# Proposal to Make Financial Institutions Carbon Neutral by 2020

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*Since 1990 (the base year for Kyoto Protocol commitments), carbon dioxide emissions in Japan have decreased in the industries sector, but surged in the commercial & other sector. At the national level, office buildings that financial institutions occupy or lease out account for a significant share of total emissions. We propose a plan to make financial institutions carbon neutral by 2020 using carbon offsets.*

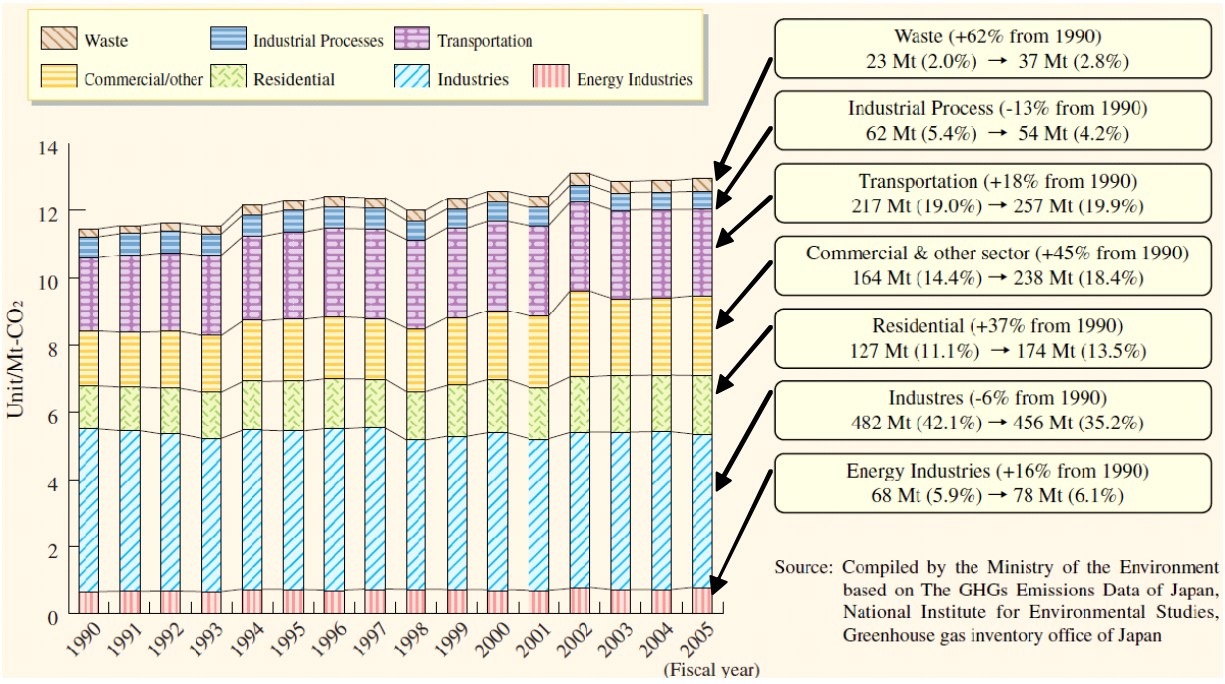
## 1. The Significant $CO_2$ Emissions of Financial Institutions

### 1. Rising $CO_2$ Emissions of the "Commercial Sector"

Ever since the Kyoto Protocol base year of 1990, the largest final demand component of Japan's carbon dioxide emissions has been the industries sector. In fiscal 2005, this sector, which includes factories, accounted for 35% of the nation's total $CO_2$ emissions of 1.293 billion tons. To its credit, however, the sector has reduced emissions by 6% since fiscal 1990 through energy-saving technologies and other initiatives (Exhibit 1).

