future. Japanese people are extremely diligent and able to enhance their skills while enjoying “manufacturing.” These are their highly rated characteristics by world standards. The Japanese government is therefore being called on to implement policies and measures that will prevent the decay of this culture of “manufacturing”, promote R&D and capital

⁶The value-added tax (VAT) is a kind of consumption tax in that it is imposed on goods and services when they are publicly or privately consumed.

investment at home, drive up the share prices of Japanese companies, and enhance international competitiveness. It is also urged to continue to secure its national income.

- ✓ Employment issues can be said to be the first thing the Japanese government should tackle. The government needs to promote pension reforms and proactively build a society in which the younger generation can find work. This is followed by population issues and environmental issues. As these issues can no longer be put off and are piling up, I would expect the ruling party to stably manage the government.
- ✓ I think it is important for the Japanese government to firstly recognise the efforts of Japanese companies, including steel makers, in order to have a constructive discussion with the industrial world. Former Prime Minister Hatoyama abruptly announced the 25% carbon reduction target by 2020, but such behaviour should be avoided. With regard to efforts toward creating a low-carbon society, I believe that the government needs to actively promote awareness campaigns targeting the residential sector, since the entire population benefits from goods and services. Just for reference, in order to appeal to investors in the capital market, it is essential to boldly carry out easy-to-understand policies, such as corporate tax cuts, instead of implementing various policies bit by bit.

Attractiveness of Japanese Equities (Equity Story)

- ✓ The interest of overseas investors in Japanese equities has been rapidly declining since around 2006. At present, there are no foreign investors who have investment funds dedicated to Japanese equities. In the equities markets, “Japan passing” has been pronounced, thus investment funds have been flowing into China, Viet Nam, India, and other Asian emerging countries with high growth potential, while Japan, which is inferior in terms of both growth and earning power, is treated as just one of the Asian countries. At present, the strong yen has been burdening the earnings of Japanese equities. Yet the current problems of Japanese equities are not these transient ones. It can be said that the problems are more deeply rooted in the Japanese corporate culture, in which an introverted style of management has been maintained while investors (especially foreign investors) have been receiving the cold shoulder over the past decades. They are also deeply rooted in the Japanese government’s inability to develop policies that catch the tide of world developments. In this sense, former Prime Minister Koizumi’s postal service privatisation had a very good impact on the equities market because it gave foreign investors the expectation that even Japan could change, which drove them to buy Japanese equities. In order to revitalise the Japanese equities market, Japan now desperately needs regulatory reform and policies that can similarly raise expectations.

Finance and the Environment

- ✓ It is a known fact that steel makers prepare environmental reports, but investors and security analysts spend hardly any time reading these reports. This is because the concern for society and the environment shown by these companies does not yet affect share prices. In the capital markets, an environment-conscious corporation means a company that make profits by providing environmentally responsible goods and services.
- ✓ The environment is extremely difficult to quantify. However, when making investment decisions, quantification is required. If a company’s concern for the society and environment could be evaluated and quantified by a third-party institution, then this would be of help in the future when the evaluation of a company’s social and environmental activities becomes common.

Questions and Answers

- (1) The demand for Japanese-made high grade steel will remain strong since such demand will increase in Asia, especially in China.
 - (2) The strengths of Japanese steel makers are their high-grade steel and their supply chain management.
 - (3) The need to make inroads into overseas markets is high.
 - (4) Almost 100% of the raw materials used in Japan are imported, while about 50% of the products are exported in terms of quantity.
 - (5) As far as past cases are concerned, steel makers have succeeded in passing higher costs on to other parties.
 - (6) Steel and non-ferrous metal makers have been making inroads into overseas markets in various ways. However, note that blast furnaces themselves cannot easily be transferred due to their huge scale and their industrial characteristic of touching on national defence and other sensitive issues.
 - (7) The 25% carbon dioxide reduction target by 2020 will have an extremely large impact on steel makers, since they will not be able to deal with this challenge unless they stop their blast furnaces.
 - (8) Steel makers have been making investments in the environmental field and energy-saving technology, and investors consider their investment level as unnecessary.
 - (9) While investors pay attention to earnings, they are disdainful of corporate concern for the society and the environment.
 - (10) —
 - (11) The Korean government and the British Government have many policy ideas that should be emulated.
 - (12) —
 - (13) —
 - (14) —
 - (15) —
- (Note) “—” indicates an item that could not be answered due to time constraints.

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| • Interviewers: | Tokuharu SATO (Ministry of the Environment, Japan) and Nagisa ISHINABE (Institute for Global Environmental Strategies) |
| • Summary created by: | Nagisa ISHINABE (Institute for Global Environmental Strategies) |
| • Interview date: | 7 July 2010 |
| • Length of the interview: | 1 hour 45 minutes |
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Energy

Reiji Ogino/ Mitsubishi UFJ Morgan Stanley

Energy Industries¹ and the Environment

- ✓ The energy sector is based on various national policies and regulations, including environmental regulations, both in a positive and negative way. From the viewpoint of energy companies, the 25% carbon reduction target and the accounting treatment of CO₂ emissions as costs imply that there will be new business restrictions and additional costs. Therefore, in a sense, it is no surprise that this target and its treatment have not been favourably received. Energy companies have been keeping track of their CO₂ emissions and managing their business in a CO₂-conscious manner as part of their measures against global warming. For example, electric power companies have been making efforts to improve the thermal efficiency of thermal power generation and the efficiency of power generation using coal². However, these voluntary efforts alone are not sufficient to prevent global warming, and thus a shift to a certain business model with a low environmental burden is necessary. When requesting energy companies to take additional action, it is essential to introduce astute yet easily understood policies.
- ✓ Since December 2009, when former Prime Minister Hatoyama announced the 25% carbon reduction target after the Democratic Party of Japan (DPJ) became the ruling party, the energy sector's sense of tension regarding CO₂ emissions reductions has become more intense than ever. This sense of tension cannot remain unresolved for very long. If the Basic Law on the Earth Environment is passed in the Diet during the current session, this legislation is considered to be favourable. This is because it is important for things to have momentum, and if this opportunity is missed, we cannot be sure when the next opportunity will come. This matter is especially important for discussions concerning the relative merits of carbon taxes and the emissions trading system.

Renewable Energy

- ✓ With regard to renewable energy, the most important point is to determine whether a profitable business model can be formulated. To this end, it is essential to enhance the Feed-in Tariff (FIT) system for electricity supply, as well as various other systems, regulations and subsidies. As for the FIT system, as long as the current lukewarm price setting mechanism is maintained, it will be difficult to nurture the relevant markets. Aggressive policies with a greater impact should be implemented. For example, the current purchase price for household-use surplus electricity is 48 yen per kilowatt. It is desirable to change this situation so that the electricity eligible for purchase under a FIT system can be expanded from "surplus" electricity to the "total" amount produced and also from "household use" to "industrial use," such as by adopting wind power generation.
- ✓ The current asking price for the purchase of wind power electricity is JPY15 ~ 20 per kilowatt, but this price level makes it impossible for venture companies to take the risk of starting a new business.

¹ The term "energy industries" in this summary section refers to the electric power industry, the gas industry and the oil industry.

² This does not mean that there are technical gaps between electricity producers, but is because the number of companies that can manufacture facilities and equipment for electric power generation plants is limited to a few companies, including Mitsubishi Heavy Industries (MHI) and Hitachi.

There is a high barrier to entering the energy supply business. The energy sector is also subject to various external factors, such as skyrocketing crude oil prices. The capability of supplying energy stably even under such circumstances is very important in gaining customers. After all, carefully targeted policies will be required to help the activities of venture companies to get on the right track. In addition, from the viewpoint of the business world or the capital market, it is preferable to implement bold and easy-to-understand policies, rather than implementing various policies bit by bit.

- ✓ The electricity purchase price has been set at JPY48. Firstly, because this amount is necessary to recover the cost of investing in the installation of a solar panel (about JPY700,000) over around 15 years and secondly because this amount is about twice the corresponding unit price of electricity for household use, and thus it is easy to understand. I imagine there will be various opinions when a new system is introduced, but it seems to me that systems can be modified after their implementation.
- ✓ If renewable energy provides 28 million kilowatts of electricity as planned in the roadmap, both the demand for the existing electricity supply and the revenues of electric power companies will decline. In addition, in order to supply and manage this volume of renewable energy, the installation of smart grids will be essential, which results in additional costs and doubly weighs on the revenues of electric power companies. Such a situation is hardly acceptable to electric power companies as they run their business based on a scenario in which demand keeps growing at a stable rate of 0.8% annually with a corresponding growth in revenues for the next 10 years. In the light of the stated scenario, any decline, even if the rate is as small as 0.1%, can hardly be acceptable.

Smart Grid

- ✓ With regard to a smart grid, its implementation will depend more on the government's decision than the management decision of electric power companies and gas companies. For example, electric power companies such as Tokyo Electric Power Company (TEPCO), The Kansai Electric Power Co., Inc., and Chubu Electric Power Co., Inc. have been testing the implementation of smart meters and smart grids (mainly their communication parts), but they have no reason to aggressively promote the practical application of costly smart grids. In addition, the relevant policies are still sketchy. Therefore, implementation has a long way to go. In the time frame of the next five years the method of employing contract workers to be in charge of visiting individual households and checking the meters will be less costly than the method of installing smart grids, even if the various labour management costs are taken into account³. In addition, smart grids have information security problems due to their wireless operations. No wireless operation should ever be able to disrupt electric power distribution to any household or to any business office.
- ✓ Nowadays, the construction of shared energy supply systems among electric power companies and gas companies has become an issue. If this idea is put into practice, efficiency may be improved. Yet, such integration will be difficult, given the current situation where the frequency differs between eastern Japan and western Japan. Looking at overseas cases, for example in the US case, every state has not necessarily adopted the same system. So I think this issue may as well be left up to business decisions.

All-electric Project

- ✓ The all-electric project for housing started about eight years ago and its effects on the revenues of electric power companies have gradually emerged. However, electric power companies have been missing the opportunity gains since the all-electric project means competition for new houses.

³ If the time frame is 10 years, the situation may change.

However, the loss of opportunity gains does not affect profits on the housing stock (namely the existing all-electric homes) so much. Therefore, at present, electric power companies have not taken this loss seriously.

Nuclear Power

- ✓ In my opinion, it will be difficult to construct any new nuclear power plant from now on. Future nuclear energy development seems to be confined to the rebuilding of aging nuclear power plants, since local residents often voice strong objections to new plants and also because the radioactive waste disposal problem has still not been solved. I consider it unrealistic to add new 9 nuclear power reactors by 2020 as envisaged in the roadmap. For reference, nuclear power costs are kept down more than they should be, compared to other electricity sources. Nuclear power has been favourably received in capital markets, owing to its low power generation costs and high earning power. However, the operating rate of nuclear power reactors has been deteriorating. On top of this, if the back-end costs increase in future years, the current mood of the capital market might change. For your information, the above-mentioned new additions have also been positively received in the capital market. But at the same time, the market players fully recognize the difficulty of adding new nuclear power reactors. From their point of view, the success or failure of accomplishing new nuclear projects is all a matter of luck.

Current Situations and the Future Outlook⁴ for Energy Industries

Electric Power

- ✓ The profit margins of electric power companies, including the Electric Power Development Co., Ltd. (J-POWER), are as high as 15 ~ 20%, reflecting their status as regional monopoly companies in a regulated industry. Historically, their dividend payout ratios have also been at high levels, ranging from 30% to 80%. There has been no growth in EPS (earnings per share), with the earnings yields being around 2.5%. Demand is anticipated to increase by 0.8% annually for the next 10 years. Meanwhile, costs will rise, even if environmental costs are excluded, since it seems rather excessive capital investment is slated for the next five years⁵. Profits are therefore most likely to decline. In response, dividend resources are also anticipated to decline, but the actual dividends are unlikely to be reduced since these companies will cope with the situation by raising their dividend payout ratios. As long as share prices remain flat, investors are hardly likely to buy these equities. Accordingly, TEPCO and several other electric power companies have been demonstrating their growth potential by investing in nuclear power facilities and/or overseas businesses.

