

# Climate Change

CSR REPORT 2016



# SuMi TRUST Group's Eco-Trustution

The Group has coined the word “Eco-Trustution” to represent its environmental financial business based on the concept of providing solutions to ecological issues through the use of our trust function. We will continue to develop and provide solution-based financial instruments and services.

## Solutions that use the unique functions of a trust bank



### Editorial policy

The CSR Report 2016 consists of a full report, and five feature booklets on *Climate Change*, *Natural Capital*, *Responsible Investment*, *Environmentally Friendly Property* and a digest report for seniors (available only in Japanese). We have published a digest version of our CSR report along with feature booklets so that readers can gain a deeper understanding of our Group's proactive initiatives. You can visit our website to view our other CSR initiatives.

<http://smth.jp/en/csr/index.html>

\* This booklet introduces various initiatives and activities by our Group, led by SuMi TRUST Bank.

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## Introduction

# Transitioning from Low-Carbon Societies to Net-Zero Societies

## Paris Agreement Takes Effect

The Paris Agreement, which entered into force in November 2016, established an international framework for climate change countermeasures for 2020 onwards. Based on the scientific viewpoint that human greenhouse gas (GHG) emissions are causing global warming, nations around the world aim to end their carbon dependence and transition to net-zero-emission societies.

- Keep global temperature rise to well below 2°C above pre-industrial levels;
- Pursue efforts to limit the temperature increase even further to 1.5°C;
- Aim to achieve net-zero emissions in the second half of this century.

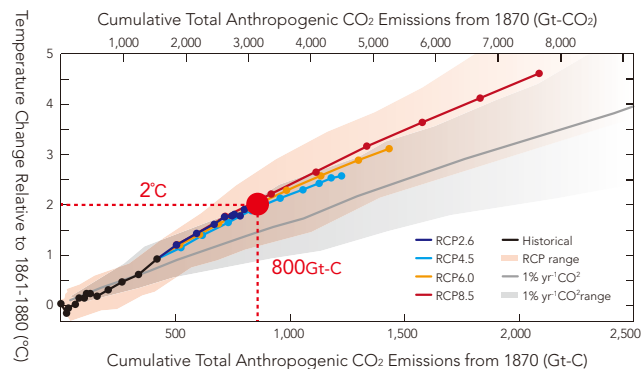
## Budgeting Carbon Emissions in Transition to Net-Zero Societies

**Carbon Budget:** The world must limit cumulative CO<sub>2</sub> emissions to about 800Gt-C to achieve the Paris Agreement aim of keeping global temperature rise below 2°C. This is what informs the “carbon budget” concept that sets a ceiling on the planet’s capacity to absorb GHG emissions.

**Limited Remaining Carbon Budget:** Past cumulative GHG emissions come to about 500Gt-C, so the world is approaching a point where the remaining emission budget is just one-third of the 800Gt-C total, or about 300Gt-C. At present, net global emissions is about 10Gt-C per year, so we are on course to exceed the safe ceiling for emissions within three decades.

**Net-Zero Societies:** Nations globally must seek to end the fossil fuel dependence of their societies soon. It is likely too late to aim merely for a low-carbon society, so nations face pressure to aim higher and make a full transition to net-zero emissions.

## Global Mean Surface Warming as a Indicator of Cumulative Total CO<sub>2</sub> Emissions\*



Source: IPCC fifth assessment review, Working group 1, Summary for policymakers, Figure SPM.10

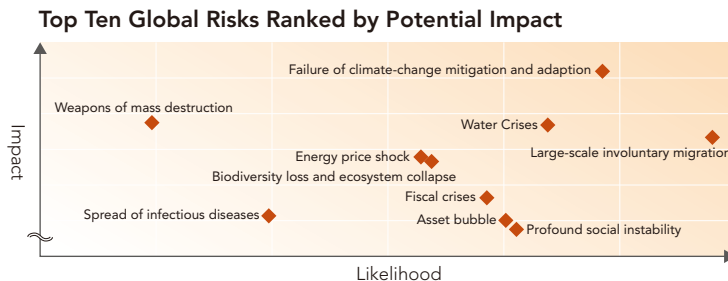
\*Estimates derived from many kinds of evidence

# Climate Change Impacts on Economics and Finance

It is widely recognized that among the many social and environmental risks facing the world, climate change will have very substantial impacts on economics and finance. The response to climate change thus calls for precision.

## Annual Meeting of World Economic Forum in Davos

Of the global risks experts assessed, the risk with the greatest potential impact in the 2016 report was found to be a failure of climate-change mitigation and adaption. Experts surveyed regarded it as having greater potential damage than weapons of mass destruction, water crises, large-scale involuntary migration, and severe energy price shock.



Source: World Economic Forum's "The Global Risks Report 2016 11th Edition"

## Financial Stability Board Establishes Task Force on Climate-related Financial Disclosures

At the request of G20 finance ministers and central bank governors, the Financial Stability Board established the Task Force on Climate-Related Financial Disclosures (TCFD), an industry-led advisory body. Advancing financial disclosure guidelines relating to climate change, TCFD calls on the financial sector to go beyond tracking the GHG emissions from its own business activities. Financial institutions will need to conduct multi-faceted monitoring of emissions at investee and borrower companies and projects and call for climate-related information disclosure and adoption of measures by investee and borrower companies and projects to avert and mitigate risks.

**Physical risks:** Risks arising from abnormal events such as floods, typhoons and droughts. Along with direct impacts, this category encompasses indirect impacts such as agricultural damage and supply chain disruptions.

**Liability risks:** Risks arising from claimants seeking damages from parties for creating the conditions driving climate change or for erroneous response to climate change; this includes the risk of claims for inadequate disclosure or use of information relating to climate change.

**Transition risks:** Financial institutions and corporations may well be exposed to asset re-pricing risk due to technological advances or policy changes in the transition to a net-zero-emissions society.

## Introduction

# SuMi TRUST Group Recognizes Climate Change as a High Priority

The SuMi TRUST Group recognizes that responding to climate change issues is important for building a sustainable society, and its solutions businesses are geared to addressing climate change issues.

## Important Issues concerning Climate Change (Materiality)

From a risk standpoint, the Group recognizes as a financial institution that reducing the risk of climate change impacts arising from companies and projects in which we are investors or lenders is important. We also recognize the importance of reducing CO<sub>2</sub> emissions from the Group's business activities.

It is our belief that helping to address climate change issues by harnessing our trust function is a matter of critical importance that will funnel more business opportunities to the Group.