Meanwhile, $CO_2$ emissions have surged in other sectors of the economy, such as the commercial & other sector (45% increase since fiscal 1990), residential sector (37% increase), and transportation sector (18% increase). Together, these sectors now comprise 57% of total emissions. Stated differently, they offer significant opportunities for carbon reduction.

**Exhibit 1 Carbon Emissions in Japan (by final demand component)**



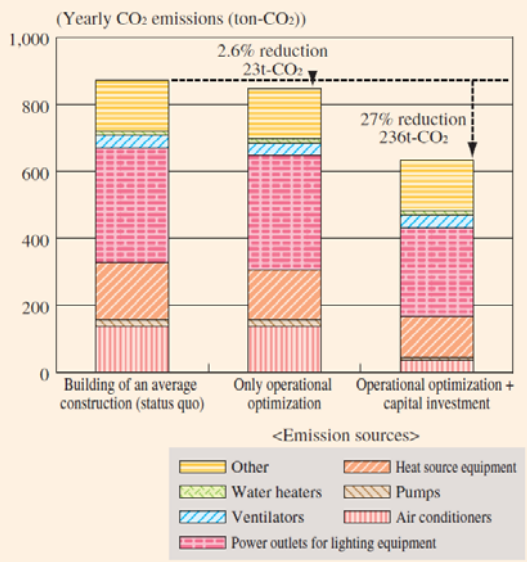

Note: For brevity, "commercial & other sector" is referred to as "commercial sector" in this paper.
Source: Ministry of the Environment, *Annual Report on the Environment and the Sound Material-Cycle Society in Japan 2007.*

## 2. Potential for $CO_2$ Reduction at Office Buildings

The core part of the commercial sector consists of office buildings. According to estimates by the Ministry of the Environment, a standard office building in Tokyo (with 8 floors above ground, 1 floor underground, and total floor space of approximately 7,500 square meters) can potentially reduce carbon emissions by up to 27% by optimizing operations and making minor capital investments to upgrade lighting and other equipment (Exhibit 2).

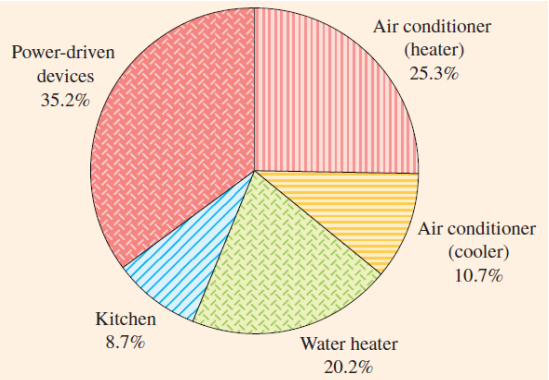
Since many office buildings have yet to implement the recommendations, significant $CO_2$ reductions are still possible through energy-saving technologies and practices. As Exhibit 3 shows, the main sources of emissions are air conditioners (which account for 36% of $CO_2$ emissions), water heaters (20% of emissions), kitchens (9% of emissions), and power-driven devices such as refrigerators and lighting (35% of emissions; Exhibit 3).

### Exhibit 2 Potential $CO_2$ Reduction at Office Buildings




Source: MOE, *Annual Report on the Environment 2007*

### Exhibit 3 Sources of $CO_2$ Emissions in the Commercial Sector




Source: MOE, *Annual Report on the Environment 2007*.

## 3. $CO_2$ Emissions of Financial Institutions

A common misperception exists that the environmental impact of financial institutions is minimal, particularly with regard to $CO_2$ emissions. However, as seen by the surging emissions of the commercial sector in recent years, the aggregate impact of office buildings which are occupied or leased out by financial institutions is actually quite significant. Below we examine the magnitude of $CO_2$ emissions based on their own environmental reporting.