Gas

- ✓ The profit margins of gas companies are 15 ~ 20%, or the same level as those of electric power companies, while their dividend payout ratios are 30 ~ 50%, or slightly lower than those of electric power companies, and the earnings yields are about 2%. Gas company profits are expected to increase over the next five years due to the progressive shift in the use of fuel from oil to gas and also because various costs, including environmental costs, will not increase to the same extent as those for electric power companies. Within the energy sector, the outlook for the gas industry can be said to be the brightest in the short run.

⁴ Note that, when considering the future outlook, capital market and security analysts focus on corporate profitability.

⁵ When liberalization was strongly urged, these companies made efforts to reduce costs. But now, they do not do anything in particular.

Oil

- ✓ The profit margins of oil companies are as low as 3% or so, even in a good year⁶. Currently, they have plunged into the red amid soaring crude oil prices. In recent years, domestic demand has been declining at an annual rate of about 3.5%, while oil refineries have been in a state of excess supply. These situations have been squeezing oil company profits despite their desperate efforts to reduce costs. The oil sector has also been facing another problem inherent to any industrial plant-based industry (in other words, a capital-intensive industry): When the operating rates of oil plants declines, the unit costs increase and thus profits are squeezed further. Additionally, after the crash of Lehman Brothers, even the issue of how far the plant's operating rate could be physically lowered was discussed⁷. About three years ago, Japanese oil companies attempted to export their excess oil to Asian countries, but such trading practices never became widespread since Japanese oil companies did not have high price competitiveness. In this way, the oil industry faces shrinking domestic demand and cannot find a way into overseas markets. Nevertheless, some oil companies still have sufficient funds, and they have been investing in oilfield facilities, petrochemical projects, solar cells, etc.
- ✓ The oil sector's first problem is oversupply, and the second problem is the wild ups and downs in crude oil prices. Higher crude oil prices weigh on corporate management, while lower crude oil prices lead to profits. However, it is difficult to control the unstable fluctuations in crude oil prices at the corporate level. In future, the industry might be reorganised with an eye to the downsizing in order to curb oversupply. Moreover, the oil industry could decline within the next 10 years in the same manner as the coal industry did in previous times. For reference, oil companies have raised funds through equity financing several times in order to strengthen their financial standing (but the official reason was to actively make investments). Their dividend payout ratios are 80 ~ 120%, and the earnings yields are approximately 1.5 ~ 3.0%.

Possibility of the Reorganisation of the Industry

- ✓ With regard to competition for market share between the electric power sector, the gas sector and the oil sector, no outstanding movements have been observed. This is partly due to the fact that new business opportunities and additional revenues are not expected to emerge for the next one or two years and partly because each sector has its own outstanding strengths and weaknesses – for example, the electric power sector is strong in energy supply to households, the gas sector is strong in supply to factories, and the oil sector is strong with regard to automobiles. Although electric cars have started to gain in popularity these days, the demand for gasoline will remain firm for a while. Other than automobiles, ships and airplanes can be cited as the main consumers of gasoline. However, from the long term perspective, ships might switch from gasoline to electricity, and airplanes might shift to biofuels or other alternative source of energy. Such fuel conversion seems to be recognised and accepted as the trend of the times.

Problems of Electric Power Companies and Gas Companies

- ✓ Both electric power companies and gas companies have an almost total monopoly on regional energy supplies under the protection of regulations, and run operations based on the fuel cost adjustment system, which ensures profits at all times. Accordingly, they tend to have a low awareness of profitability and efficiency. Both electric power companies and gas companies should

⁶ The oil sector's profit margins are low partly because the sector is subject to various taxes, including the gasoline tax and the light oil transaction tax.

⁷ In fact, the operating rate can reportedly be lowered to about 65%. For comparison, the current operating rate ranges from 75% to 80%.

have the will to run their operations under circumstances where the principle of competition works effectively, just as with other listed companies, and should not complacently rely on their monopolistic position and earning structures.

- ✓ Any business model that relies on imported fossil fuels involves risks, but neither electric power companies nor gas companies take this seriously. This is because their earnings are assured in accordance with the fuel cost adjustment system, even if crude oil prices surge. If policy makers would like to urge electric power companies and gas companies to be aware of these risks, the most effective way would be to abolish the fuel cost adjustment system.
- ✓ In many cases, electric power companies and gas companies adopt ROA (return on assets) as their management target⁸. However, only a limited number of them have announced the forecasted management benchmarks for three to five years ahead⁹. Therefore, their management policies are hardly visible, making corporate evaluation difficult. Investors buy the equities of electric power companies and gas companies because these companies are not only major, but also are public utility companies with stable sources of earnings. However, it cannot necessarily be said that these companies comply with the market principles of competition or corporate governance as listed companies. One reason for this is that electric power companies and gas companies have rarely raised funds through equity financing over a period of about 20 years since the collapse of the bubble economy. To put it plainly, they have had little need to communicate with investors as they have not needed to raise equity. Why have they not required equity financing? This is mainly because they have had ample free cash flows due to the limited amount of business growth-related outflows¹⁰. Just for reference, they have raised funds mainly through debt financing in recent years.

Deregulation and Liberalisation

- ✓ In the era of deregulation, in-house power generation management companies¹¹ were established, and even the energy sector was hit by a wave of new entrants. These new companies experienced rapid growth for a while, but they were small and faced difficulties in supplying energy stably while accepting the risk of the wild ups and downs in crude oil prices. So it was hard for them to continue operations. When supplying energy, the most difficult part is to forecast crude oil prices. As of 2003 when ENESERVE CORPORATION was actively engaged in business projects, the OPEC price band system was still in practice, which made oil price forecasting relatively easy. But since 2004, when the price band system was abolished, forecasting crude oil prices has become extremely difficult, and business profits have been squeezed.
- ✓ As the liberalisation of the electric power industry has moved forward in foreign countries, the Japanese authorities and industry insiders, etc., have also made attempts towards liberalisation. However, substantive competition never occurred among electric power companies since new entrants had to borrow the transmission lines from the existing electric power companies and therefore could not determine electricity charges at their own discretion.

⁸ ROA is generally adopted as a key management benchmark since most of the assets of electric power companies are recognised at cost as electricity charges are determined in accordance with the comprehensive cost method under the Electricity Business Act. For information, earnings forecasts are often not announced since such forecasts might take a bashing.

⁹ Among electric power companies (11 companies in total), the following five companies announce management benchmarks: Tokyo Electric Power Company, The Kansai Electric Power Co., Inc., Shikoku Electric Power Co., Inc., The Okinawa Electric Power Co., Incorporated, and Electric Power Development Co., Ltd.

¹⁰ The depreciation expenses are high due to the nature of plant-based industries (in other words, capital-intensive industries), but this is not a cash item and thus does not affect cash flow.

¹¹ An in-house power generation management company is one form of ESCO (energy service company), which is engaged in business activities that provide services through the installation of mass production-type diesel generators within the premises of the customers, managing operations on behalf of the customers, and ultimately reducing electricity costs for the customers. The reasons generally given for ENESERVE's downhill slide are the discounts it gave on electricity charges and higher crude oil prices.

Inroads into Overseas Markets

- ✓ The overseas investment ratio of electric power companies is relatively low since they use most of their investment funds to maintain their facilities. The overseas investment ratio of gas companies varies in accordance with each company's strategy: To name a few, Tokyo Gas has 20 ~ 30% and Osaka Gas about 30% in overseas operations. The overseas investment ratio of oil companies is higher than that of electric power companies and gas companies since they need to invest in overseas oilfields on a major scale.

Relationship with Overseas Fossil Fuel Suppliers

- ✓ The top concern of energy companies is to maintain a stable supply of energy. To this end, they sometimes need to purchase fossil fuel from overseas in large quantities on a long-term basis. When they purchase more than they eventually need, the excess portion can be stockpiled, but in reality they adjust other domestically adjustable power sources such as hydraulic power and nuclear power so that they can use fossil fuels as much as possible.

How Foreign Investors View Japanese Electric Power Companies

- ✓ Japanese electric power companies have constructed a vertically integrated business model, based on which they are engaged in operations from generating electricity to transmitting and distributing electricity. In contrast, electricity generation and electricity transmission/distribution businesses tend to be separated in foreign countries. Therefore, foreign investors can understand a business model that is focused on electricity generation, such as that of Electric Power Development, but they are hardly able to understand such a business model as TEPCO's. Foreign investors sometimes ask about asset value (not book value but figures based on the DCF (discounted cash flow) method) of electric power plants owned by TEPCO. Since these figures are not normally required in Japan, this kind of question is extremely difficult to answer.

Cost Items

- ✓ With regard to the cost breakdown of the electric power business, raw materials (fuel) costs account for one third, and the remaining two thirds consists of labour costs, taxes, repair costs, depreciation expenses, back-end costs, interest expenses, carbon credit costs, and other expenses, including R&D expenditures (based on figures for FY2008). Raw materials (fuel) costs fluctuate widely, depending on fuel prices.

Depreciation Expenses

- ✓ If demand for the existing energy declines as projected in the roadmap, the existing assets will have to be properly depreciated. In this case, huge amounts of depreciation expenses will be recorded due to the energy industry's nature as a plant-based industry (in other words, a capital-intensive industry). However, at this stage, no energy companies seem to be working on these issues.

Cost-transfer and Carbon Leakage

- ✓ With regard to cost-transfer, this practice can be implemented if it is approved by the national government on the basis of the fuel cost adjustment system¹². However, when cost-transfer is actually carried out, electric power companies will have to face a certain level of accountability to the region's companies and residents. In fact, electric power companies are reluctant to negotiate or explain about cost-transfer since they have rarely handled such price negotiations with the users, or in other words, their level of experience in negotiating sales situations is low. Accordingly, they want the Japanese government to bear the burden of accountability and other relevant burdens as much as possible. For example, the last time crude oil prices skyrocketed to the extent that their fuel costs exceeded the upper limit under the fuel cost adjustment system, electric power companies did not try to bring this issue to the Diet, showing their lack of will to proactively revise charges.
- ✓ The price elasticity of energy demand is close to zero. However, if electricity costs substantially increase, power consumption will decline. The impact of skyrocketing energy prices will vary, depending on the industrial sector. However, in general, if electricity charges rise by 10 ~ 20%, a fairly substantial number of industry sectors might suffer. Careful attention will be required for some industry sectors such as the chemical sector and the ceramics sector, whose energy sensitivity is relatively high, although such sensitivity still varies depending on the products to be handled.
- ✓ I doubt that existing factories will be relocated immediately. This is because, taking management decisions into account, the relevant matters will proceed in the following order: Firstly, construction sites for new factories will be moved overseas; next, some of the existing domestic factories will stop their operations; and only then will some of the remaining existing factories be relocated overseas. Whatever the case may be, it will be difficult to actually perform a cost-transfer to the extent that this may substantially damage regional or domestic industries, no matter how strong the influence or bargaining power of the electric power companies, or even if such cost-transfer is possible from an institutional standpoint. While domestic demand-oriented industries may be able to perform cost-transfer, manufacturers that are forced to compete in the global market cannot generally perform cost-transfer in the sale prices. As product prices are declining amid persistent deflation, electricity charges are hardly likely to be allowed to rise as an exceptional case. Electric power companies should first make efforts to reduce costs, instead of always performing cost-transfer, since they should have room to cut costs, including labour costs.

Environmental Taxes and the Emissions Trading System

- ✓ When comparing environmental taxes and the emissions trading system, energy companies prefer environmental taxes. There are three reasons for this. Firstly, the level of environment taxes is predictable and there is no risk of transaction failures. Secondly, as with the consumption tax, environmental taxes can be booked as one form of national taxation (under the tax-exclusive price system). Besides, if a credit transaction fails, the party in charge has no accountability to the shareholders and other stakeholders. Thirdly, as for the emissions trading system, there are many troublesome issues to be resolved, including transaction price setting and the clarification of the responsible departments or divisions within a company (for example, which department is responsible, the finance department or the manufacturing department, etc.). In contrast, environmental taxes allow the existing management style to be maintained. For the above-mentioned reasons, my prediction is that both electric power companies and gas companies will accept environmental taxes if they have to choose between the two, on the condition that the Japanese government approves the cost-transfer.