### The Group's climate change-related materiality issues

- Taking into account how borrowers and investees impact society and the environment
- Pursuit of business opportunities with environmental and social themes
- Climate changes (physical impacts)
- Reducing the Group's environment burden

## Action Guidelines for Mitigating Climate Change

### 1. Implementation of Measures and Support to Help Mitigate Climate Change

In addition to actively taking measures to reduce greenhouse gas emissions in our own business operations, we are making efforts, as a corporate citizen, to support activities that mitigate and adapt to climate change.

### 2. Provision of Products and Services

We are working on developing and providing products and services that help mitigate climate change. Our financial functions are being leveraged to promote energy conservation and encourage the use of renewable energy.

### 3. Collaboration with Stakeholders

We engage in dialogue and cooperation with our stakeholders as we work to mitigate climate change.

### 4. Education and Training

We will ensure that these guidelines are fully implemented at group companies, and will actively conduct education and training to mitigate climate change.

### 5. Information Disclosure

We will actively disclose information related to our efforts to mitigate climate change.

# Risks and Opportunities relating to Climate Change

In the area of climate change, financial institutions face not only direct impacts arising from their own business activities but also indirect impacts arising from investee and borrower companies and projects, and exposures from the latter are larger. Moreover, an important element for financial institutions in evaluating corporate growth strategies is factoring in the transition to a net-zero society into their business models.

## Risks Relating to Climate Change

Risk categories*	Risk concepts	Attributes of risk linked to climate
Risk arising from regulation	<ul style="list-style-type: none"> <li>• Risk that business models and corporate strategies may be affected as the regulatory response is ramped up to reach the goal of staying below 2°C</li> <li>• Risk that carbon budgeting may affect economies</li> <li>• Growing risk financial institutions will call for greater disclosure of climate-related information from their investee and borrower companies</li> <li>• Risk there will be pressure for companies to factor in climate issues when procuring finance and services</li> </ul>	<ul style="list-style-type: none"> <li>• Financial institutions face high expectations they will seek to avert or mitigate risks from indirect impacts arising from the activities of investee or borrower companies or projects</li> <li>• Climate-related risk extends to impacts on the whole supply chain, so risk management in the upstream supply chains of investee and borrower companies will be important</li> <li>• Establishing quantitative risk assessment measures will be important</li> </ul>
Risk arising from physical impacts	<ul style="list-style-type: none"> <li>• Risk that climate change will affect land usage and natural resource procurement</li> <li>• Risk that natural disaster damages social infrastructure and Group assets and puts business continuity at risk</li> <li>• Risk that progression in global warming increases the likelihood of heat stroke and pandemics</li> </ul>	
Other risks	<ul style="list-style-type: none"> <li>• Risk of stricter regulation and technological advances disrupting industries and companies and impairing the value of the Group's loan assets and stockholdings</li> <li>• Reputational risk that climate change-related initiatives are deemed inadequate</li> </ul>	

## Business Opportunities relating to Climate Change

Opportunity categories*	Opportunity concepts	Attributes of opportunities linked to climate
Opportunities arising from regulation	<ul style="list-style-type: none"> <li>• There may be more opportunities to offer advisory services and finance to projects and companies that are helping to slow or mitigate climate change</li> <li>• Changeover to new social systems on spread of renewable energy may open up profitable opportunities over the medium and long term</li> </ul>	<ul style="list-style-type: none"> <li>• Climate-related businesses promoting a switch in social systems in areas such as energy and transportation may become the economic mainstream</li> <li>• A social infrastructure changeover in the longer term on the spread of renewable energy may translate into an increase in stable profit opportunities for the Group over the longer term</li> </ul>
Opportunities arising from physical impacts	<ul style="list-style-type: none"> <li>• There may be more opportunities to offer finance for infrastructure and technological development that enhances adaptive capacity to climate change</li> </ul>	
Other opportunities	<ul style="list-style-type: none"> <li>• Positive social evaluation as a financial institution helping to address climate change may translate into more business opportunities</li> <li>• Greater social awareness of climate change may support sales of the Group's financial products that factor in environmental considerations</li> </ul>	

\*Framework is based on Carbon Disclosure Project categories.

## Introduction

# Climate Change Risk Management for Portfolio Investments

## Principles for Responsible Investment

SuMi TRUST Bank became a signatory to the Principles for Responsible Investment (PRI), which was jointly established by the UN Global Compact and the United Nations Environment Programme Financial Initiative (UNEP FI). These principles require institutional investors such as pension funds and asset managers to take ESG factors into account when making investment decisions.

## Collaboration with Institutional Investors and Asset Managers

PRI has established working groups on a wide assortment of ESG-related themes. Participants in working groups from signatory institutions debate in great depth evaluation items for determining materiality when screening companies as investments, specific evaluation guidelines, and certification systems for industries and sectors.

SuMi TRUST Bank participates in the palm oil (tropical rainforests) and water risk working groups, two thematic areas with high climate change vulnerability. In the palm oil working group, members met face-to-face with a major Southeast Asian plantation company onsite in Indonesia and heard from the company in conjunction with input from NGOs about its various stakeholder initiatives.

## Engagement with Investee Companies

Through engagement with investee companies, SuMi TRUST Bank promotes pro-active information disclosure of initiatives and policies concerning climate change, specific actions to avert and mitigate impacts from climate change, and the use of certification systems. In some cases, we carry out engagement on these issues in concert with other PRI working group members. With the aim of further strengthening these activities, we started from fiscal 2016 to use the specialist services offered by ISS-Ethix, a consultant offering ESG-related advisory services, to engage investee companies that seem unmotivated about changing in light of global norms or rules.



Discussions at the PRI working group on palm oil



Engagement at a palm oil plantation in Indonesia



# Climate Change Risk Management for Loans

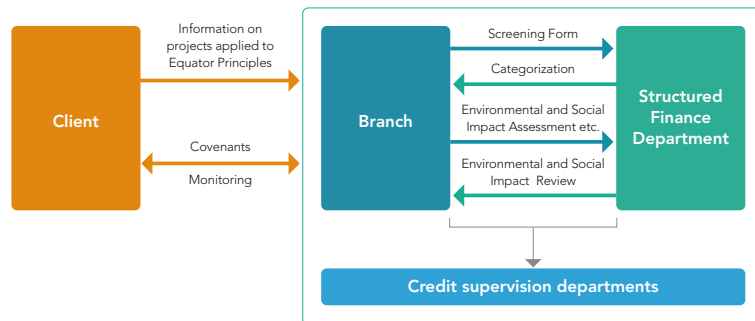
## Equator Principles

Based on its Sustainability Policy, SuMi TRUST Group has drawn up environmental and human rights policies with the aim of moving toward a sustainable society, and it is working to further strengthen its ESG risk management system in line with international standards.

