



NIPPON STEEL & SUMITOMO METAL CORPORATION

<http://www.nssmc.com/en/>



Nippon Steel & Sumitomo Metal Corporation
Sustainability Report 2014 (April 2013–March 2014)

NIPPON STEEL

Sustainability Report 2014



SUMITOMO METAL

Corporate Philosophy

Nippon Steel & Sumitomo Metal Corporation Group will pursue worldleading technologies and manufacturing capabilities, and contribute to society by providing excellent products and services.

Management Principles

1. We continue to emphasize the importance of integrity and reliability in our actions.
2. We provide products and services that benefit society, and grow in partnership with our customers.
3. We pursue world-leading technologies and manufacturing capabilities.
4. We continually anticipate and address future changes, innovate from within, and pursue unending progress.
5. We develop and bring out the best in our people to make our Group rich with energy and enthusiasm.

Basic Environmental Policy (Established in October 2012)

Under the principle of "Ecological Management," NSSMC is committed to contributing to the creation of an environmental-preservation oriented society with lower environmental impact. For this purpose, the company will conduct business activities based on the viewpoint of environmental preservation in local communities, which includes the maintenance and improvement of good living environments and the promotion of reduction and recycling of waste. The company will also address challenges on a global scale including response to issues of global warming as well as the maintenance and improvement of biological diversity.

1. Reducing environmental impacts at every stage of operations (eco process)
2. Offering of environment-oriented products (eco products)
3. Proposing environmental preservation solutions from a global perspective (eco solution)
4. Development of innovative technologies
5. Development of a rich environment
6. Promotion of environmental relations activities

Structure of the Report

1 What's NSSMC like? → p.2
We aim at becoming the world-leading steelmaker with comprehensive strengths.

2 Basic approach to NSSMC's environmental management → p.6
Through three ecos and the development of innovative technology, NSSMC is determined to help resolve challenges for a sustainable society.

3 How NSSMC's corporate management supports environmental management → p.30
We seek for ever-improving operational management, and to be trusted by society.

Overview of the communication tools

Sustainability Report 2014			
Brochures	Easy-to-understand brochure on environmental initiatives  Each double-page spread has a link to the website for further detail. Sustainability Report 2014 (Book form and PDF file) ^{1, 2}	Brochure on the compact overview of the company  Company Brochure (Book form and PDF file) ¹	Brochure on the overall businesses and management for investors  Annual Report 2014 (Book form and PDF file) ^{1, 2}
	Details on environmental initiatives  http://www.nssmc.com/en/csr/	Details on the following subjects  http://www.nssmc.com/en/ •Products •Research & Development •About NSSMC •Recruiting information	Details on business and management  http://www.nssmc.com/en/ir/
Other publications	Various reports •PR brochures “Quarterly Magazine: NSSMC”² •Picture book “A New Story About Iron”² •Technical articles and technical reports¹	Various reports for shareholders¹ •Fact Book •Financial Results •Securities Reports •Corporate Governance Reports •Reports for Shareholders	

¹ PDF files are available for downloading from the website.
² Printed copies are available upon request from the website.

NSSMC is contributing to society through steelmaking

Nippon Steel & Sumitomo Metal Corporation (NSSMC) has strived to introduce new products to society, by always appropriately adjusting to the changing times and making advances in steelmaking technology so as to better satisfy the needs of customers.

We are committed to contribute to the development of society by further improving our advanced technology.

Japan's main artery Opening of the Tokaido Shinkansen line



The Zero Series trains
Courtesy of Railway Technical Research Institute

1964
NSSMC's railway wheels and axles and drive units were adopted.

Corrosion-resistant Stainless steel



1970's
NSSMC developed corrosion-resistant, heat-resistance stainless steel with strong adaptability to match design specifications.

"Creation of Hometown Forests" began In steelworks



1971
The world's first forest was created by using the Miyawaki method.

The world's first Continuous annealing furnace



1972
By adopting a continuously annealing line of five processes of steel sheets for automobiles, its manufacturing period was reduced from 10 days to one day.

Development of superior steel materials Supported the "3-C boom"

Steel sheet contributed to diffusion of the "3-C" consumer durables such as cars, coolers (air conditioners), and color TVs.