The CSR report of Mitsui Sumitomo Insurance Group (MSIG) reflects the typical carbon emissions inventory of a large financial institution in terms of emission sources (electricity, natural gas, etc.) and scope of measurement. Since complete coverage is not possible at the national level, MSIG estimates the aggregate amounts based on samplings and number of employees. For fiscal 2006, emissions amounted to 53,273 tons (including 11,304 tons from gasoline for fleet vehicles). Electricity usage comprised the bulk of emissions, which is thought to accurately characterize large domestic financial institutions (Exhibit 4).

Other financial institutions have also released environmental data in CSR reports and on the Internet. Due in part to lack of unified reporting standards, total estimated emissions for office buildings nationwide (including tenant-occupied buildings, and excluding fleet vehicles) vary widely from 50,000 to 150,000 tons per year at each financial institution.

Obviously, compared to energy intensive industries such as the steel and chemical industries, financial institutions have quite low

**Exhibit 4 $CO_2$ Emission Inventory of Mitsui Sumitomo Insurance Group (FY 2006)**

| Source | Measured usage (unit) | Group-wide total | Emission factor (*3) | Total emissions tCO2 (*2) |
|---|---|---|---|---|
| Electricity (*4) | 77,832 (megawatt hours) | Same | 0.386 tCO2/MWh | 30,043 |
| Gasoline (*5) | 4,868 ( cubic meters) | Same | 2.322 tCO2/CBM | 11,304 |
| Gas | 1,146 (1,000 cubic meters) | 2,724 | 2.360 tCO2/TCM | 6,430 |
| Heat supply | 33,209 (gigajoules) | 78,944 | 0.067 tCO2/GJ | 5,289 |
| Wastewater | 102 (1,000 cubic meters) | 243 | 0.511 tCO2/TCM | 125 |
| Fuel oil | 5 (cubic meters) | 12.143 | 2.710 tCO2/CBM | 33 |
| Water | 84 (1,000 cubic meters) | 199 | 0.190 tCO2/TCM | 38 |
| Waste | 208 (1,000 metric tons) | 496 | 23.500 tCO2/kt | 12 |
| | | | Total | 53,273 |

Notes: (1) For electricity and gasoline usage, group-wide totals are derived from observed amounts. For other emission sources, group-wide totals are extrapolated from observed amounts at four main buildings (Shinkawa, Surugadai, Chiba New Town, and Hachioji, comprising 235,000 square meters of floor area and 8,150 persons). *Group totals are also proportional to the number of employees.*
(2) Carbon emissions are based on a measurement per employee, multiplied by total group-wide employees (19,347 in March 2006, excluding part-timers).
(3) Emission factors are obtained from Tokyo Metropolitan Government, "TMG Plan to Counter Global Warming (FY 2005)." The electricity emission factor varies by electric power company, and the nationwide default value is 0.555 tCO2 per 1,000 kWh.
(4) Electricity usage consists of measured amounts at main buildings, and estimates for other buildings (electricity bills are divided by the average rate of ¥18.6 per kWh).
(5) For gasoline usage, monthly expenditures are divided by the average domestic retail price for each month. For fleet vehicles with no usage data, the average volume is applied. *Excluding gasoline usage, total emissions are 41,969 metric tons.*
Sources: MSIG, *CSR Report 2007*, p. 26, and MSIG website. Text in italics was added by the author.

$CO_2$ emissions. Still, when their nationwide emissions are aggregated, the environmental impact becomes quite significant, and comparable to some electrical assembly and processing firms (Exhibit 6).

## 2. Global Spread of Carbon Offsetting

### 1. The Carbon Offset Approach

The practice of carbon offsetting consists of measuring and minimizing one's own greenhouse gas emissions (GHG, most of which is carbon dioxide), and then compensating for the remaining emissions indirectly by reducing emissions elsewhere, for example through green energy or forestry projects. Specifically, some or all of the remaining emissions are offset by purchasing credits for emissions reduction or capture that occur at another location. When an entity has reduced its own emissions and offset all remaining emissions, it is said to achieve carbon neutrality.