As a part of these efforts, we have specified processes for identifying priority issues (materiality) regarding sustainability. In light of the importance taking into account the environmental and social risks and impacts of those receiving our loans or investments, SuMi TRUST Bank in February 2016 integrated use of the Equator Principles, guidelines for private-sector financial institutions, into its decision-making processes for loans in project finance and related fields as a risk management tool.

SuMi TRUST Bank is aware that financing large-scale projects such as mine development, oil and gas development, power plants, petrochemical plants and infrastructure development may indirectly have an adverse effect on climate change. We also believe it is the responsibility of a sound financial institution to avert or mitigate risks of deterioration in loan receivables due to project suspensions as a result of environmental or social problems.

## Systems and Processes for Evaluating Environmental and Social Risks



**Application processes:** Following internal policies based on procedures for evaluating social and environmental impacts, the Structured Finance Department carries out assessments of environmental and social impacts relating to individual projects.

**Implementing environmental and social impact reviews:** Our reviews of the environmental and social impacts of a project proposed by developers take into account its industry, the country where it is sited, and whether it meets the standards called for by the Equator Principles, and from there, we arrive at a comprehensive risk assessment.

**Monitoring compliance:** Compliance with important items concerning environmental and social impacts have been reflected into loan agreements, and compliance with these is regularly confirmed through such methods as reports on project compliance status on these fronts.

**Company training programs:** We provide regular training sessions for employees in departments and sections relating to sales, assessment, and screening to foster a thorough understanding of internal operations supporting environmental and social impact reviews and raise their awareness about related concepts.

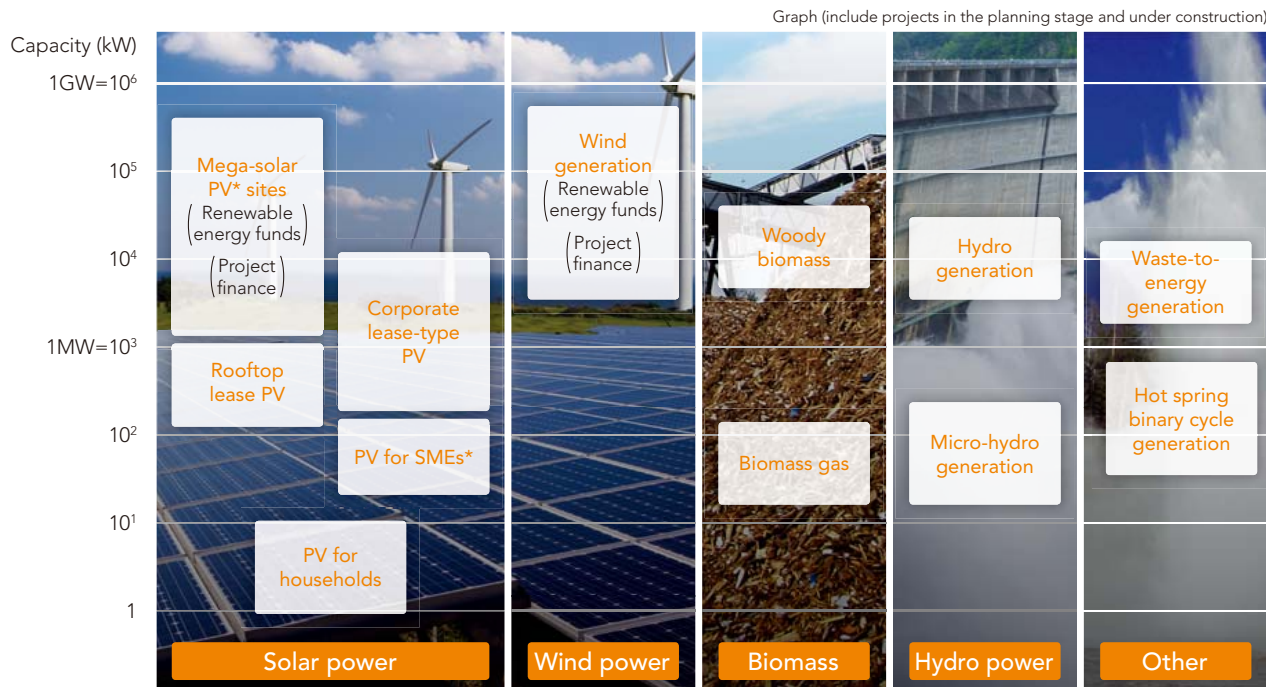
# Spread and Growth of Renewable Energy



# Our Renewable Energy Initiatives

SuMi TRUST Group is working to develop financial products that facilitate the spread and growth of diverse forms of renewable energy. These include schemes for business scales that range from micro scales such as micro-hydro generation to large-scale generation exceeding 100MW.

The Group provides finance in forms that match a wide variety of funding needs from leases to project finance and renewable energy funds.



\*SMEs: small and medium-sized enterprises; PV: photovoltaic

## Spread and Growth of Renewable Energy

# Renewable Energy Project Finance

We are promoting the adoption of renewable energy such as wind and solar power through project finance.

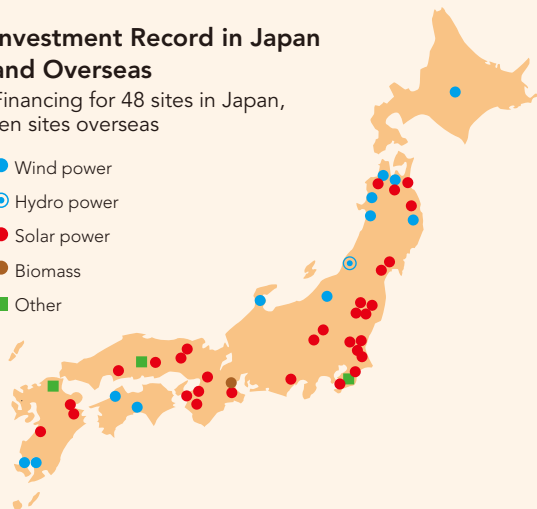
In renewable energy projects, both offshore and onshore wind power generation are increasingly large-scale enterprises. In Japan, mega-solar PV sites grew further from the level of the previous fiscal year. The total potential generation capacity of these projects where SuMi TRUST Bank is a financier stands at 4,154MW with annual power output of 7,637GWh.

It has been widely remarked that one factor that enabled international ratification of the epoch-making Paris Agreement was recognition of renewable energy's economic rationality. The emission reduction plans of both developed and developing nations rely on adopting renewable energy sources, so we believe expectations for project finance to play a role will grow from here.