¹² The fuel cost adjustment system is a system whereby electricity charges are automatically adjusted every month in accordance with the changes in fuel prices (track record), or more specifically, the actual price of crude oil, LNG (liquefied natural gas) and coal.

- ✓ If the emissions trading system is adopted and the downstream CO₂ emissions (on the consumer side) are capped, electric power companies will have to set the CO₂ emissions coefficient for electricity in several-year units. This treatment is intended to eliminate any impact from changes in the CO₂ emissions coefficient for electricity (the operating rate of a nuclear power plant in many cases) so that the achievement of CO₂ emissions reduction efforts on the consumer side can remain intact. Possible approaches to set the CO₂ emissions coefficient for electricity include one to conclude an agreement with the government, and another is for electric power companies to make a pledge. For example, in a scenario where electric power companies guarantee the coefficient value, they will pay compensation or will purchase CDM credits, etc., if the actual numbers exceed the guaranteed value. Then what measures should be taken if the actual numbers fall below the guaranteed value? That will be the subject of future consideration.

Accounting Treatment of Carbon Credits and Accountability to the Shareholders

- ✓ There are two possible accounting methods to book carbon credits: One method is to include them in costs and transfer them to the electricity charges; and the other method is to book them as an intangible asset in the asset account. The former case requires one cost item to be added, and thus it will lead to arguments about the charge revisions (revision of the electric power supply clauses). The revision of electricity charges was made in 2008 or the first year of the first commitment period (2008 ~ 2012) of the Kyoto Protocol. Back then, the idea of booking carbon credits as a cost item and performing cost-transfer to electricity charges was not part of the mainstream. Therefore, I assume only a small number of companies keep booking all carbon credits as a cost item. From the viewpoint of the capital market, where profits are emphasised, it is desirable for carbon credits to be booked as a cost item and perform cost-transfer to the electricity charges. For reference, when to revise the electric power supply clauses depends on the management decision of each company.
- ✓ If the purchase of carbon credits equivalent to 250 million ~ 300 million tons is required over the next five years and if the electric power sector must pay about JPY500 billion (including TEPCO's approx. JPY100 billion), this would have a tremendous impact on their earnings, to which the capital market would respond.

Basic Energy Plan

- ✓ The Ministry of Economy, Trade and Industry made the following comment in a written statement concerning the coming review of the Basic Act on Energy Policy (Basic Energy Plan): “The government must implement policies, measures and actions to promote the overseas transfer of Japan’s advanced technologies and systems and take in foreign demand in a proactive manner with the aim of expanding the scale of entire energy industries (intensification and the widening of areas) in the light of future structural changes in each sector of electricity, gas, oil and resources development, while at the same time developing an environment where free competition and self-motivating collaboration among the various businesses beyond energy sectoral barriers will be promoted.” This comment had an enormous impact on the energy sector. The view expressed therein will induce management executives to consider how they run their businesses in future, and this is highly desirable from the viewpoint of the capital market or security analysts.

Expected Role of the Japanese Government

- ✓ From the viewpoint of the capital market or security analysts, the Japanese government is being asked to formulate and implement dynamic policies that could provide a spark for new markets to be created, whether such a policy might be the Feed-in Tariff (FIT) system for renewable energy or the eco point system. Ill-defined policies will only confuse the relevant markets into inaction and no new markets will be created.
- ✓ The Ministry of Economy, Trade and Industry and the Agency for Natural Resources and Energy are being asked to commit themselves to designing systems whereby electric power companies and gas companies can comply with the principles of the capital market, instead of becoming complacent with regard to the existing systems.

Finance and the Environment

- ✓ In order to promote investment in eco-friendly and socially responsive companies, it is necessary to articulate the advantages to investors. In the case of SRI (socially responsible investment), one of the problems seems to be the lack of a proven record of the economic return on such investments.
- ✓ If there are any labelling schemes such as the Energy Saving Grand Prize that are easy to understand from an outsider's standpoint, such systems are easy to use as information for making investment decisions. It is desirable that such systems are searchable on the Internet, as many people generally obtain information from the Internet. In addition, it is preferable that giving prizes or other forms of recognition be announced not only on official websites, such as that of the Ministry of the Environment, but also through other reliable media.
- ✓ Energy companies prepare environmental reports and other similar reports in a respectful manner. This is because they use such reporting as part of their external PR operations and as an image-building tool, just like TV commercials. In many cases, the eco concept is used as a marketing tool.

Questions and Answers

- (1) As mentioned above, the gas industry will see an increase in demand as the fuel shift from oil proceeds, while the oil industry will gradually fall into a decline over the next 10 years. As for the electric power industry, stable demand is anticipated even if a slight decline might continue. The proportional mix of electric power sources is predicted to change, affected by the relevant policies.
- (2) As mentioned above, government policies have a strong influence on the issue of whether and how renewable energy and smart grids will become widespread. However, these new fields are unlikely to become the main source of earnings for energy companies, given the large-scale of their existing business. With regard to nuclear power facilities, capital investment will be confined to the renewal of existing facilities, since it is hard to construct new ones.
- (3) As mentioned above, Japanese electric power companies, gas companies and oil companies have started to invest overseas.
- (4) As mentioned above, almost 100% of raw materials are imported, while exports are close to zero. For a period of time, oil was exported from Japan to Asia, but the scale was limited due to the lack of price competitiveness.
- (5) As mentioned above, in the case of electric power companies and gas companies, the cost-transfer is possible from an institutional standpoint. As an adverse effect, electric power companies and gas

companies are less cost conscious. This low cost-consciousness can be cited as a problem specific to these sectors. Oil companies cannot perform cost-transfer, as can be noted from the current situations where they stay in the red.

- (6) As mentioned above, when energy prices rise, the degree of impact on industries varies in accordance with each industry's energy sensitivity. In my opinion, it is not necessarily bad to impose restrictions on such products or industries with poor performance in terms of energy efficiency.
- (7) Nothing in particular.
- (8) Environmental policies are of high strategic importance to management strategies. It can be said that this is also the case with official statements at the level of a ministerial announcement.
- (9) In the case of electric power companies and gas companies, the ratio of foreign investors ranges from about 15% to 20%.
- (10) As mentioned above, energy companies have been keeping track of their CO₂ emissions. They have also been promoting the disclosure of information.
- (11) As mentioned above, I would like the Japanese government to implement dynamic policies that will enable new markets to be created. I also hope that the central government would introduce systems where the principle of competition is applied to electric power companies and gas companies.
- (12) Nothing in particular.
- (13) At present, such efforts seem to be made at the level of each business office, but no special movement can be seen at the management level of energy companies. The other day, when I entered the toilet in my office, I noticed that the lighting fixture was loaded with sensors. That is something new.
- (14) In my opinion, the new programme strays from the real tasks that the BOJ should perform. It has every reason to be criticised as carrying out oppression of the private sector.
- (15) As mentioned above, it is preferable that the Basic Law on the Earth Environment should be passed in the Diet during the current session as the energy sector currently feels a sense of tension. With regard to the Basic Act on Energy Policy, I highly evaluate the fact that arguments about the acquisition of upstream interests were touched on. If possible, I hope that nuclear power development could be promoted early on. The ratio of independent development does not matter much, as it is just a matter of definition.

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- **Interviewers:** Sei KATO, Tokuharu SATO (Ministry of the Environment, Japan), Toshihiko MASUI, Junichi FUJINO (National Institute for Environmental Studies) and Nagisa ISHINABE (Institute for Global Environmental Strategies)
 - **Summary created by:** Nagisa ISHINABE (Institute for Global Environmental Strategies)
 - **Interview date:** 2 June 2010
 - **Length of the interview:** 3 hours

Chemicals

Name Withheld on Request/Foreign Securities Co.

The Chemical Industry and the Environment

- ✓ The chemical sector has been feeling a keen sense of crisis concerning a series of greenhouse gas reduction initiatives since September 2009 when former Prime Minister Hatoyama announced the 25% greenhouse gas reduction target. From what I understand, in December 2009, Goldman Sachs issued an analyst's report on greenhouse gas reductions and the chemical industry at the strong request of the chemical sector. More specifically, chemical companies wanted the brokerage house's analysts to determine how the series of greenhouse gas reduction initiatives will affect their share price¹. Awareness among many investors regarding global warming is still at a low level, and the impact of greenhouse gas reduction costs, etc., has not yet been recognised. Yet once investors start to recognise this problem, the chemical sector will surely be disfavoured and the relevant investment portfolio will be reshuffled immediately.
- ✓ In the reports of some analysts, even a company that is considered to have a long-term perspective and excellent environmental technology receives the "sell" rating. For example, Toray Industries, Inc. has been actively engaged in advertising activities with the focus on dream-inspiring technologies, including carbon fibre and water treatment technology, and thus the company is popular among individual investors. However, the finances of such products and technologies are currently in the red and are far from a full-fledged business. Toray has a "sell" rating because the current share price level is considered to be overheated². In contrast, although Ube Industries, Ltd. has excellent environmental technology with high profitability, the company's shares are not actively purchased due to its low profile, resulting in deterioration in its share price. Accordingly, Ube Industries is evaluated as "buy."
- ✓ With regard to the LCCO₂ estimation (calculated CO₂ emissions during the process from raw materials procurement to product disposal based on the LCA approach) by McKinsey & Company, I would rather not comment on that as I am not really sure. But the estimation seems to have received mixed reviews, depending on the company. This kind of estimation relies on premises and assumptions. So I would prefer such estimations to be based on more objective data, such as interindustry relationship tables. However, at the same time, I think the actual calculation is extremely difficult because a wide variety of products are manufactured in the chemical sector.
- ✓ In the case of the chemical industry, the products vary greatly, unlike with steel, etc. Besides, it is possible to manufacture different chemical products using the same manufacturing process. (For example, caustic soda, chlorine and hydrogen are produced from sodium hydroxide.) It is therefore difficult to prepare benchmarks for the chemical industry. Efforts to visualise the CO₂ produced in each process have been advancing, but each company transfers expenses in accordance with its own main products. Thus, if CO₂ is allocated just like expenses, it will be difficult to obtain coherent data from different companies. Mitsubishi Chemical, among others, seems to be at the forefront of research on CO₂ visualisation.

¹ The Goldman Sachs analyst's report referred to is *Greenhouse Gas Reduction: Lofty Challenge but Not All Negatives*, The Goldman Sachs Group Inc., December 10, 2009, written by Mr. Hisaaki Yokoo and Mr. Kentaro Asai.

² For comparison, Toray cannot be said to be popular among institutional investors.

- ✓ Since the announcement of the CO₂ reduction target by former Prime Minister Hatoyama in 2009, corporate efforts to reduce greenhouse gas emissions have been upgraded as shown in the shift in the responsible department from the Technology Department or Environmental Department to the Headquarters Planning Office. The allocation of CO₂ emissions among departments and/or plants has also been advancing, and the amount of CO₂ emissions reductions has been monitored in a similar manner to the monitoring of earnings. Now that the energy conservation measures that could be economically justified have already been completed, companies are continuously making desperate efforts partly by implementing even energy conservation measures that are not economically justified, but which must be taken at some divisions or plants. In such cases, the headquarters is involved in compensating for the relevant expenses.