Carbon offset credits must be either certified under Kyoto rules or verified by a reliable third party. Offsets include CERs (Certified Emission Reductions), which are regulated under the Clean Development Mechanism of the Kyoto Protocol, and voluntary carbon offsets such as JVETS (Japanese Voluntary Emissions Trading Scheme, a pilot program of the Ministry of the Environment) and VERs (Verified Emission Reductions). If the amount of carbon dioxide emissions is known, carbon offsetting can be practiced not only by businesses and local governments, but by individuals. The typical carbon offset process is shown in Exhibit 7. Three types of market-oriented voluntary offsetting (for product and service use, business and personal activities, and occasional events) are shown in Exhibit 8.

However, carbon offsetting still faces major challenges. A fundamental problem is determining whether offsetting actually motivates GHG reduction (offsets may create a moral hazard by increasing emissions). In addition, emission and reduction estimates need more accurate verification, as do reductions

## Exhibit 5 Carbon Emissions Inventory of Financial Institutions (office buildings)

| Financial institution | $CO_2$ emissions (tons) FY2004 | FY2006 | Scope |
|---|---|---|---|
| **Banking** | | | |
| Mitsubishi UFJ FG | 125,700 | 125,660 | 26 buildings of bank and trust bank (nationwide?) |
| Sumitomo Mitsui FG | n/a | n/a | 4 head office buildings (observed data) |
| Mizuho FG | 98,192 | 84,953 | 9 main office buildings in Tokyo (bank, corporate bank, trust bank, info. & research institute) |
| **Securities** | | | |
| Daiwa Securities Group | 51,763 | 50,786 | Almost full coverage |
| Nomura Holdings | 3,763 | 3,285 | Nihonbashi head office buildings only (main, annex, former main); partial data on Nagoya and Osaka offices |
| Nikko Cordial Group | 20,919 | 21,810 | Expanded from 133 facilities in FY2004 to 147 in FY2006 |
| **Non-life insurance** | | | |
| Millea Group | 46,511 | 50,394 | Tokio Marine Nichido Group (85 buildings in FY2006) |
| Sompo Japan Group | 56,947 | 48,517 | Full coverage for electricity use; gas use covers only buildings that conform to Tokyo's environmental ordinance |
| Mitsui Sumitomo Insurance Group | 44,519 | 41,969 | All domestic branches |
| **Life insurance** | | | |
| Dai-ichi Mutual Life | 11,900 | 11,500 | Head offices in Hibiya (Tokyo) and Oi (Kanagawa) |
| Meiji Yasuda Life | n/a | 26,856 | 3 main buildings in Tokyo |
| T&D Insurance Group | 11,332 | 10,640 | Main group companies including T&D Holdings, Taiyo Life, and Daido Life |

Notes: In principle, carbon dioxide emissions are calculated based on usage of electricity, gas, and water. However, compilation methods may vary, for example, by excluding water usage or including heating supply. In all cases, however, electricity usage comprises the bulk of emissions. MSIG excludes gasoline consumption of fleet vehicles. Due to large disparities in coverage, simple comparisons cannot be made between firms.
Sources: Compiled from 2007 CSR reports of respective financial institutions.

attributed to projects. Aside from national governments, NPOs abroad have risen to the challenge by establishing voluntary carbon offset standards. Leaders in this area include the Voluntary Carbon Standard 2007 (VCS 2007), and the Gold Standard of the WWF (the global conservation organization).