### Investment Record in Japan and Overseas

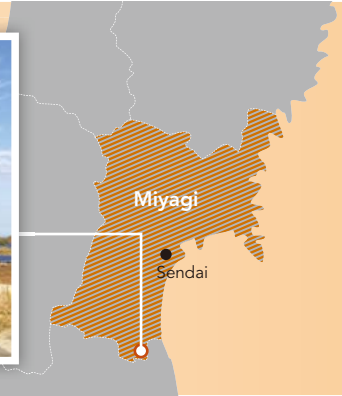
Financing for 48 sites in Japan, ten sites overseas

- Wind power
- Hydro power
- Solar power
- Biomass
- Other



## Mega-solar in Japan

Solar panels with total potential generation capacity of about 19MW were installed at a former golf course that was closed and sold after the Great East Japan Earthquake, opening the way for conversion of the site into a mega-solar PV farm. SuMi TRUST Bank arranged project finance in the form of a syndicated loan for building on the site. With estimated annual output of 65,000MWh, the project uses the feed-in-tariff (FIT) system to wholesale electricity at a fixed price to the electricity supply system.



## Offshore Wind Farm Overseas

In Europe, where shallow expanses of continental shelf extend far from the coastline, projects to build large-scale offshore wind power farms are increasing. At a site about 80 kilometers off the Dutch coast at water depth of about 30-35 meters is one of the world's largest offshore wind power farms with about 150 large-scale turbines that have total potential capacity of 4MW each. In addition to generating and wholesaling electricity, the project encompasses the operation of submarine transmission cables.



## Spread and Growth of Renewable Energy

# Renewable Energy Funds

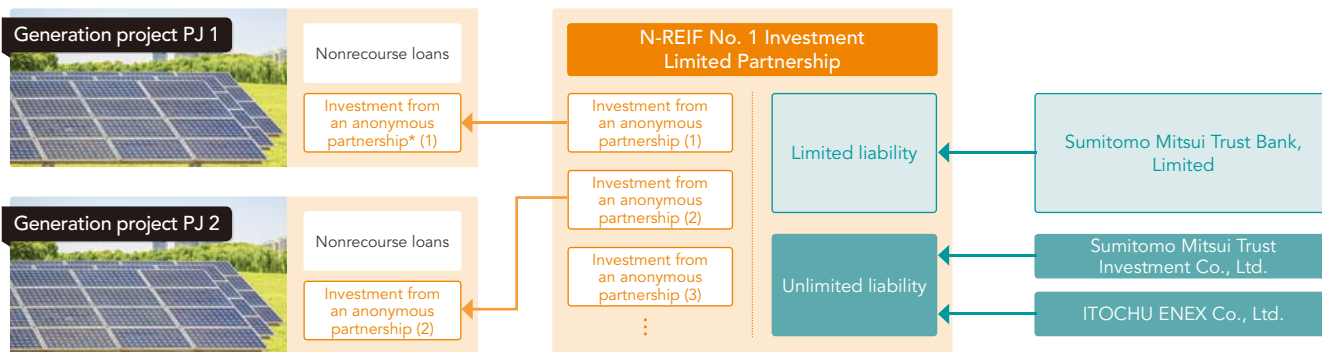
Renewable energy funds have been set up exclusively for the purpose of investing in and operating large-scale renewable energy projects.

As of September 2016, our funds have become investors in multiple large-scale solar power generation projects with total potential capacity of 113MW. Of the 51.9 billion yen in total investment supplied to these projects, the aggregate investment of our funds stands at 4.15 billion yen.

These projects, with annual power output of 136GWh, reduced CO<sub>2</sub> emissions by more than 73,000 metric tons, an amount equivalent to the emissions of 21,000 ordinary households in Japan.

\*For calculating CO<sub>2</sub> emissions, we referenced the electricity utility emission coefficient (fiscal 2014) for offtakers of each project, and for the CO<sub>2</sub> emissions of an ordinary household, we referenced the per-household CO<sub>2</sub> emissions in the Ministry of the Environment's national greenhouse gas inventory (fiscal 2014).

## Fund Schemes



\*Anonymous partnerships are called "tokumeikumiai" in Japanese.

- We contribute by providing equity-like funding for the spread of renewable energy projects.
- We are expanding assets under management in our funds and building up an investment track record in solar power, and plan to broaden the scope of our renewable energy investments to include biomass, wind, and other sources.
- We are working to develop investment products for individuals and institutional investors and pension funds that seek stable income gains.



## Mega-Solar Projects Using Leases

Sumitomo Mitsui Trust Panasonic Finance supports financing for mega-solar facilities.

Using leases to fund solar facility installations keeps the upfront investment costs for mega-solar PV project construction at zero, and projects can earn stable income by using the feed-in-tariff (FIT) system to wholesale at a fixed price the electricity it generates to the power supply grid. Leases are thus an effective method of financing for mega-solar projects that ensures business plan soundness.

Compared with other renewable energy sources, solar power generation has three advantages: 1) procedures for assessment etc. are straightforward and simple, 2) the construction phase is relatively short, and 3) there are established technologies that were originated and developed domestically. As a result, mega-solar projects have been sited and built in Japan since the FIT system came into effect. Sumitomo Mitsui Trust Panasonic Finance Co., Ltd. has supported the installation of 40.4MW of total potential capacity in 23 projects since the FIT system's introduction, which attracted entry into this field from an array of companies from startups to those in related sectors such as electric power, construction, and energy that sought to diversify.

Changes to the FIT system that factor in the unique properties of mega-solar projects such as the introduction of purchase price auctions and the addition of operation and maintenance criteria for certification has increased the business reliability of mega-solar power providers. Combined with advances in solar technologies and the establishment of new forms of financing, investors are expected to develop more mega-solar projects as businesses with stable, long-term prospects. We are working together with panel manufacturers, engineering, procurement, and construction (EPC) vendors and others to provide total support to investors entering the solar power generation field.

### Future pathways for solar power



- Pursue energy management linked to electric vehicles and storage batteries
- Realize net-zero energy buildings (ZEBs), net-zero energy house (ZEH), and virtual power plants (VPP)
- Expand local production-consumption models and energy self-sufficiency
- Reduce power generation costs further via technological development
- Tap into new funding supplies via infrastructure investment funds



## Spread and Growth of Renewable Energy

# Micro-Power Generation in Water Supply Systems

Sumitomo Mitsui Trust Panasonic Finance supports the adoption of power generation systems that tap into latent energy sources in water supply systems across Japan. We help promote execution of global warming mitigation plans in concert with regional public authorities.