Carbon Restrictions

- ✓ Whether it is from environment taxes or the emissions trading system, the chemical industry undoubtedly wants to have its share of the burden reduced. In addition, many chemical companies have voiced unwillingness to participate in a domestic emissions trading system. Apart from CO₂ emissions, which can be reduced through more efficient operations and other similar measures, chemical industry insiders want the government and the public to understand the industry's characteristics; that is to say, CO₂ is inevitably generated from the manufacturing processes for cement and other chemical products. This opinion is understandable. However, it is also true that awareness and efforts to reduce greenhouse gas emissions differ from company to company even within the same sector. Ube Industries and Tokuyama Corporation, both of which are engaged in energy-intensive businesses, have been making strenuous efforts. On the other hand, Sumitomo Chemical Co. Ltd., Kaneka Corporation, Daicel Chemical Industries, Ltd. and other companies, all of which had formulated their respective carbon reduction plans from an optimistic view of assuming both the introduction of a basic unit system and a 6% carbon reduction target, were slow to respond and they are now in a panic. Just for reference, companies such as Mitsubishi Chemical, Ube Industries, and Sumitomo Chemical have formed special in-house teams to handle measures to combat global warming and the emissions trading system, and they have been researching overseas cases, including the Clean Development Mechanism (CDM) and carbon reduction efforts.
- ✓ With regard to business downsizing and employment issues related to carbon restrictions, only a limited number of companies are considered to be affected. Energy-intensive major diversified chemical companies are more likely to be affected. However, small and medium-sized companies such as paint makers and ink makers are more likely to feel only a limited impact because their greenhouse gas emissions are minor. Even within the chemical industry, the impact from carbon restrictions varies according to manufactured products.

Environmental Taxes, the Emissions Trading System, and Tariffs (Border Adjustment Tax)

- ✓ When comparing environmental taxes and the emissions trading system, environmental taxes are preferred by the industrial world. It is not possible to tell what will happen in the financial markets, and it is difficult to prevent both speculative money movements and wild fluctuations in share prices. Intrinsicly, the demand and supply of emissions credits should not change day by day, but they actually do in the market. From the viewpoint of companies, coping with changes in currency exchange rates is itself a challenge. If they also have to trade in emissions credits in the market, this will be difficult both mentally and organisationally (who or which department should be responsible, etc.). Are face-to-face transactions more preferable then? Not really. I guess it will be troublesome to find counterparts to trade with. It is quite difficult to find a comprehensive solution that could solve all the issues. To cap emissions trading prices may be an effective tool for preventing wild ups and downs in prices, but I am not sure if it would work well in the market.

- ✓ The idea of introducing environmental taxes and then imposing a kind of tariff called a “border adjustment tax” on imported goods to protect domestic industries will not last long in the rest of the world. Partner countries might boldly take advantage of this taxation system to impose tariffs on Japanese-made products. In the light of Japan’s heavy reliance on exports, this idea is considered to be likely to do more harm than good.
- ✓ With regard to the emissions trading system, if the national government and local governments adopt different schemes, this could cause confusion. So I think it would be better for the system to be unified nationally.

Current Conditions and Future Outlook for the Chemical Industry

- ✓ The current conditions of the Japanese chemical industry do not present an optimistic outlook at all, as Asian nations (especially China) are catching up at breakneck speed. This is especially noticeable in commodities. For example, Japan currently exports ethylene products to China, but industry insiders predict that such export demand will disappear in the near future. Japan is certainly strong in terms of technology and the quality of its products, but others will catch up within five years. Accordingly, a great number of Japanese companies have been striving to shift commodity products to specialty products with many differentiators. However, global demand for specialty products is not substantial at this stage. For example, expectations for products in the rapidly growing BRICs are for commodity products that meet basic needs. On the other hand, specialty products require technology, and in many cases such technology cannot be purchased for money, but requires huge R&D efforts, resulting in high costs. Nevertheless, the strengths inherent in specialty products do not necessarily guarantee peace of mind or security because emerging countries will continuously emulate their more advanced rivals and further narrow the gap. Once the much larger Chinese companies catch up with Japanese companies in terms of technology, a number of Japanese companies will be forced to specialize in Japan-specific niche businesses. However, amid declining domestic demand, the business model of manufacturing products here in Japan and selling them to Japanese people lacks growth potential.
- ✓ The problem with the Japanese chemical industry is that a selection and concentration strategy in terms of goods or at the corporate level has not been implemented. The profit margins of Japanese companies are extremely narrow, as seen in the example of petrochemical companies whose profit margins (in terms of operating profits) are around 5% and plunge into the red in less successful years³. In contrast, the profit margins of German companies are 10 ~ 15%, and, to crown it all, Chinese companies boast profit margins of more than 20% partly due to their market growth and cost advantage and partly due to tariff measures. When Japanese chemical companies raise funds through equity financing, their shares are hardly ever purchased by foreign investors due to their low profitability. Looking at the shareholding ratio of Japanese chemical companies, foreign investors account for 20 ~ 40 %. But this does not mean they buy these shares for positive reasons. They include these shares in their portfolio just because the Japanese market still remains large by world standards.
- ✓ Chinese companies have been expanding their commodity business, supported by robust domestic demand. They have also been learning the technology of specialty fields. It is problematic that their awareness of intellectual property rights is low, but the custodial difficulty is even more problematic. For example, valuable expertise is being disseminated by some retired Japanese engineers. In addition to China, oil-producing countries in the Middle East are expected to gain substantial influence in the chemical sector. To take ethylene products as an example, energy accounts for 80% of the raw materials. In this sense, oil-producing countries have a comparative advantage. Korea’s current strength is considered to derive from the positive impact of its currency exchange rates. However, basically, Korea has problems similar to Japan’s.

³ The break even points are 90 ~ 95%.

- ✓ At this point in time, solar cells, lithium ions, and carbon fiber have the potential to become the main products of the future since the markets for these products are expected to grow. However, with regard to solar cells, their economic rationality is not justified without subsidies. Besides, it is difficult for Japanese companies to gain influence and make profits since each country and its relevant companies are competing to develop or expand sales. With regard to carbon fibre, the market is expected to expand along with the progress in automotive weight saving. However, it will be difficult for carbon fibre, for which the recycling technology has not yet been established, to become widely used in one or two years. This is not only because carbon fibre costs as much as JPY4,000 per kilogram, compared to iron's JPY100 per kilogram (although such a simple comparison cannot be made because carbon fibre is six times as bulky as iron), but also because automakers demand 100% recyclable raw materials. However, in about five years, carbon fibre might gain in popularity. In Europe, automotive weight saving has been strongly promoted. If the Japanese government adopts similar policies, the relevant technological advances may be accelerated.

Inroads into Overseas Markets and Carbon Leakage

- ✓ With regard to inroads into overseas markets, ambitious companies with ample funds and human resources have already made inroads based on business requirements such as cost competitiveness and proximity to customer regions. The proportion of overseas operations varies from company to company, ranging from 30% to 70% or more. Meanwhile, companies that have not yet made inroads are also more likely to be unable to continue to do so in the future.
- ✓ If restrictions on a carbon economy are imposed, Japanese companies will certainly accelerate their overseas transfers due to the resulting increase in business costs at home. There may be no new chemical plants constructed here in Japan. In addition, some companies will cease domestic production and move overseas. In this regard, however, if diversified chemical companies are well guided by a certain policy or policies, they might cease the production of commodities and concentrate their resources on more profitable products. So far, despite the low profitability of commodities, they have not yet been able to make such a decision for various reasons. This kind of decision will benefit the chemical sector. Consideration of how to create a soft landing will become more important in the future when environmental taxes or the emissions trading system are designed and fully implemented. Looking at the European case, they seem to be setting a transition period and are reducing taxes, and such mitigation measures are worthy of consideration.
- ✓ With regard to commodities, large quantities of imports enter the Japanese market. For example, about 90% of dye compounds are imported from foreign countries (especially from China) along with the increase in imported clothing. Therefore, if some carbon restrictions are imposed, the consequence is more likely to be the loss of domestic industries unless such schemes are devised to enable companies to compete on an equal footing with other nations.

Breakdown of Expenses and Passing Higher Costs on to Other Parties

- ✓ A wide variety of products are manufactured in the chemical industry. This situation also means that the breakdown of expenditures is equally diverse.
- ✓ Higher costs can be passed on to other segments when the economy is going well and the supply-demand balance is tight. But when these conditions are not favourable, it is difficult to pass on these higher costs. According to the product, the higher costs for ethylene and other products, where the energy costs account for a large portion of the raw material costs, can easily be passed on to customers who willingly try to understand the circumstances. In contrast, higher costs for paint, ink and other products, where the energy and fossil fuel material costs account for only a small

proportion of the manufacturing costs, it is difficult to pass higher costs on to users if energy or fossil fuel prices rise slightly. In the light of the main premise of continuing deflation, however, all parties, including oil companies, logistics companies, retailers and wholesalers, have been making strenuous efforts to reduce costs and thus it is now not so easy to pass higher costs on to anyone else.

Expected Role of the Japanese Government

- ✓ I would like the Japanese government to create opportunities that will drastically change global demand. To this end, it will be essential to firstly clarify the future direction and the vision for the society and then to formulate and implement bold policies to realize such a direction and vision. For example, the US government has been focusing on the creation of green industries partly by subsidizing about 50% of R&D expenditures related to solar cells. At least one excellent Japanese company took advantage of this trend and moved to the US. I suggest that the Japanese government consider this kind of preferential policy for R&D expenditures. Japanese companies, including diversified chemical companies, have budding technologies that might become the mainstream of the next generation.
- ✓ When formulating a vision for the future society, it is important to put the broad industrial base and spillover effects into perspective. Policies to increase national wealth as a whole, instead of that of certain companies, should be prioritised. For example, carbon fibre-related technology only involves a limited number of Japanese companies (3 ~ 4 companies). I believe that the Japanese government needs to consult with the industrial world, regarding what should be focused on.
- ✓ I also believe that it will be worth considering the establishment of Japan's own environmental standards and creation of entry barriers to foreign companies, just like the European policy to promote automotive weight saving. Even if foreign competitors meet such standards and enter the Japanese market several years later, Japanese companies will have the advantage as long as they complete their initial investments within a few years.

Attractiveness of Japanese Equities (Equity Story)

- ✓ Foreign investors now consider Japan as just one of the Asian Pacific countries, and thus none of their investment funds are specialised in Japanese equities or bonds. No foreign investors purchase Japanese equities for a positive reason, because Japanese companies are inferior to Asian counterparts in terms of their potential for growth or earning power. Japanese companies boast excellent technological competence, but such competence cannot be appreciated unless it is accompanied by earning power.

Finance and the Environment

- ✓ It seems to me that awareness of the environment and corporate social responsibility (CSR) has been increasing since some time between 2007 and 2008. I believe that concern for the society and the environment is essential for implementing sustainable management. I also think it is right that environmental reports and CSR reports should be prepared. However, do investors and analysts read such reports? No, they just recognise their existence. Although very detailed environmental and CSR reports are being prepared, there is too much information overload and thus it is difficult to compare such data across companies. In addition, investors and analysts, who are not environmental experts, cannot judge whether and to what extent such information is assured. My guess is that investors obtain such information from a specialised consulting company when it is required. If this

information is evaluated by a third-party institution and the evaluation can be referred to, that will be convenient. It is also desirable that the evaluation criteria be globally comparable.

Questions and Answers

- (1) As mentioned above, the shift from commodity products to specialty products with many differentiators will continue to progress. However, the rise of emerging economies around the world, especially in Asia and the Middle East, is so pronounced that Japanese companies cannot hold on to the status quo. Companies should constantly evolve their business models in response to the changing circumstances. In this sense, if their business models continue to target only Japanese people here in Japan, their growth potential seems to be limited, since domestic demand is forecasted to decline along with the declining birth rate.
- (2) The following can be cited: Solar cells, lithium ions, carbon fibre, LED, biomass, biodegradable plastics, water treatment technology, and approaches to utilising CO₂ as some sort of raw material. But it is difficult to forecast their future development. With regard to biomass, biodegradable plastics, water treatment technology, and the approach to utilising CO₂ as some sort of raw material, it will take at least 10 years to achieve innovations in the relevant technologies.
- (3) As mentioned above, there has been a need to make inroads into overseas markets for a quite a long time, and savvy companies with ample resources have already done this.
- (4) Japanese companies do not have a large global market share. As far as Asia goes, some Japanese companies are ranked among the top three companies in terms of local market share.
- (5) The possibilities for and proportion of higher costs that can be passed on to other parties vary in accordance with the times and the products.
- (6) Overseas transfers are considered to be progressing.
- (7) The impact is considerable. The chemical industry has been faithfully trying to deal with environmental regulations, including taking voluntary action, in the light of past environmental pollution incidents caused by chemical companies. For example, with regard to the disclosure of energy usage or CO₂ emissions, Japanese companies show their sincerity partly by evaluating their entire plants and disclosing the results. In contrast, disclosure among Asian companies is limited to the simple adoption of good practices and the presentation of other figures or cases that suit themselves.
- (8) As mentioned above, company-wide efforts are being made to reduce CO₂ emissions. For example, Mitsubishi Chemical established the KAITEKI Institute, Inc. (Institute for a More Comfortable Earth)
- (9) As mentioned above, the equities of Japanese chemical companies are not purchased for a positive reason. At this stage, knowledge concerning greenhouse gas reduction is limited among investors.
- (10) As mentioned above, more CO₂-related information is being disclosed.
- (11) I would like the Japanese government or the Ministry of the Environment to set a national vision and, based on this, to then formulate appropriate policies and measures. I also hope that public officials will consider subsidizing R&D expenditures and creating barriers to entering the Japanese market.
- (12) Looking at model cases in the US and Europe, I would like to suggest that the Japanese authorities consider fostering green industries based on national policies as well as formulating mitigation measures such as setting a transition period or reducing taxes when carbon restrictions are imposed.
- (13) Nothing special, but I have mixed feelings. While I am impressed by the grand scale of the new system for the sake of energy savings in offices, I wonder if they really needed to go to such lengths.