## 2. Carbon Offset Examples in the West

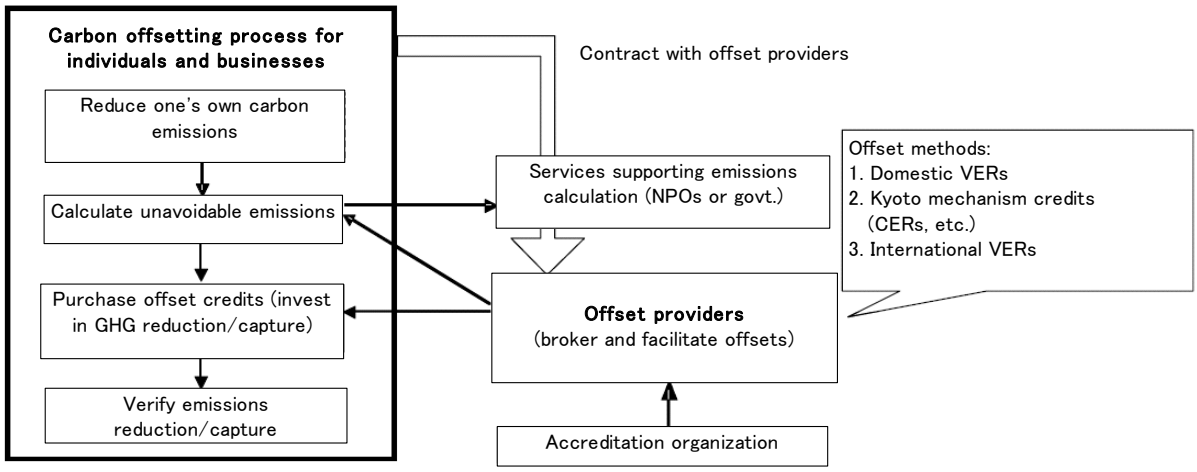
According to surveys by the World Bank and others, the global voluntary carbon market quadrupled in volume from 2005 and 2006, from 6 million tons of carbon dioxide equivalent transacted in 2005 (valued at US$ 44 million), to 23.7 $MtCO_2$-e (US$ 91 million) in 2006. With carbon prices still low, the market is expected to continue its steep growth trajectory. Some forecasts put the market size at 400 million tons in 2010 (this does not include the regulated Kyoto Mechanism credit market, which is rapidly expanding).

## Exhibit 6 Typical Carbon Emissions in Other Sectors

| Company | Annual emissions ($t\text{-}CO_2$) | Scope |
|---|---|---|
| Nippon Steel Corp. | 67,000,000 | Domestic group cos. |
| Mitsubishi Chemical | 9,200,000 | Domestic group cos. |
| Toyota Motor Corp. | 5,200,000 | Domestic group cos. |
| Sony Corp. | 1,000,000 | Domestic group cos. |
| Ricoh | 170,000 | Consolidated domestic manufacturing |
| Mitsubishi Corp. | 10,000 | 130,000 tons for transportation |
| Seiyu | 530,000 | 204 domestic stores |
| Taisei Corp. | 280,000 | Domestic construction sites |

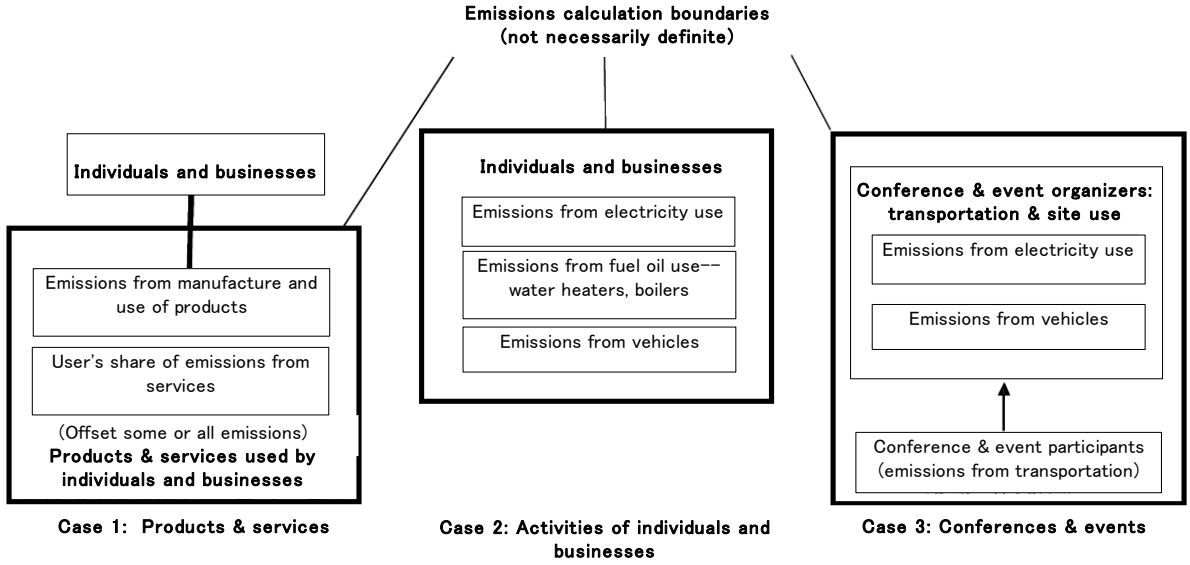
Note: Shows results of selected large companies in fiscal 2005.
Sources: Compiled from CSR reports of respective companies.