In Japan's water supply systems, an increasing amount of energy is released without being harnessed such as untapped use of vertical drop in gravity-flow supply pipes and the release of surplus pressure in pumped supply pipes via pressure-reducing valves. The Group promotes ways to tap into these wasted sources of energy as a renewable energy source that can generate electricity.

In the past, the introduction of new power generation systems that tap into such sources was impeded by the need to reduce device costs, achieve higher efficiencies, and realize more compact sizes but these obstacles have been resolved. We support introducing such systems with lease finance and the use of leasing agreements for water supply systems with local authorities.

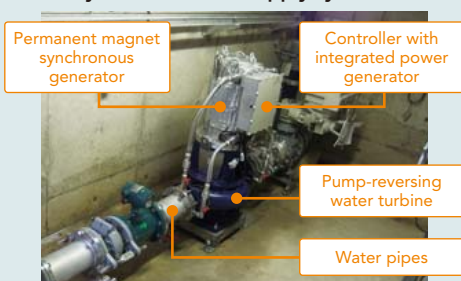
### Specific properties of micro-power generation in water supply systems

- Keep costs low via use of standardized parts, general-use pumps and low-cost magnets
- Develop water turbines that efficiently generate power in response to water flow velocities
- Integrate power generation and water supply control systems, install water turbines in a vertical configuration on top of pipes to realize a much more compact footprint

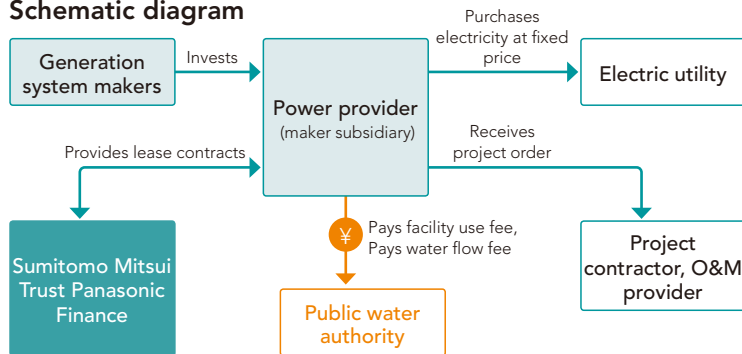
### Specific properties of leases

- Projects can be launched with no upfront investment costs
- Power provider is responsible for constructing the power generation system and its operation and maintenance (O&M)
- Lease can earn stable revenues

### Newly developed micro-power generation system for water supply systems



### Schematic diagram

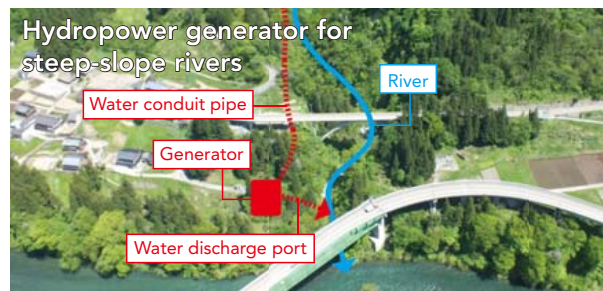
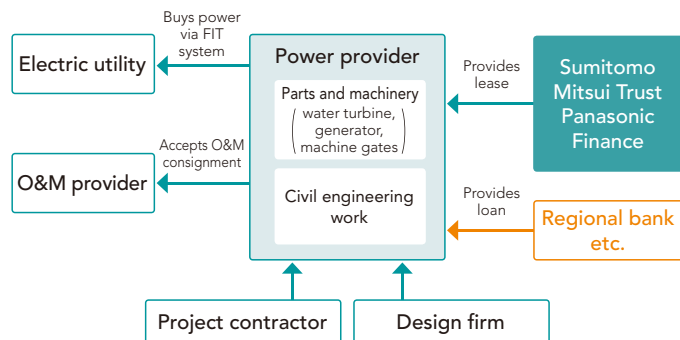




## Small and Mid-sized Power Generation in Rivers

Japan's river systems have the potential to generate 14GW of electricity through the installation of small or mid-sized generators and its agricultural water supply channels 300MW, according to the results of a Ministry of the Environment survey. Sumitomo Mitsui Trust Panasonic Finance is helping to revitalize regional communities through joint initiatives with regional banks that aim to use each region's untapped hydropower potential.

### Schematic diagram of collaboration with regional banks



Hydropower generation could be a source of renewable energy for Japan, which is blessed with many high-flow, steep-slope rivers. In cases where the feed-in-tariff (FIT) system is used, the maximum aggregate potential from installing small and mid-sized hydropower generators is estimated at 4.3GW.

Small and mid-sized power generators approved for installation since the FIT system's introduction have total output of 780MW, and of those, the ones in use have 190MW, indicating there is still scope for new installations.

It is possible to install hydropower generators that factor in the environment such as run-of-the-river small and mid-sized hydropower generators that use the shape of rivers or existing agricultural water supply channels and do not require building large dams.

### Small and mid-sized hydropower potential, actual adoption capacity

	Potential aggregate output	Breakdown by category
Maximum aggregate potential in Japan*1	14.3GW	River systems 14GW Agricultural supply channels 300MW
Potential with FIT system*1	1.06~4.3GW	River systems 900M~4.06GW Agricultural supply channels 160~240MW
Approved for installation post-FIT adoption*2	780MW	
Installations post-FIT adoption*2	190MW	

\*1 Ministry of the Environment's fiscal 2010 survey report on the adoption potential for renewable energy

\*2 Agency for Natural Resources and Energy's website (accessed in June 2016)

## Spread and Growth of Renewable Energy

### Biomass Gas Generation

We support adoption of biomass facilities that convert food waste and other organic waste into biogas for electricity generation.

At a biomass power generator, organic waste—such as food waste, livestock urine and manure, and organic sludge from sewage and wastewater—is fermented and combustible gases, mainly methane, are extracted and used as fuel to generate electricity. Under the Food Recycling Law, the recovery of heat from food waste is recognized as a form of recycling provided certain conditions are met, and the power generated can be resold at a fixed price using the FIT system. This system's value is in improving overall energy efficiency through the effective use of both electricity and heat.