In my opinion, it is more desirable for local governments and the national government to consider unifying their systems.

- (14) The new programme of the BOJ might be a meaningful policy for small and medium-sized companies, but large companies do not have any particular financing problems. Therefore, it has had little impact on major companies. In addition, since interest rates have already been extremely low in Japan, even lower interest rates will not change corporate activities.
- (15) As mentioned above.

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 - **Summary created by:** Nagisa ISHINABE (Institute for Global Environmental Strategies)
 - **Interview date:** 7 June 2010
 - **Length of the interview:** 3 hours
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Automobile

Tatsuo Yoshida/ UBS

The Automobile Industry and the Environment

- ✓ Within the automobile industry, environmental friendliness has already become a global trend. However, judgments regarding capital investments, R&D and business matters are made not on the basis of a country's environmental measures, but on world market trends. For example, to conserve the environment, the world's automakers use labour and funds not only to develop power trains¹ and vehicles, but also to establish production technologies and distribution systems that have a lower impact on the environment. In the case of the automobile sector, because environmental measures are often imposed as restrictions, the differences between companies in terms of their response to these restrictions are limited. However, differences do exist according to the strategy adopted by each company, such as the rate of response to such measures and the earlier introduction of new technologies.
- ✓ If environmental measures are established at levels and schedules that are inconsistent with the market mechanisms and customer demand, they result in creating disadvantages for both the government and the industry. For example, the State of California had to revise its restrictions on exhaust gases because it enacted them at levels and schedules beyond the limits of corporate efforts. On the other hand, in a situation where environmental measures overlap measures to boost the economy (such as the recent measures to increase the demand for automobiles in Japan, the US and European countries), the creation of demand for automobiles contributes to the profits of all automakers since this increases automobile sales and reduces sales costs.
- ✓ Wherever automobiles are manufactured, distributed and used, they inevitably have an adverse impact on the environment and resources. Even if the CO₂ emissions for each vehicle are reduced, if the level of automobile ownership increases, any reduction in total emissions will be limited. In the automobile sector, many restrictions have already been introduced to reduce the emissions of CO₂ as far as possible, and the severity of these restrictions has been increasing with the passage of time. Even if the technical development required is feasible, the cost and labour inputs required for this development and the additional cost of adopting the new technology will be factors that limit company profits. However, automakers have no choice but to accept such environmental measures as good corporate citizens.
- ✓ Since the strategies adopted by Japanese automakers to sell hybrid automobiles have been determined on the basis of the price that consumers are willing to pay, the profitability of these vehicles is extremely low at present, at a little more than the break-even point.² If there is any concern about the situation of Japanese automakers, it is that they pay too much attention to hybrid vehicles and other automobiles that require a high level of advanced technology, and compete with each other with respect to the quality of their automobiles so fiercely that they lag behind in the competition among global players.
- ✓ It is difficult to predict the sales of electric automobiles since significant technological innovation is required to solve the problem of the short range per charge and because it is necessary to establish a system for charging the batteries. Even if the sales of hybrid automobiles and electric automobiles increase, they will not reach the level of the sales of conventional power trains. As part of Japan's measures for reducing the emissions of CO₂, it seems that it would be efficient to increase the

¹ "Power train" means the power system and the power transmission and drive system. It consists of the following component parts: the engine, clutch, transmission, propulsion shaft, differential gears, and drive shaft.

² How the R&D budget is allocated is unknown since information on this budget has not been disclosed.

proportion of next-generation automobiles in relation to the total number of new automobiles sold, while decreasing the number of older generation automobiles still on the road. In this case, it is necessary to take into consideration the declining population and the declining ownership of automobiles.

- ✓ Since the use of hydrogen-fueled automobiles, biofuel-driven automobiles and natural gas automobiles, and use of carbon fibre for automobile bodies still require technological innovation and cost reductions, the adoption of this technology will not become mainstream for the time being. (For the products, services, and technologies that seem to be likely to become mainstream in the future, see the Questions and Answers (2) section.)

The Current Situation and Prospects for the Future of the Automobile Industry

- ✓ The North American market was, is, and always will be the most important market for Japanese automakers. Although the markets of China, Brazil and other emerging countries are expected to grow, the North American market will remain important due to its size and the deployment of business operations that has been made through direct investment subsidiaries. Although the automobile market in North America shrank temporarily due to the financial crisis, it is likely to expand in the future since the number of licensed drivers will increase. It is therefore natural to transfer production capacity not to Japan, where the population and the demand is expected to decrease, but to North American and emerging countries, where the demand can be expected to increase. In addition, in the Japanese market, where sales competition is fierce, the rate of return is low since substantial expenditures are required for sales promotion and purchasing incentives.
- ✓ Japanese automakers are likely to continue to give priority to the North American market, where they have firmly established brand loyalty and consumers clearly recognise the difference between Japanese and Korean automobiles.³ Although this difference may narrow, it will continue to remain in the future. In the European market, however, Japanese automakers have a problem of positioning and consumers do not recognise the difference between Japanese and Korean automobiles. In the Chinese market as well, many consumers are purchasing a new automobile for the first time and think that automobiles from both countries are good and there is no particular difference. The automobiles that sell well are Korean and Chinese automobiles in China, Suzuki automobiles in India, and GM, Fiat, Volkswagen automobiles in Brazil.
- ✓ In Japan and Western countries, although demand has been artificially created by tax breaks and other incentives for more environmentally friendly automobiles, there may be a negative reaction in future. (For the short-term (three months) and the medium- and long-term (one year) prospects for the automobile industry, see the Questions and Answers (1).)

Cost-transfer at the Time of a Rise in Raw Materials Costs

- ✓ The level of cost-transfer depends on the situation of competition in each market. Usually, each automaker fixes the price of its products, taking into consideration the movements of the price leader for each product segment and the competitiveness of their products. However, if in a market there is a strong trend towards deflation, the rising cost of materials can be shifted to the final consumers only to a limited extent. In this case, the automakers have to minimise the effects of the rising cost of materials by endeavouring to reduce their overall costs and the costs assumed by their affiliated companies. In the automobile sector, if the price of materials rises, this can never be covered by adjustments in employment allocations.

³ One of the reasons for this is that consumers in North America remember that a Korean automaker that advanced into the North American market in the 1980s frequently had quality problems.

- ✓ Since automakers use long-term and stable contracts as a negotiating tool, they have some negotiating power with respect to steel manufacturers. However, since the details of the negotiations cannot be disclosed, it is unknown to what degree rises in costs can be accepted.

Inroads into Overseas Markets and Carbon Restrictions

- ✓ When an automaker makes a decision about entering an overseas market and setting up local production, it considers various factors, such as the avoidance of trade friction, the liability for local production (especially in developing countries), avoidance of the effects of exchange rate fluctuations, the reduction in lead times, the local trends with regard to demand, and the situations of the local infrastructure, the supplier networks, and the advantages and disadvantages of various taxes and subsidies. In addition, since automobile manufacture depends on a minimum scale of operations, if this minimum scale cannot be achieved, the overseas market will not be chosen. Even if the minimum scale can be fulfilled, whether or not the risk of making the investment can be accepted will depend on each company's strategy and judgment. Thus, automakers make decisions concerning inroads into overseas markets on the basis of a variety of factors. Therefore, overseas transfers are not determined by carbon restrictions or raw material costs alone.
- ✓ Although overseas production is increasing, some autoparts are exported from Japan due to the low technical level and the unavailability of materials, including engines, electronic devices, automatic transmissions, and high-tensile steel.
- ✓ Now that the automobile industry has a tradition of expanding to foreign countries, investors no longer make decisions on the basis of each company's overseas deployments alone.

Expected Role of the Japanese Government

- ✓ The automobile sector requires a long lead time to develop a product or technology. The Japanese Government is required to make consistent and long-term commitments so that the long-term input of labour and expenditures is not wasted. Since Japanese automakers compete in the global market, the Government is required to take measures that consider not only the situation in Japan, but also world trends. Measures that require additional costs for personnel as well as costs for optimal solutions that are only applicable to Japan are regarded as a business risk by Japanese automakers.
- ✓ If there is a gap between the purpose of a policy and the requirements of the market mechanism or customer needs, the government should guide the market and the customers towards eliminating this gap. Systems should be designed so that assistance for the achievement of their purpose does not turn into assistance for specific means and technologies. Technologies supported by policies are often half-baked and lack permanency or universality. For this reason, the Government should only take essential measures and encourage companies to develop their technologies independently within competitive markets. It is not appropriate for the government to take measures that place excessive emphasis on specific technological elements. In the field of advanced technologies, the significance of various technologies can change radically after a sudden breakthrough occurs.
- ✓ The Government should also carry out measures that are highly effective in reducing greenhouse gas emissions beyond sectoral boundaries, such as a reduction in traffic congestion and a shift in modes of transport.
- ✓ Japan's corporate tax is significantly higher than in other countries. This should be corrected. In addition, the government should actively promote tax reform and the creation of a system that would enable the employment of foreign technical experts.

Tokyo Metropolitan Government's Emissions Trading System

- ✓ Although the Tokyo Metropolitan Government's emissions trading system will only have a limited impact if the system is implemented by the Tokyo Metropolitan Government alone, it could become an effective initiative for reductions in CO₂ emissions if the national government implements the system throughout Japan. If the cost of conducting corporate activities in the Tokyo Metropolitan area becomes too high, companies will move out of the area. The Tokyo Metropolitan Government might not have envisaged such a scenario, but automakers that have offices or plants in the metropolitan area will examine the details of the system and come up with their own solutions.

Basic Law for the Earth Environment

- ✓ With regard to the Basic Law for the Earth Environment, the Japan Automakers Association has pointed out the following problems: the height of the barriers to implementation (feasibility), verification of the effects (identification of the burden on individuals), and international comparison with other systems (fairness).

Finance and the Environment

- ✓ Many investors are directly interested in the profitability and growth potential of companies. Apart from SRI funds, there are no investors who make decisions concerning investments based mainly on CSR and environmental friendliness. Although companies that have excellent ratings in terms of profitability and potential for growth are also likely to have an excellent record in CSR and environmental friendliness, many investors do not decide to invest in a company based on its CSR and environmental friendliness. People in the US are more concerned about SRI than in Japan due to the difference in expectations regarding their sense of trust in corporations. In the US, people have traditionally often been dubious of the sincerity of companies, so they generally consider that monitoring by citizens is necessary. As a consequence, SRI and other methods of governing corporate activities have been more popular in the US than in Japan.
- ✓ With regard to the visualisation of CO₂ emissions, each automaker has promoted visualisation and the disclosure of information through sustainability reports and environmental reports. If uniform formats or standards could be established that enable a comparison to be made between companies, then this will be useful as a reference for SRI investments.

Questions and Answers⁴

- (1) Please comment on the medium- and long-term prospects for the industry sector that you cover.