## Exhibit 7 Carbon Offset Process




Source: MOE, *Study Committee to Establish Carbon Offset Guidelines.*

## Exhibit 8 Examples of Carbon Offsetting




Source: MOE, *Study Committee to Establish Carbon Offset Guidelines.*

European countries have aggressively adopted carbon offsetting. In 2005, with the support of the U.K. government, British Airways launched a voluntary scheme for passengers to offset carbon dioxide emissions from their flights by contributing to renewable energy and energy-efficiency projects in developing countries. For example, on a flight from London to Narita, participating passengers would pay approximately 17 pounds (3,700 yen). Scandinavian Airlines also operates a similar program, and has an emissions calculator on its website which flight route and aircraft type.

The HSBC Group, based in London, aims to become carbon-neutral on a worldwide basis. Initiatives include investing to improve energy efficiency and buying green (renewable) electricity. Moreover, from 2004 to 2005, HSBC launched a pilot program to purchase 170,000 tons of verified emission reductions (VERs) from four projects around the world (wind farm in New Zealand, organic waste composting in Australia, agricultural methane capture in Germany, and biomass co-generation in India).[1] British Petroleum offers customers a program to offset gasoline purchases. According to some

estimates, the U.K. accounts for approximately one-fourth of global VER transactions, and has over 60 offset providers who facilitate transactions and act as agents for businesses and individuals.

In the U.S., sectors such as information and communication technology and personal services have been particularly active. Enhancement of corporate identity appears to be an important motivator. Some businesses have modified their websites so that individuals can offset their private emissions including vehicle emissions. Google and Starbucks offset emissions at the corporate level. In addition, many other firms have declared themselves to be carbon neutral.

Events such as conferences, sports competitions, and concerts are also engaged in carbon offsetting. The G8 Gleneagles 2005 Summit in Perthshire, Scotland announced that it offset the electricity and energy usage of participants for transportation, meetings, and lodging. Other major events include the 2006 FIFA World Cup in Germany (which offset 100,000 $tCO_2$-e in the Green Goal environmental program), 2006 Winter Olympics in Torino, Italy, and numerous music concerts.

## 3. Carbon Offset Examples in Japan

In late 2007, Japan Post introduced carbon offsetting with the 2008 New Year's postcards, contributing five yen of the purchase price toward CERs sourced from wind power and other projects abroad. At the end of 2007, an NPO corporation called Carbon Offset Japan began selling CERs to individuals, with seven of the 16 participating businesses being financial institutions.[2] Moreover, a panel set up by the Ministry of the Environment has recently announced the first set of guidelines for voluntary carbon offsetting.