#### Merits

- Curtails volume of waste produced, reduces waste disposal costs
- Earns income from reselling electricity via the FIT system
- Curtails putrid odors due to fermentation, reduces release of bad smells to nearby areas
- Byproducts like post-fermentation, digested slurry can be recycled as a liquid fertilizer

#### Wastes eligible for usage

- Food waste, food residues
- Livestock urine and manure
- Organic sludge, etc. from sewage and wastewater

#### Flow diagram of a Biomass Gas Generation System

Receiving tank (right)



Digestive fluids tank (left)

Methane fermentation tank (built-in gas holding tank)



Wastewater processing facilities (in front, below ground)

Desulfurizing units



Concentrated sludge, liquid fertilizer storage



Power generator



Solid and liquid fertilizers



Resell electricity

# Support for Energy Efficiency



## Support for Energy Efficiency

### Renovation Loans for Smart Houses

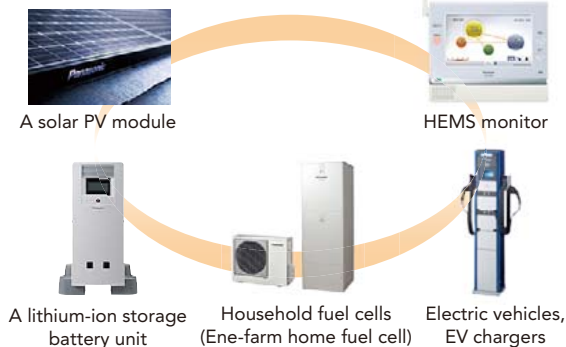
We support remodeling homes into “smart houses” through our home renovation loans. Homes are becoming places where families wisely use energy they generate.

A smart house can efficiently generate and store energy by combining solar PV panels, a storage battery unit, and a household fuel cell. Functions enabling dwellers to control electricity consumption to match their lifestyle and weather conditions have improved.

With the liberalization of retail sales of electricity and gas to households in Japan, many hope energy and telecommunication sector companies will partner to offer bundled services that combine telecom, broadcast TV etc. with electricity. Moreover, electric vehicle batteries may increasingly be used to store energy, and there has been progress in developing services that integrate the functions of housing, home appliances, and vehicles.

Since a system for purchasing surplus electricity from solar panels was established, Sumitomo Mitsui Trust Panasonic Finance has contributed to the spread and adoption of solar power generation by households with its solar loans. Our solar loan portfolio as of September 2016 stood at 64.5 billion yen. Through our partnerships with equipment vendors and installers, we support remodeling homes into “smart houses” with our renovation loans.


#### Equipment for Upgrading to a Smart House



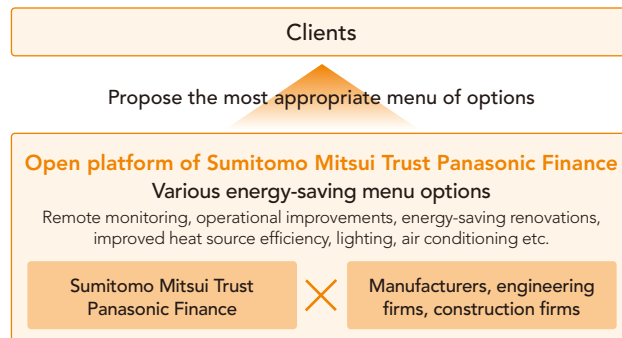
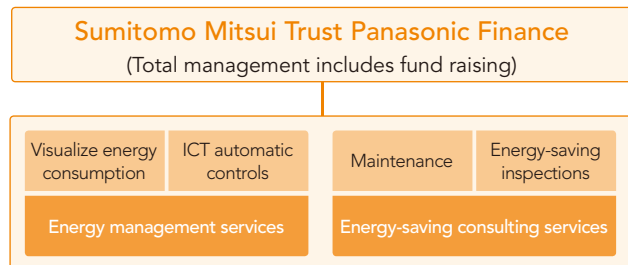
A smart house

# Energy Management Systems Using Leases: Example

We offer comprehensive support from the planning and installation stages through to energy management services.

Specific investment ideas	<ol style="list-style-type: none"> <li>1. Installation of high-efficiency refrigerators and refrigerator showcases</li> <li>2. Installation of non-freon equipment</li> <li>3. Switch to LED lighting</li> <li>4. Adoption of integrated control systems</li> </ol>	 <p>Example: A store that remodeled by installing high-efficiency refrigerators, refrigerator showcases, and LED lighting</p>
Post-installation savings	<ol style="list-style-type: none"> <li>1. Electricity consumption lowered by about 2.5GWh per year (25% cut)</li> <li>2. Electricity bill lowered by about 42 million yen per year</li> <li>3. Maintenance cost lowered by about 5.4 million yen per year</li> </ol>	
Key points in our proposals	<ol style="list-style-type: none"> <li>1. A one-stop service menu from energy-saving consulting, equipment investment planning, and financing to post-installation energy management services</li> <li>2. Use of subsidies lightens investment costs</li> <li>3. Use of leases reshapes payment stream: zero upfront investment to purchase equipment with costs paid over time in the form of leveled-out payments</li> </ol>	

## Energy-Saving Consulting: Energy Management Services





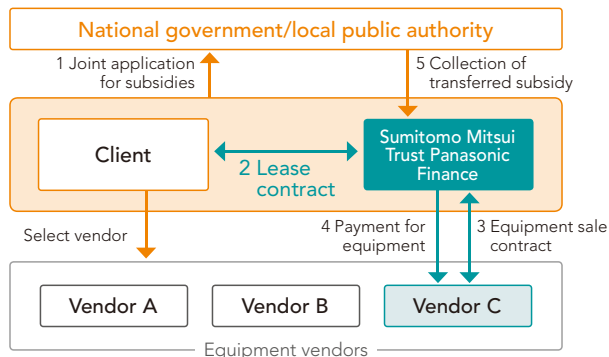
## Support for Energy Efficiency

# One-Stop Services for Energy-Saving Investment: Subsidy-Eligible Leases

We offer one-stop services that support all processes from planning for energy-saving investments to asset operation.

- Our one-stop service menu ranges from energy-saving assessments, examinations to identify energy-saving measures, equipment selection, subsidy applications, and securing financing to maintenance services.
- Using leases enables installation of energy-saving equipment without upfront investment cost.
- Securing subsidies lowers upfront investment costs, enabling recipients to benefit even more from energy savings and cost reductions.
- We offer tailored proposals through partnerships with manufacturers and installers.