Short-term

- Although the sector has rebounded from the low point in terms of the number of automobiles sold, sales and profit levels still reflect the fact that the economy is in the midst of a recovery and have still not achieved record profits.
- The situations in automobile markets vary:
 - ◇ Gradual recovery from stagnation (North America, Southeast Asia)
 - ◇ Reaction against an artificial recovery (Japan, West Europe)
 - ◇ Continuation of motorisation (China, India, Brazil)
- Foreign exchange: A rising yen against the US dollar and the Euro has had a negative effect on both the export balance and the conversion of profits from overseas subsidiaries.

⁴ The answers written by the analyst Yoshida have been reprinted as they are, except for the notes, which have been added by the summary author.

Medium- and long-term

- Although positioning has been maintained due to a sophisticated balance between quality, performance and price, severe competition has continued among Japanese automobile manufacturers in North America, Northern Europe, Southeast Asia, Oceania, the Near and Middle East, etc.
- Any Japanese automaker is competing not only with other Japanese automakers, but also with global automobile manufacturers to increase market share in emerging countries:
 - ◇ China: Korean automobiles, European and American low-end automakers (direct competition with local Chinese automakers is not so fierce)
 - ◇ India: Korean automobiles
 - ◇ Brazil: Korean automobiles, European and American low-end automakers
 - ◇ Russia: Korean automobiles, European and American low-end automakers

(Note) “Short-term” refers to the recent three months and “medium- and long-term” refers to the most recent one year (“long-term” refers to the most recent five years).

- (2) Please tell us about the products, services and technology that you expect to become mainstream in the future. In addition, please also describe the major cost items involved (energy/raw material costs, labour costs and overhead costs, etc.) and give a rough breakdown. In addition, please tell us about alternatives, if there are any.

Products

- Small and midsize crossover SUVs (North America, Europe, Asia, etc.)
- Compact automobiles in A&B segment (Asia, etc., Europe)
- Reasonably priced HVs (Japan, North America)

Services

- Telematics (Japan, North America, Europe)

Technology

- Engine: Downsizing + Charging
- Automatic MT: DCT (Dual Clutch Transmission), etc.
- HCCI (Homogeneous Charge Compression Ignition)
- Lighter body weight⁵

- (3) Please tell us about the corporate requirements for making inroads into overseas markets, while also providing information about the past trends and future outlook, the domestic and overseas investment situation and the domestic versus overseas ratio, as well as any background information and the reasons, etc. In addition, please describe how Japanese and foreign investors evaluate such inroads into overseas markets.

Background to inroads into overseas markets

- Avoidance of trade friction (mainly advanced countries)
- Local liability to manufacture domestic products (mainly developing countries)
- Avoidance of the impact of exchange rate fluctuations
- Reduction in lead times

Evaluation by investors of inroads into overseas market

When investors evaluate companies, they do not just focus on inroads into overseas markets.

- (4) Please tell us about the market share of Japanese companies in overseas markets, and whether the share has changed or not, or otherwise what the trend is. Please also indicate the ratio of exports to

⁵ (Note) This does not mean the use of carbon fibre.

imports of each company (for example, the ratio of imported raw materials, or the ratio of exported products).

Japanese companies' share

- US: Gradually increasing trend (changes in the basic trend depend on changes in the sales of Toyota, the largest Japanese automaker)
- Europe: After a gradually increasing trend, there has been a slight downward trend since 2008.
- China: Although the absolute number of automobiles sold has increased, the share has decreased.
- Southeast Asia and the Middle and Near East: Stably remaining high

Each company's imports and exports

- The ratio of exported automobiles can be calculated from the data disclosed on each company's website: for example, Toyota 51%, Honda 26%, and Nissan 51% (as of March of FY2010).
- No data on imports has been disclosed.

- (5) Please describe what kinds of management decisions the companies have made, and to what extent cost-transfer was made with regard to products in the past when crude oil and other raw material prices surged. In addition, if the cost-transfer to the final products is difficult, countermeasures are assumed to include a reduction in employment and cuts in capital expenditures. So tell us what kind of measures companies actually took in the past. In addition, give us your views on what kind of measures companies may take in the future if they are put in a similar situation as described above.

Measures to deal with a rise in the prices for raw materials

- Basically, companies control the impact of any price rise on their profits as far as possible by "additional and accelerated cost reductions" and "cost-transfer."
- The extent of the cost-transfer depends on the state of competition in each market.
- The automobile sector does not directly connect "raw material prices" with "employment and capital."

- (6) If greenhouse gas emissions quotas are imposed and thereby the cost of raw materials, such as energy and steel, increase, to what extent will overseas transfers be accelerated at the corporate level or at the factory level? Please give us your views on this point, although your answer might depend on the degree of such cost increases. In addition, describe how the choice of technology at the corporate level may be affected by the above-mentioned situation. If you think these impacts would differ from company to company within the same industrial sector, please also tell us about the reason(s) for this, for example, the difference in proprietary technology or the financial standing, etc.

Overseas transfers

- In addition to GHG emissions quotas and raw material prices, there are various other factors to be considered when deciding on a transfer overseas.
- A decision to transfer operations overseas is made comprehensively from the point of view of currency movements, the trends in demand in the foreign country, the competitiveness of exports from the foreign country, the foreign country's infrastructure, the network of suppliers, the advantages and disadvantages of taxes and subsidies, etc.

Differences within the industry

- Because there is a minimum scale that is applicable to automobile manufacturing, if the minimum scale cannot be accomplished, inroads into overseas markets will be excluded from among the choices.
- Even if the minimum scale is fulfilled, whether or not the investment risk is accepted depends on each company's strategy and judgment.

- (7) Please tell us how environmental policies and measures will affect corporate management decisions. In addition, please describe what kind of environmental policies and measures companies consider as risks, and, in contrast, what kinds of these policies and measures are taken advantage of to earn profits (for example, market creation derived from environmental regulations or the production of high-priced goods (farm products, etc.)). If there have been any significant increases or decreases in capital investment spending and/or R&D expenditures instigated by environmental policies in the past, tell us about these as well.

Influence of environmental policies and measures

- Since the automobile sector is obliged to comply with environmental regulations, the freedom of judgment given to businesses is limited. However, companies may adopt a strategy of accelerating measures to cope with the effects of these regulations or introduce new technologies.
 - The risk is that the requirements of the environmental policies and measures are determined at a level or schedule inconsistent with market mechanisms and customer needs. Automakers are caught between the requirements of the policies and measures and the requirements of the market and customers.
 - When environmental policies overlap with measures to boost the economy (such as the recent measures to increase automobile demand in Japan, the US and Europe), the creation of automobile demand contributes to each automaker's profits due to the increase in automobile sales and a drop in sales expenses.
 - In the automobile sector, since environmental friendliness has already become a global trend, the amount of expenses for capital investment or R&D do not change according to one country's environmental policies or measures alone. Companies make investments and promote R&D according to the trends in the global market where they are developing their businesses.
 - To conserve the environment and resources, the world's automakers use labour and funds not only to develop power trains and vehicles, but also to establish production technologies and distribution systems that has less environmental burden.
- (8) Please describe how your industry sector or each company has been working on measures to combat global warming, how such efforts are characterised, and how they are strategically positioned.

Management efforts in response to measures to combat global warming

- Automobiles inevitably create a burden on the environment whenever they are manufactured, distributed, and used. Even if CO₂ emissions per automobile are reduced, the number of automobiles owned will continue to increase and therefore the effect of the manufacturer's efforts on any reduction on the total amount of emissions will be limited.
 - Because of this, many regulations have already been introduced in the automobile sector to reduce CO₂ emissions as much as possible and the level of standards set by these regulations has become stricter with the passage of time.
 - Although it is possible to develop technologies that reduce CO₂ emissions, the costs and labour required for this development and the additional cost of adopting any new technologies will put a squeeze on earnings.
 - However, automobile companies, which are required to act as good corporate citizens, cannot avoid making efforts to deal with environmental issues.
 - In addition, every automaker is anxious that its rival manufacturers might establish a competitive advantage, using environmental friendliness as a lever.
 - Therefore, the executives will direct all the stakeholders, such as employees, stockholders, and suppliers, to make environmental efforts, such as the prevention of global warming and the reduction of CO₂ emissions.
- (9) Please tell us about investment trends among Japanese and foreign investors. In particular, describe to what extent corporate social contributions and concern for the environment are evaluated as being useful for making investment decisions. In addition, explain how the recent increase in

environmental consciousness has been affecting companies, financial institutions and the securities market. If the corporate social contribution and concern for the environment are actually evaluated, please describe how investors obtain information related to the environment and society (for example, environmental reporting, or interviews with individual companies, etc.). Furthermore, if you consider this kind of information disclosure insufficient, please point out the problems.

Social contributions, environmental care and investment decisions

- Apart from SRI funds, I have never met any investor who places the greatest importance on CSR or environmental friendliness.
- Many investors are directly interested in profitability and growth potential. Although companies that have excellent profitability and growth potential are likely to be also excellent with respect to CSR and environmental concerns, this does not mean that investors make investments by estimating profitability and growth potential from the point of view of CSR or environmental friendliness.

(10) With regard to efforts to visualise CO₂ in economic activities, including the carbon disclosure project, please give us your views on the recent corporate trends and the response of financial institutions (such as low-interest loans) to such trends, if any.

Visualisation of CO₂

- Each automaker has traditionally been positive about the visualisation of CO₂ and information disclosure through sustainability reports and environmental reports.

(11) Please give us your views as to what kinds of policies are advisable for the Japanese government or the Ministry of the Environment to take up in order to promote corporate measures to deal with global warming and increase investment in the green industry. In addition, if you consider any previous or existing policies or measures to be effective, please tell us about these cases and the relevant factors in their success. If you have an opinion about evaluation systems that are desirable for companies to adopt for their environmental and social activities (the contents of what is to be evaluated by the society and the government and the means of offering incentives), please inform us.

Policies

- The role of the government is “to fill the gap” between the policy purpose and market mechanisms and customer needs or “to lead markets and customers to fill the gap.”
 - ◇ However, technologies that are supported by government policies are often half-baked and lack permanency and universality.
 - ◇ If support that facilitates the achievement of the purpose becomes support for a specific means or technology, this is like putting the cart before the horse.
 - ◇ The government should minimise policy support and promote the independent development of technologies in competitive markets.
 - ◇ It is inappropriate to adopt policies that place excessive importance on specific technologies, such as electric automobiles or fuel cells. In the field of advanced technologies, the differences in significance among technologies change greatly when a breakthrough suddenly occurs.
- The automobile sector cannot be directly involved in the reduction of traffic congestion or modal shifts. The government also plays the role of carrying out measures that are highly effective for the reduction of GHG.
- In the automobile sector, the lead time to develop an elemental technology or a product is long. It is necessary to make a consistent and long-term policy commitment so that the long-term input of labour and funds does not end up becoming worthless.
- Japanese automakers are competing in the global market. Using too much manpower and financial resources for optimal solutions that are only applicable in Japan is a risk factor for their business. Policy planning requires consideration for the level of competition in the global market.

- (12) Considering the efforts of foreign governments or foreign companies, please tell us about model cases that Japan should emulate, if any.

Foreign efforts

- Correction of the heavy corporate tax burden
- Systems that facilitate R&D: tax systems and systems for employing technical experts from foreign countries

- (13) The Tokyo Metropolitan Government has been implementing an emissions trading system since April 2010. Please give us your views on its impact on corporate activities.

Tokyo Metropolitan Government's emissions trading system

- The effects of emissions trading will be minimal if it is only carried out by the Tokyo Metropolitan Government. However, it could turn out to be an effective initiative for the reduction of CO₂ emissions if the Japanese Government follows the example of the Tokyo Metropolitan Government.
- If the cost of conducting corporate activities in Tokyo becomes too high, companies may move out of Tokyo. The Tokyo Metropolitan Government does not seem to expect this situation.
- The automakers that have offices and plants in Tokyo will be pressed to take some measures. They will take them after examining the details of the system.

- (14) The other day, the Bank of Japan (BOJ) established a new loan programme for financial institutions with the aim of revitalizing environment and energy-related projects. Please give us your views on this measure, if any. (Please take into account the following article for reference.)

I have no particular comments.