Some financial institutions have already adopted carbon offsetting. MUFJ Trust Bank began studying the practice in 2006, and in 2007 contracted to purchase 10,000 tons in CERs to offset electricity use at their headquarters, with plans to expand the practice to other locations. Sumitomo Mitsui Banking Corporation aims to make its corporate headquarters carbon neutral between 2006 and 2012 by purchasing green energy credits and CERs.

Service industries have adopted some interesting initiatives. For example, Tokyo Broadcasting System is investing in energy-efficient design modifications at its new site, and has also purchased Gold Standard carbon reduction credits. In April 2007, JTB Kanto Corp., a major travel agency, launched the industry's first "$CO_2$ zero travel" package, and has already enrolled thousands of customers. The package lets customers offset $CO_2$ emissions associated with their use of transportation and hotels by buying green energy credits, and awards them with a green power certificate and badge.

## 4. Green Power Certification System

The Green Power Certification System, a scheme operated by Japan Natural Energy Co., issues tradable certificates representing electric power generation from natural energy sources (wind, hydro, geothermal, and biomass). Certificate owners can claim that they use green electricity, regardless of the actual power source. For example, a corporate headquarters building that uses 1 MWh of electricity per year can claim to use natural energy by contracting to purchase an equivalent amount of green power certificates.

The contracted unit price of green electricity reflects a premium for the carbon offset, which can be calculated by applying the appropriate emission factor. In the above example, a green power certificate for 1 MWh represents a carbon offset of 390 tons (assuming an emission factor of 0.39kg $CO_2$/kWh). Exhibit 9 shows a list of major JNEC clients (financial institutions are italicized) along with annual contracted amounts. Clients are entitled to display the green power logo and claim that their products are made using natural energy.

Under the Law Concerning the Promotion of Measures to Cope with Global Warming, green

**Exhibit 9 Selected Clients of JNEC's Green Power Certification System**

| Company | Annual contracted volume (1,000 kWh) |
|---|---|
| Sony Corp. | 31,500 |
| *Nomura Holdings* | 5900 |
| Asahi Breweries | 3,300 |
| Seiko Epson Corp. | 2,000 |
| TBS | 2,000 |
| Toyota Motor Corp. | 2,000 |
| NGK Insulators | 2,000 |
| Tokyo Tatemono | 1,800 |
| Fuji Zerox | 1,700 |
| Navitime Japan | 1,700 |
| Sekisui House | 1,440 |
| Ricoh | 1,250 |
| Asahi Shimbun | 1,200 |
| Taisei Corp. | 1,200 |
| Tokyo Gas | 1,150 |
| Mitsubishi Estate | 1,000 |
| Mitsui & Co. | 1,000 |
| *Tokio Marine & Nichido Fire Insurance* | 1,000 |
| Sumitomo Mitsui Banking Corp. | 1,000 |
| *Mitsubishi UFJ Lease & Finance* | 1,000 |
| *Rakuten Securities* | 1,000 |
| *Swiss Re* | 15 |

Note: Current as of December 4, 2007. Italics denote financial institutions.
Source: Japan Natural Energy Co.

power certificate owners are entitled to publicize their participation. In addition, some local governments such as Kyoto prefecture and Yokohama City recognize the green power certificates as carbon credits.

## 3. Making Financial Institutions Carbon Neutral by 2020

### 1. Putting the Environment First

Major domestic financial institutions of all types have addressed the environment as a key aspect of corporate social responsibility. While expressions vary, they have declared efforts to bolster both the areas of financial process and financial products.

The financial process area refers to reducing the environmental impact of running financial business activities. This includes initiatives that range from reducing energy ($CO_2$ emissions) and paper use to promoting green purchasing. In particular, $CO_2$ reductions are being emphasized at main office buildings by restricting the use of utilities (electricity, water and gas), conducting energy-saving campaigns in the summer and winter, and resetting thermostats and shortening operating hours of heating and cooling systems. As mentioned earlier, some financial institutions are already offsetting their carbon emissions through the purchase of green power and emission credits.