## Flow Chart Mapping Out the Use of Subsidies



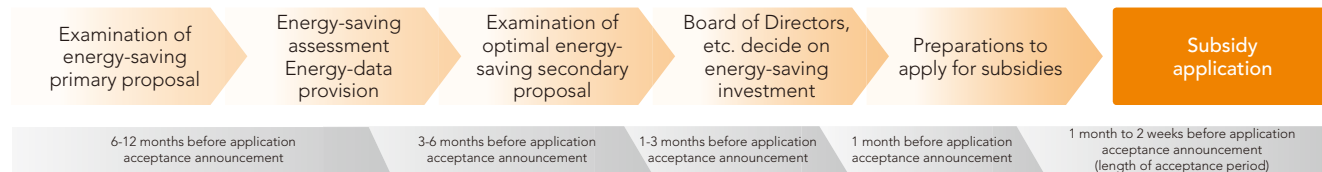
### Main subsidy systems

- Subsidy support for rationalizing energy use at SMEs
- Zero net energy building (ZEB) project: Subsidies to promote adoption of innovative energy-saving technologies in housing and buildings
- Subsidies for facilities that sharply cut CO<sub>2</sub> emissions via efficient execution of advanced countermeasures (ASSET project)
- Promotion of energy-saving measures for existing buildings

\*1 Certain conditions must be met to be eligible to apply for subsidies

\*2 Subsidy systems may change

## Stages in the Subsidy Application Process



## Our Response to New Regulations on Refrigerants

In October 2016, an international coalition of nations agreed to amend the Montreal Protocol to regulate production volume of hydrofluorocarbons (HFCs), an alternative to ozone-destroying Freon\*, in a series of steps, announcing their decision at the 28th meeting of the parties to the protocol. Together with the Paris Agreement, this accord represents a major step forward in the international effort to address climate change.

In the wake of the amended Montreal Protocol, Japan has amended domestic laws to regulate HFC production and strengthen usage regulations. The major equipment categories subject to the stricter regulations are air conditioners, refrigerators, and freezers. Switching to equipment that uses non-freon or natural alternative refrigerants is now an urgent priority.

The Group's leases focus on equipment using non-freon alternatives as refrigerants, so we are contributing to the adoption and spread of non-freon equipment.

Japan Machinery Leasing and Sales Co., Ltd., a Group member, works to safely retrieve and dispose of leased, Freon-using equipment after the lease has expired.



A non-freon freezer unit and a non-freon freezer showcase

\*Freon alternatives have been used in place of specified Freon, which has been identified as an ozone layer destroyer. HFCs do not deplete the ozone layer but they have a large greenhouse gas effect and so have high global warming potential.

### Kigali Amendment to Montreal Protocol to Regulate Freon Alternatives

	Developed nations	Group 1 developing nations* <sup>1</sup>	Group 2 developing nations* <sup>2</sup>
Base year	2011—2013	2020—2022	2024—2026
Baseline value (CO <sub>2</sub> equivalence)	Avg. HFC volume in each year + 15% of HCFC* <sup>3</sup> baseline value	Avg. HFC volume in each year + 65% of HCFC* <sup>3</sup> baseline value	Avg. HFC volume in each year + 65% of HCFC* <sup>3</sup> baseline value
Launch year for regulation	2019	2024	2028
Target year	2036	2045	2047
Target reduction	85%	80%	85%

\*<sup>1</sup> Group 1 developing nations are still developing and do not belong to Group 2

\*<sup>2</sup> Group 2 developing nations are India, Pakistan, Iran, Iraq, and Gulf nations

\*<sup>3</sup> HCFC: Hydrochlorofluorocarbons

## Support for Energy Efficiency

# Other Contributions to Climate Change Mitigation

### Farming systems that use renewable natural resources

We support energy-efficient farming that uses natural forms of energy such as sunlight, water, and wind to control the environment inside greenhouses. Sensors can track key environmental metrics such as the atmospheric temperature and the temperature of things inside greenhouses and automatically adjust controls to effectively balance the overall environment.

We seek to improve annual production efficiency such as the volume of produce for each unit of energy consumption and upfront investment.



A passive house-based farming system

### Industrial-use storage batteries

Storage batteries can be used for many purposes such as peak shifting, leveling out load shifts, a power source for emergencies such as a blackout, support for self-sufficient facility operation, curtailing load-shifts from adding renewable energy to the grid, and storage for regenerative energy from electric motors. They also perform useful roles for stable facility operation and integration of renewable energy sources into the grid.



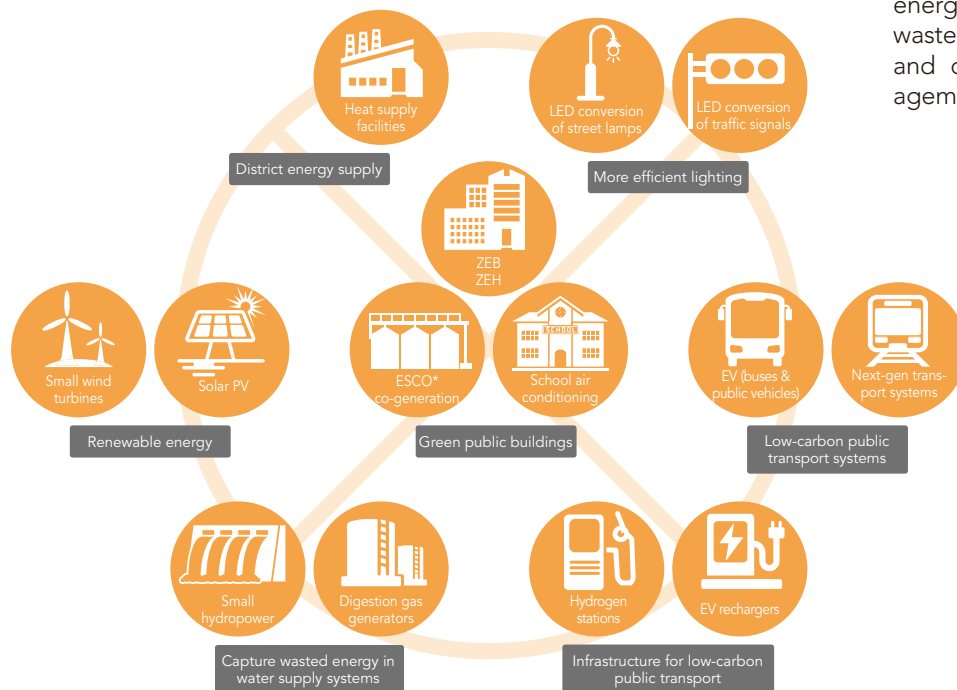
Electricity storage system



## Supporting Community-level Climate Change Mitigation Efforts

We support the use of leases and private-sector funding to combat climate change at the level of communities and local public authorities.

Regional public authorities are responsible for promoting measures to combat climate change that are responsive to the environmental and social attributes of their regions. We support such efforts with supply schemes that use leases and private-sector funding to promote comprehensive energy-saving measures, encourage maximum adoption of renewable energy sources and systems for recouping wasted energy, and foster town planning and development and integrated management of public facilities.