- (15) Please give us your views on the Basic Law for the Earth Environment, and the energy basic plan, etc., if any.

Basic Law for the Earth Environment

- The Japan Automakers Association has already expressed its regret, pointing out the following problems: the height of the hurdles to compliance (feasibility), verification of the effects (investigation of the public burden), and international comparisons (fairness).
- It is efficient to increase the ratio of next-generation automobiles to the total sales of automobiles, while decreasing the number of old-generation automobiles.
- Consideration should also be given to the impact of the reduction in the number of automobiles owned due to the declining population and a decrease in the number of young people moving away from automobiles.

-
- **Interviewers:** Teruya SARUTA (Ministry of the Environment), Junichi FUJINO (National Institute for Environmental Studies) Nagisa ISHINABE (Institute for Global Environmental Strategies)
 - **Summary created by:** Nagisa ISHINABE (Institute for Global Environmental Strategies)
 - **Interview date:** 11 June 2010
 - **Length of the interview:** 1 hour 30 minutes
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Paper/Pulp and Glass

Hiroyuki Okaseri/ Mitsubishi UFJ Morgan

The Paper and Pulp Industry and the Environment

- ✓ In Japan, to reduce CO₂ emissions the paper and pulp industry is lowering the ratio of heavy oil to the total amount of energy consumed during the manufacturing process and is promoting the use of biomass (mainly woodchips). Although the manufacturers are using the Ministry of Economy, Trade and Industry's subsidy programme, this programme requires them to increase the biomass ratio to more than 50%. As a result, each of them is making desperate efforts to collect woodchips and make up for any shortfall using coal. Although the paper sector is anticipating a revival of forestry in Japan, it is difficult to make large-scale investments in forests in Japan due to land ownership and other problems. The Japanese Government should immediately implement policies and measures that can overcome this situation.
- ✓ Globally, it has become difficult to exploit natural forests. Moreover, because, in relation to food supply problems, there has been a reduction in the areas where trees can be planted, the growth of the paper and pulp business has natural limitations.

The Current Situation of the Paper and Pulp Industry

- ✓ It is basically possible for anyone to manufacture paper at any location with the introduction of equipment made by Voith in Germany or Metso in Finland. Because of this, it is difficult to differentiate products and it can be said that the paper and pulp industry is susceptible to external circumstances, such as the situation of supply and demand in the world and foreign exchange rates.
- ✓ The global trend in the demand for paper has greatly changed since the collapse of the financial services firm of Lehman Brothers Holdings. Before Lehman's fall, the demand for paper (paper for printing) amounted to 100 million tons due to the economic boom; subsequently, advertising expenses were reduced and paper demand decreased by about 20% to 85 million tons in advanced countries. In the meantime, Japan's rate of printing paper imports increased from 5% to 15% due to cost competition with foreign paper manufacturers. At present, Japan is importing paper from China and Europe at about a fifty-fifty proportion. Due to the depreciation of the euro, European countries (such as Finland and Sweden) have been taking the offensive in relation to Japan. When the euro was strong against the yen (JPY150 per euro), the volume of paper imported from Europe was not so high. At present, the operating rate of Japanese paper plants is about 85%.
- ✓ Japan's paper and pulp industry is characterised by a continual production process from woodchips to finished paper. This is a strong point for Japanese manufacturers. For example, if the price of pulp sharply rises around the world, this is advantageous for Japanese manufacturers.¹ It is hard to manufacture pulp from woodchips: about JPY70 billion is required as capital investment, and it is necessary to undergo strict environmental impact assessments. Since Japanese manufacturers purchase about 70 to 80% of the world's woodchips, they can become price setters. However, the sellers (mainly in Indonesia) know that if the Japanese manufacturers cannot purchase woodchips, it is difficult for them to manufacture paper. Therefore, the price of pulp has been moving according to a wait-and-see attitude among the various parties involved.

¹ Pulp is manufactured from woodchips.

- ✓ China, which is a rival of Japan in the paper and pulp industry, has been actively making capital investments and is manufacturing about 80 to 85% of its printing paper from pulp. However, China has a limited number of plants that can employ continual production like the Japanese plants.
- ✓ The market for paper is in a state of excess supply. Although European countries and China have been actively exporting paper, the major European manufacturers have never gained profits from this. In the US, the paper industry has become a shrinking industry. Although China has been very actively making capital investments, it has not disclosed the resulting financial state of the industry. Speculation has become rife that its balance sheet is in a mess. Major Japanese manufacturers rank 4th or 5th place in the world in terms of scale. However, they have also not been able to gain profits easily under a situation of excess supply. Their profits from exports barely reached marginal levels. Since the Chinese Government has imposed antidumping customs tariffs in its territories other than Hong Kong, Japan's exports to China are almost entirely limited to Hong Kong. At present, Japan has fixed the price of paper at a record low level and is competing with China and Australia for the Hong Kong market. The industry's operating profit ratio is about 5%.
- ✓ With regard to the demand for each of the product types, the demand for corrugated cardboard has been increasing due to the popularization of Internet shopping. Demand for copying paper has not declined so much since the requirements of the market are comparatively stable. The sales of pigment coated paper, which is used for catalogs and handbills, depends on the economic situations. Moreover, the presentation of products through printed catalogs is becoming outdated due to the progress in IT. Therefore, the sales of pigment coated paper have been declining. China has focused in particular on expensive pigment coated paper, while European countries are good at making thin coated paper.
- ✓ Because there is a deep mutual understanding among Japanese companies, they are not contending against each other for market share as before. This seems to be greatly dependent on the personality of each company's president. Therefore, if the president is replaced, the situation may change completely.

Prospects for the Future of the Paper and Pulp Industry

- ✓ Analysts have a difference of opinion regarding the prospects for the future of the paper and pulp industry. Optimistic analysts predict that because demand will increase in emerging countries (especially, China, India, and Viet Nam), the world demand for printing paper is expected to increase to 130 million tons by around 2020. Pessimistic analysts predict that demand in advanced countries will decline due to further progress in IT and a reduction in advertising through paper media, and it will be impossible to return to the level of 100 million tons.² If world demand for paper far exceeds 100 million tons, a problem of securing woodchip supplies will arise. Before Lehman's fall, it was thought that this problem might become a bottleneck for the supply of paper.

Carbon Fiber

- ✓ At present, there is almost no technology for carbon fibre and other special types of fibre, and differentiation is impossible.

Breakdown of Costs

- ✓ The breakdown of the cost of JPY100 for one kilogram of pigment coated paper is described below. The marginal profit ratio is about 30%. When each company's profit level is estimated, the profit structure for corrugated cardboard, newspaper, printing paper, special paper and other paper (such as

² The amount of paper used is about 20 kg per capita per year in Western countries and Japan, about 10 kg in China and Russia, and 2 or 3 kg in Viet Nam and India.

for the real estate business) serves as an important viewpoint. For example, if the proportion of corrugated cardboard is high, as in the case of Oji Paper, it is currently possible to make stable profits.

Breakdown of costs (per JPY100)	
Woodchips	30 yen
Chemicals (made mainly from heavy oil)	18 yen
Energy	10 yen
Depreciation	15 yen
Distribution costs	10 yen
Labor costs	4 yen
Repair costs	5 yen
Other costs	5 yen

Inroads into Overseas Markets

- ✓ With regard to inroads into overseas markets, Oji Paper has established a joint venture company in China, and is expecting an increase in demand for paper in that country. Because this project started this year and continual production from pulp will begin in 2013, there has been no response from investors so far. Moreover, because the financial situations of each of the paper manufacturers are not good, no company has shown any intention of following Oji Paper.

Cost-transfer

- ✓ Because corrugated cardboard is not imported, cost-transfer is possible domestically. As for printing paper, the customers for printing paper – that is, printing and advertising companies – are strongly demanding price cuts, and the competition with foreign manufacturers is fierce. Therefore, market situations are not as stable as in the corrugated cardboard market. Since cost-transfer is difficult, each manufacturer is cutting down on labour, equipment and other costs as much as possible. Because it is difficult to reduce the number of employees, some manufacturers are discussing the continuation of preventive maintenance to reduce capital investment.

Environmental Taxes

- ✓ If there is a price on carbon, consideration will be required for pigment coated paper since the domestic manufacturers may have a hard fight with respect to competition from imported paper. As for corrugated cardboard, newspaper and other types of paper, however, competition with foreign manufacturers is unlikely to occur. As described above, because cost-transfer for printing paper is likely to be difficult, when an environmental tax is introduced, it is appropriate to consider increasing customs duties on imported products. However, cost trends in the paper and pulp industry have so far been determined by foreign exchange rates and the world demand for paper rather than energy costs.

Carbon Leakage

- ✓ Even if emissions quotas for greenhouse gases are imposed, it is difficult to envisage that overseas transfers will make any progress (especially concerning corrugated cardboard). Since there seems to be no particular difference in the technology and product quality, disparities are unlikely to arise among the manufacturers in the industry. The key point for CO₂ reduction measures is whether the volume of fuels can be acquired besides heavy oil and coal.

Questions and Answers

- (1) As described above, the prospects depend on external factors, such as the world supply-demand balance and exchange rates. No equity financing has been carried out in the past five to ten years (except for the allocation of new shares to third parties at the time of the Hokuetsu TOB).
- (2) I have no particular comments. The impact of the iPad on electronic distribution as opposed to paper media cannot be estimated at present.
- (3) As described above, Oji Paper has recently advanced into China.
- (4) In the Hong Kong market, Japanese companies account for about 10%. Each company's ratio of exports to the total sales is 5 to 20% for printing paper.
- (5) As described above, they differ between corrugated cardboard and printing paper.
- (6) As described above, it is difficult to envisage that overseas transfers will make any progress (especially concerning corrugated cardboard). Because there is no particular difference in the technology and product quality, disparities are unlikely to arise within the industry.
- (7) The Ministry of Economy, Trade and Industry's measures for preventing global warming (popularisation of biomass) had a very great impact on the paper and pulp industry.
- (8) I have no particular comments. Although each company has prepared a substantial environmental report, the main purpose of these is to overcome the poor image of the paper and pulp industry in terms of the environment (deforestation).
- (9) It can be said that the moves by investors are extremely passive. Many investors possess shares because these shares were automatically incorporated in investment funds linked to the Nikkei Stock Average. Many investors possess shares under a cross-holding system. The ratio of floating shares is 15%.
- (10) I have no particular comments.
- (11) As described above, Oji Paper is expecting a revival of forestry in Japan. In addition, many paper manufacturers are carrying out tree planting activities, which should be highly regarded.
- (12) I have no particular comments.
- (13) Nothing.
- (14) Nothing. Because no capital investments have been made, there is no need for funds. However, there is a need for the repayment of debts.
- (15) I have no particular comments.

The Glass Industry and the Environment

- ✓ Because Japan has no regulations concerning building insulation, the proportion of apartment houses with insulating glass is about 5%. Because Low-E glass in particular is not widely used in apartment houses, the glass industry is expecting to increase profits through the establishment of legal regulations concerning housing standards in order to deal with environmental problems. The glass industry would welcome such environmental regulations because they will lead to greater sales of value-added products. However, since it takes up to about 15 years to recover any investment in insulating glass, it seems difficult to achieve a significant effect on energy savings. I have not heard any views that the increased amount of energy used at the stage of manufacturing insulating glass should be offset by the savings in energy made at the stage of consumption.
- ✓ Because glass is a basic material like paper and pulp, it is difficult to make suggestions concerning innovative low-carbon technologies and projects. The applications are considered to be more important, such as through the installation of various types of value-added glass. Although Asahi

Glass has been developing technology for the plasma melting of glass, it is difficult to estimate the energy-saving effects. Demand for solar cells is expected to increase. The two Japanese solar cell manufacturers each have sales of about JPY30 billion— that is, JPY60 billion in total. Although the proportion of each company's sales in Japan has not been disclosed, the introduction of a FIT system would be advantageous to both if its introduction facilitates the popularisation of renewable energy for electricity supply. There is an example in which the introduction of an eco-point system (for televisions) resulted in an increase in the demand for liquid crystal glass.