The financial products area refers to environmental solutions targeted at businesses as well as individuals. Recently, as the market becomes increasingly defined, providers are actively offering preferred interest rates to environmentally friendly businesses (environmental finance), financing of natural energy and CDM projects, carbon offset brokering and trusts, eco funds (environmentally conscious mutual funds), cleanup support for soil pollution, and ISO certification support. In addition, there is growing recognition of the environmental risk of financing, which has prompted specific responses to reduce the risk.

### 2. Financial Institutions as Role Models

At the 2007 G8 Summit in Heiligendamm, Germany, leaders declared the aim of halving global carbon dioxide emissions by 2050 to mitigate and stabilize carbon dioxide density. To meet this goal, Japan must reduce emissions by over 70%. The EU has already committed to a 20% reduction by 2020. However, at the 13th Meeting of the Conference of the Parties to the UN Framework Convention on Climate Change (COP13) in December 2007, the only notable progress toward a post-Kyoto framework from 2013 was a new negotiating process to encourage the U.S., China and India toward an agreement in Coopenhagen in 2009.

However, this development was overshadowed by news late last year that Siberia's permafrost is

melting. Clearly, all industries need to respond to climate change. But as the lifeblood of the global community, financial institutions are particularly well situated to lead others in slashing carbon dioxide emissions over the long term.

Financial products may be vital to the environmental business, but they are designed to earn profits by reducing the environmental impact of other entities—not that of the financial institution. To claim a genuine leadership role in achieving a sustainable society, financial institutions must lead by example in the financial process area by measuring, reducing, and offsetting their own environmental impact. Many have already introduced the ISO 14001 standard for environmental management and announced emission reduction goals. However, these goals tend to be short-term and incremental in nature, ranging from several percent to 20% at most.

### 3. Becoming Carbon Neutral by 2020

With no effective global action plan on climate change, financial institutions can only play a limited role if they maintain their current trajectory. They must strive to adopt bolder and more forward-looking initiatives. In this context, we propose they challenge themselves to becoming carbon-neutral by 2020.

Initially, the challenge entails three steps: (1) reducing emissions, (2) purchasing green energy, and (3) purchasing emission reduction credits. The first step is to measure and reduce current carbon dioxide emissions, for which energy consulting is an effective tool. Next, unavoidable emissions at specific locations must be offset by using green (renewable) energy. Third, all remaining emissions must be offset by purchasing emission reduction credits, at which point the financial institution becomes carbon neutral. In addition, environmental management must respond to changes in national energy and environmental policies, and to eco innovations (products and processes that contribute to sustainable development) that exceed existing elemental technologies.[3]

At current carbon prices in the EU emissions market (approximately 3,000 yen per metric ton of carbon dioxide), it will cost millions of yen per year to make principal offices carbon neutral, and hundreds of million yen per year on a companywide basis. Under present accounting rules, green energy certificates are treated as donations, and emission credits as intangible fixed assets. In the absence of an emissions trading system in Japan, the unregulated carbon offset market represents a flexible and effective alternative for businesses. We hope that financial institutions can overcome the limitations of conventional concepts when they judge the value of the carbon neutral challenge.

## Endnotes

1. According to the HSBC website, group-wide electricity use in 2005 was 1,610 GWh (approximately 20 times larger than that of MSIG). Total carbon dioxide emissions amounted to 663,000 tons, of which 539,000 tons came from energy use, and 120,000 tons from business travel.

2. Clean Development Mechanism (CDM) is one of three market mechanisms created under the Kyoto Protocol. It lets developed countries receive credit for supplying technology and funding for projects that reduce or capture GHG emissions in developing countries.

3. According to media reports in early February 2008, the government intends to amend the Law Concerning the Promotion of Measures to Cope with Global Warming so as to establish the first nationwide emission guidelines for buildings with large emissions.

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