### Main benefits from using leases

- **Effective use of fiscal resources**  
Lower upfront costs, multi-year contracts are possible
- **Easier cost management, including leveling out O&M costs**  
Operation and maintenance (O&M) costs can be included in lease contracts, enabling leveled-out monthly payments that make budget management simpler
- **More efficient administration of personal effects**  
Enables more efficient record-keeping and administration that comes with ownership such as attaching insurance to personal effects in general

\*Energy service companies (ESCOs) provide comprehensive energy-saving services from adoption of energy-saving equipment to operation and maintenance.

## Support for Energy Efficiency

# Environmentally Friendly Construction Consulting

We support improving the overall environmental performance of buildings, and the most important theme in achieving this is improving energy efficiency.

- As interest in environmental issues has grown, so has the number of building owners and asset managers aiming to apply for certification under the CASBEE® system or to provide notification of self-evaluation.
- SuMi TRUST Bank provides environmentally friendly construction consulting services where we advise on the installation of energy-saving systems in buildings, ways to take into account landscapes and ecosystems, extension of building life spans, and adoption of recycling systems.
- Some projects we advised have been selected by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) for the “leading projects” program for sustainable buildings and by the Ministry of Economy, Trade, and Industry (METI) for the “net zero energy building” proof-of-concept pilot program.

## Shimane Bank's New Head Office

The new head office building for Shimane Bank, a project commenced around the hundredth anniversary of its founding, has an energy-saving design and self-supporting systems for emergencies that bolster local disaster-response capabilities. A plank in the “GREEN BANK Shimagin Project,” the building symbolizes the bank's contribution to efforts to create a low-carbon regional economy and bolster local disaster preparedness. The appearance control system realizes ideal visual environments through a combination of lighting controls for brightness, exterior louvers and controls for window blinds; the energy-saving air conditioning system is optimized for the climate of a region facing the Sea of Japan with “eco-voids,” natural ventilation chimneys, at “twin corners” of the building that create an updraft from natural wind pressure; and the “Green Plaza” initiative includes the use of digital signage to display energy consumption paired with a building energy management system (BEMS). Self-supporting systems that enhance disaster-response capabilities have been built into the building so that it contributes to creating a disaster-resilient community where the lighting always stays on and information is never cut off.

(Selected for the “leading projects” program for sustainable buildings; this was formerly known as the 2014 No. 1 “leading projects for promoting CO<sub>2</sub> reduction” program for housing and buildings)



# Initiatives to Reduce CO<sub>2</sub> Emissions from Business Activities

## Energy Usage and CO<sub>2</sub> Emissions (Domestic Bases)

Energy usage		FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015
Total volume of energy usage (heating value)	GJ	1,081,210	1,107,217	999,891	1,000,431	949,345	913,496	846,830
Total volume of energy usage (converted to crude oil)	kl	27,895	28,567	25,797	25,811	24,493	23,568	21,848
Energy usage intensity	kl/m <sup>2</sup>	0.062	0.063	0.055	0.053	0.055	0.053	0.051
Electrical power	thousand kWh	95,656	96,831	87,081	85,901	79,933	76,768	71,206
City gas	thousand m <sup>3</sup>	2,019	2,116	1,875	2,475	2,502	2,398	2,158

CO <sub>2</sub> emissions		FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015
Greenhouse gas emissions volume	t-CO <sub>2</sub>	45,900	45,545	40,233	47,867	50,380	48,921	43,816
Greenhouse gas emissions after adjustment	t-CO <sub>2</sub>	42,607	40,562	38,788	46,531	41,994	48,188	43,470
Emissions intensity	t-CO <sub>2</sub> /m <sup>2</sup>	0.102	0.101	0.086	0.099	0.114	0.111	0.103
Emissions intensity (after adjustment)	t-CO <sub>2</sub> /m <sup>2</sup>	0.095	0.090	0.083	0.096	0.095	0.110	0.103

Scope of calculation: SuMi TRUST Bank facilities in Japan subject to the Act on the Rational Use of Energy. Group companies are tenants in some facilities.

Calculation method: The emission factors in "Ministerial Ordinance on Greenhouse Gas Emissions Produced in Conjunction with the Business Activities of Specified Emitters" were used.

Emission factors and emission factors after adjustment for each electricity business were used as the electricity emission factors for calculation of emissions intensity.

## CO<sub>2</sub> Emissions at Bases Subject to the Tokyo Metropolitan Ordinance on Environmental Preservation

		No. 1 plan period					No. 2 plan period	
		FY2010	FY2011	FY2012	FY2013	FY2014	Cum. total	
Standard emissions	t-CO <sub>2</sub>	27,690	28,790	29,891	29,891	29,891	146,153	FY2015 (Four bases)
Mandatory reduction ratio	%	8	8	8	8	8	—	FY2015 (HQ)
Maximum emissions limit	t-CO <sub>2</sub>	25,476	26,488	27,501	27,501	27,501	134,467	
Mandatory reduction	t-CO <sub>2</sub>	2,214	2,302	2,390	2,390	2,390	11,686	
CO <sub>2</sub> emissions	t-CO <sub>2</sub>	20,810	18,186	18,860	18,993	18,501	95,350	
Emissions reduction	t-CO <sub>2</sub>	6,880	10,604	11,031	10,898	11,390	50,803	
Excess reduction	t-CO <sub>2</sub>	4,666	8,302	8,641	8,508	9,000	39,117	
Emission permits awarded	t-CO <sub>2</sub>						39,117	

The emission figures in the table above show the reduction status at SuMi TRUST Bank's four bases with regard to the "mandatory reductions in total greenhouse gas emissions" and the "mandatory reductions in total greenhouse gas emissions via the emissions trading system" proscribed in the Tokyo Metropolitan Ordinance on Environmental Preservation (The four bases are the Fuchu Building, Shiba Building, Chofu Building, and Meguro Building). The head office building is a multi-tenant building with mandatory reductions that come into effect from fiscal year 2015 but SuMi TRUST Bank's mandatory reductions have not yet been finalized and so this data is shown in two columns in a separate table. Our emission reporting has been verified by a third-party assessment organization. The coefficients used to calculate emissions for the No. 1 plan period and the No. 2 plan period differ, so the performance over time of these periods cannot be compared.

As for the mandatory reductions based on the Tokyo metropolitan ordinance on environmental preservation that commenced from fiscal year 2010, the five years through fiscal year 2014 are the No. 1 plan period. Our reductions in this period far exceeded what was required, so the Group secured emission permits for 39,117t-CO<sub>2</sub>. We decided to carry forward these emission permits into the No. 2 plan period that commenced in fiscal year 2015. We will make effective use of the emission permits in executing reduction measures vis-à-vis emission increases from the addition of facilities and relocations.

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