Current Situation of the Glass Industry

- ✓ Every glass manufacturer has been actively pursuing M&A beyond national borders, such as the merger between NSG in Japan and Pilkington in the UK in order to manufacture glass in countries where the demand exists. In the European market for construction glass, Asahi Glass and NSG each occupy 20 to 25% and Saint-Gobain occupies 25%. Substantially, these three companies have established an oligopolistic system. However, their profit margins are low. As with companies in the paper and pulp industry, the three companies can be considered to have a deep mutual understanding. The operating rate of the plants is about 85%.

Prospects for the Future of the Glass Industry

- ✓ The key to the growth of glass manufacturers is how to attract consumers from emerging countries, such as Southeast Asia (Viet Nam and Malaysia) and South America (especially Brazil and Argentina). For example, NSG has clearly stated that Asia and South America are targets for its growth strategy. It can be said that each glass manufacturer has promoted the internationalisation of its management and has established a system for ensuring overseas business development.
- ✓ Although Asahi Glass merged with Tostem, a housing materials manufacturer, it is difficult to evaluate the merger since it was carried out just recently.

Cost Items

- ✓ The list below shows a breakdown of the cost items for glass. The marginal profit ratio is 45%. Asahi Glass uses heavy oil and electricity on a fifty-fifty basis as its energy sources in Japan. The annual cost of energy is about JPY50 billion.

Breakdown of costs	
Energy	28%
Raw materials	20%
Labor costs	12%
Overheads	9%
Depreciation	9%
Transportation costs	12%
Other costs	10%

Cost-transfer

- ✓ Because glass is heavy, it is rarely imported or exported and is basically manufactured and consumed locally. Because of this, it is comparatively easy to make cost-transfer. When the cost of raw materials rose sharply at the beginning of 2008, cost-transfer was made almost entirely in Europe due also to the impact of a housing bubble. In Japan, the cost-transfer rate was about 50% because the supply was not so excessive, the rate of housing starts did not rise much, and the distribution channels are complicated. The glass manufacturers tried to make up for the remaining

50% by reductions in labour and other costs. However, because it was difficult to reduce the number of employees, the remaining 50% seems to have been covered by cost reduction efforts, a decline in profits, changes to the mixture of products (such as construction, automobiles, and solar cells), and improvements in the efficiency of operations.

Equity Story for Japanese Shares

- ✓ The preference for Japanese shares has been falling. Many investors question why they have to purchase the shares of Japanese companies that are unlikely to grow much. While Japan was independent from Asia before, it is regarded as a part of Asia now. Because the Chinese Government has been raising the ceiling for the ratio of shareholdings by foreign investors, investors are reducing investments in other countries to increase their investments in China. Japan is one of the countries in which investors are reducing their investments.

Overseas Model Cases That Could Be Emulated

- ✓ Japan should consider taking measures to promote the use of value-added glass, like they have in the UK. The penetration rate of added-value glass is 80 to 90% in the UK, overwhelmingly higher than in Japan. Because it is troublesome to install this glass in existing houses, it seems desirable to design a system that will facilitate installation.

Questions and Answers

- (1) As described above, the key to the growth of the glass industry is to increase the sales of highly value-added products by strengthening housing and environmental standards and to advance into emerging countries where demand is likely to increase.
- (2) Highly value-added products will become the mainstream if housing and environmental standards are strengthened.
- (3) As described above, the number of cross-border M&As is increasing.
- (4) Because the raw materials for glass can be obtained almost anywhere, glass is basically manufactured and consumed locally. Overseas market shares have been described above.
- (5) As described above, the cost-transfer rate is about 50%.
- (6) Because glass is heavy, overseas transfers do not seem to have expanded. Almost no disparities seem to have arisen in the industry. There is hardly any difference in the technology adopted. Special glass has remained a niche product (the penetration rate for special glass for apartment houses is about 5%).
- (7) As described above, the further penetration of insulating glass in the market is anticipated. Insulating glass hardly seems to incur any environmental risk.
- (8) I have no particular comments.
- (9) When investors make a judgment about investments, they do not seem to take into account the company's consideration for the environment and society. There is no special evaluation system that seems necessary.
- (10) Nothing.
- (11) The most important issue is to promote value-added glass. Among other measures, as described above, the eco-point system boosted the sales of liquid crystal glass. A feed-in tariff (FIT) for renewable energy is also expected to increase the shipment of solar cells.

- (12) As described above, Japan should consider the market diffusion of value-added glass, as is the case in the UK.
- (13) Nothing.
- (14) Nothing.
- (15) Nothing.

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- **Interviewers:** Sei KATO, Takaharu SATO (Ministry of the Environment), Junichi FUJINO (National Institute for Environmental Studies), Nagisa ISHINABE (Institute for Global Environmental Strategies)
 - **Summary created by:** Nagisa ISHINABE (Institute for Global Environmental Strategies)
 - **Interview date:** 1 June 2010
 - **Length of Interview:** 3 hours
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List of Questions to Securities Analysts

- (1) Please make a comment on medium-and long-term perspectives of the industry sector which you cover.
- (2) Please tell us about products, services and/or technology which you expect to become mainstream in the future. Also please describe their major cost items (energy/raw material costs, labour costs, and overhead costs, etc.) and the rough breakdown. In addition, please inform us about their alternatives, if any.
- (3) Please tell us about the corporate need to make inroads into overseas markets, while also providing information about the past trend and future outlook, domestic and overseas investment situations and the domestic versus overseas ratio, as well as background information and reasons, etc. In addition, please describe how Japanese and foreign investors evaluate such inroads into overseas markets.
- (4) Please tell us about Japanese companies' market shares in overseas markets, and whether the shares have changed or not, or otherwise their trend. Please also show us the export and import ratio of each company (for example, the import ratio of raw materials, or the export ratio of products).
- (5) Please describe what kind of management decision companies made, and to what extent cost-transfer was made to products in the past when crude oil and other raw material prices surged. In addition, if cost-transfer to final products is difficult, countermeasures are supposed to include the employment reduction and the capital expenditure cut. So please tell us what kind of measures companies actually took in the past. Also please give us your view on what kind of measures companies may take in the future when they are put in a similar situation as described above.
- (6) If greenhouse gas emissions quotas are imposed and thereby costs of raw materials such as energy and steel increase, to what extent will overseas transfer be accelerated at a corporate level or at a factory level? Please give us your view on this point, although your answer might depend on the degree of such cost increase. Also please describe how technology choice at a corporate level may be affected by the above-mentioned situation. In addition, if you think these impacts would differ from company to company within a same industry sector, please tell us about the reason(s), for example, the difference in proprietary technology or the financial standing, etc.
- (7) Please tell us about how environmental policies/measures will affect corporate management decisions. In addition, please describe what kind of environmental policies/measures companies consider as risks, and, in contrast, what kind of those policies/measures are taken advantage of to earn profits (for example, market creation derived from environmental regulations or production of high-priced goods (farm goods, etc.)). If there were any remarkable increases or decreases in capital investment spending and/or R&D expenditures caused by environmental policies in the past, please also tell us about them.
- (8) Please describe how your industry sector or each company has been working on measures against global warming; how such efforts are characterised; and how they are strategically positioned.
- (9) Please tell us about investment trends by Japanese and foreign investors. In particular, please describe to what extent the corporate social contribution and the care for environment are evaluated as fodder for making investment decisions. In addition, please explain how the recent increase in environment consciousness has been affecting companies, financial institutions and the securities market. If the corporate social contribution and the care for environment are actually evaluated, please describe how investors obtain information related to environment and society (for example, environmental reporting, or interview with individual companies, etc.). Furthermore, if you find this kind of information disclosure insufficient, please point out the problem. In addition, please give us your view, if any, on a desirable evaluation system (contents to be evaluated by society or

government, or how to give incentives) in order to promote companies' environmental/social activities.

- (10) With regard to efforts to visualise CO₂ in economic activities, including the carbon disclosure project, please give us your view on the recent corporate trend and financial institutions' responses (such as low-interest loans) to such trend, if any.
- (11) Please give us your view on what kind of policies are advisable for the Japanese government or the Ministry of the Environment to take in order to promote corporate measures against global warming and increase investment in the green industry. In addition, if you find any previous or existing policies/measures effective, please tell us about their cases and the relevant success factors.
- (12) Looking at foreign governments' or foreign companies' efforts, please tell us about model cases which Japan should emulate, if any.
- (13) The Tokyo Metropolitan Government has implemented the emissions trading system since April 2010. Please give us your view on its influence on corporate activities.
- (14) The other day, the Bank of Japan (BOJ) established a new loan programme for financial institutions with the aim of vitalizing environment/energy-related projects. Please give us your view on this measure, if any. (Please refer to the following reference article.)
- (15) Please give us your view on the basic law for the earth environment, and the energy basic plan, etc., if any.

List of Companies Covered by the Interviewed Securities Analysts

1. Atsushi Yamaguchi

(Steel & Non-ferrous metals)

- Nippon Steel Corp.
- Sumitomo Metal Industries, Ltd.
- Kobe Steel, Ltd.
- Nisshin Steel Co., Ltd.
- JFE Holdings, Inc.
- Yodogawa Steel Works, Ltd.
- Maruichi Steel Tube Ltd
- Hitachi Metals, Ltd.
- Nippon Light Metal Co., Ltd.
- Mitsui Mining & Smelting Co., Ltd.
- Mitsubishi Materials Corp.
- Sumitomo Metal Mining Co., Ltd.
- Dowa Holdings Co., Ltd.
- Furukawa Electric Co., Ltd.
- Sumitomo Electric Industries, Ltd.
- Fujikura Ltd.
- Hitachi Cable, Ltd.

2. Reiji Ogino

(Energy)

(Electricity)

- Tokyo Electric Power Co. Inc.
- Chubu Electric Power Co., Inc.
- Kansai Electric Power Co. Inc.
- Chugoku Electric Power Co., Inc.
- Hokuriku Electric Power Co., Inc.
- Tohoku Electric Power Co., Inc.
- Shikoku Electric Power Co., Inc.
- Kyushu Electric Power Co., Inc.

- Hokkaido Electric Power Co., Inc.
- Okinawa Electric Power Co., Inc.
- Electric Power Development Co., Ltd.

(Gas)

- Tokyo Gas Co. Ltd.
- Osaka Gas Co., Ltd
- Toho Gas., Ltd.

(Oil)

- SHOWA SHELL SEKIYU K. K.
- COSMO OIL Co, Ltd.
- TonenGeneral Sekiyu K.K.
- AOC Holdings, Inc.
- Idemitsu Kosan Co., Ltd.

3. Name withheld on request (Chemicals)

(Fibre)

- Teijin Limited
- Toray Industries, Inc.

(General Chemistry)

- Asahi Kasei Corp.
- Showa Denko K.K.
- Sumitomo Chemical Co., Ltd.

(Specialty)

- Tosoh Corporation
- Mitsui Chemicals, Inc
- Mitsubishi Chemical Holdings Corp.
- Ube Industries, Ltd.
- Kuraray Co., Ltd.
- Nissan Chemical Industries, Ltd.
- KANEKA Corp.
- DIC Corp.

(Electrical Materials)

- SUMCO CORP.
- Shin-Etsu Chemical Co., Ltd.
- JSR Corp.
- Sumitomo Bakelite Co., Ltd.
- Zeon Corp.
- Hitachi Chemical Co., Ltd.

4. Tatsuo Yoshida (Automobiles)

- Nissan Motor Co., Ltd.
- Toyota Motor Corp.
- Mazda Motor Corp.
- Daihatsu Motor Co., Ltd.
- Honda Motor Co., Ltd.
- Suzuki Motor Corp.
- Fuji Heavy Industries Ltd.

5. Hiroyasu Okaseri (Paper, Pulp & Glass)

(Paper and Pulp)

- Oji Paper Co., Ltd.
- Mitsubishi Paper Mills Ltd.
- Hokuetsu Kishu Paper Co., Ltd.
- Nippon Paper Group, Inc.
- Rengo Co., Ltd.

(Glass)

- Asahi Glass Co., Ltd.
- Nippon Sheet Glass Co., Ltd.
- Nippon Electric Glass Co., Ltd.