Grain-oriented electrical steel sheets Supported social infrastructure



1968
NSSMC developed grain-oriented electrical steel sheets, a product which minimizes energy loss for transformers used in the power transmission and distribution stage.

Early adoption of computers

1968
Introduced computer control of blast furnace operation.

Promoting productivity improvement

1973
The steel industry's first online system began operation.

Coke Dry Quenching (CDQ) equipment

Supported emerging countries' economic growth and energy saving

1976
Contributed to global-scale energy saving and CO₂ reduction.

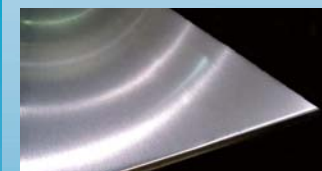
Support in the era of concern for the global environment

High-tensile steel sheets for automobiles

Contributed to reduction in weight

1980's
Contribute to improve gasoline mileage by reduction in vehicle body weight.

Light and strong Titanium materials



1984
NSSMC began production and sales of outstanding corrosion-resistant, light, and strong titanium.

Cooperation for construction of a Shanghai Baoshan Steel steelworks

1985
Initial blowing in the No. 1 blast furnace

High-strength steel wires for cables Akashi Kaikyo Suspension Bridge



1988
NSSMC helped make the Akashi Kaikyo Suspension Bridge a reality, as well as other long-span suspension bridges.

Overseas business development

1990
I/N Tek in the U.S.A. began operation
1991
I/N Kote in the U.S.A. began operation
1992
International Crankshaft in the U.S.A. began operation

SuperDyma®

Prolongs service life

2000
Increased adoption as construction material due to its high durability and strong adaptability to match design specifications.

Nagoya Works and Kimitsu Works Waste plastic recycling

2000
Began business-basis recycling of waste plastic containers and packaging collected from households.

Ultra-high-tensile steel sheet for automobiles

Contributes to weight reduction and collision safety



2000's
Satisfied requirements for both collision-safety and weight-reduction functionalities.

Ultra-strength, corrosion-resistant low-alloy oil tubular

Satisfies both strength and corrosion resistance requirements

2003
Developed steel tubular for oil and natural gas exploration; the product has an unprecedented level of strength and corrosion resistance, and thereby contributes to ultra-deep natural gas well development.

Support for customer's global expansion

Steel plate for tankers

Reduces environmental burden to one-fifth



2004
Developed steel plate that needed no coating and reduced the speed of corrosion that occurs on the hull of a crude-oil tanker to one-fifth compared to the conventional plate.

UStainless steel boiler tube

Achieved the world's highest strength in boiler tubes

2007
The world's first alloy steel (25% Cr) for boiler tubes with a significant increase in strength

CLEANWELL® DRY

Satisfies both high performance requirements and eco-friendliness



2009
Developed special threaded joints of oil well tubular that enable clean oil and well development, without using grease which contains substances of concern such as lead.

Technological innovation in railway wheels Green transportation



2012
Developed railway wheels that withstand heavy loading, used in mining railways and other demanding applications.

Respond to the yen's sharp appreciation

From 2012 Toward becoming the world's leading steelmaker with comprehensive strengths

Major events

1963
Opening of the Meishin Expressway

1964
Opening of the Tokaido Shinkansen Line
Tokyo Summer Olympics

1970
Japan World Exposition (Osaka Expo'70)

1972
Sapporo Winter Olympics

1973
The first oil crisis

1978
The second oil crisis

1982
Opening of the Tohoku and Joetsu Shinkansen Lines

1985
The Plaza Accord
The International Exposition, Tsukuba, Japan, 1985 (Tsukuba Expo '85)

1988
Opening of the Seikan Submarine Tunnel
Opening of the Great Seto Bridge

1992
The United Nations Conference on Environment and Development (UN Earth Summit)

1997
Adoption of the Kyoto Protocol at the third session of the Conference of Parties to the UNFCCC (COP 3)

1998
Nagano Winter Olympics

2002
FIFA World Cup Korea/Japan

2005
The 2005 World Exposition, Aichi, Japan

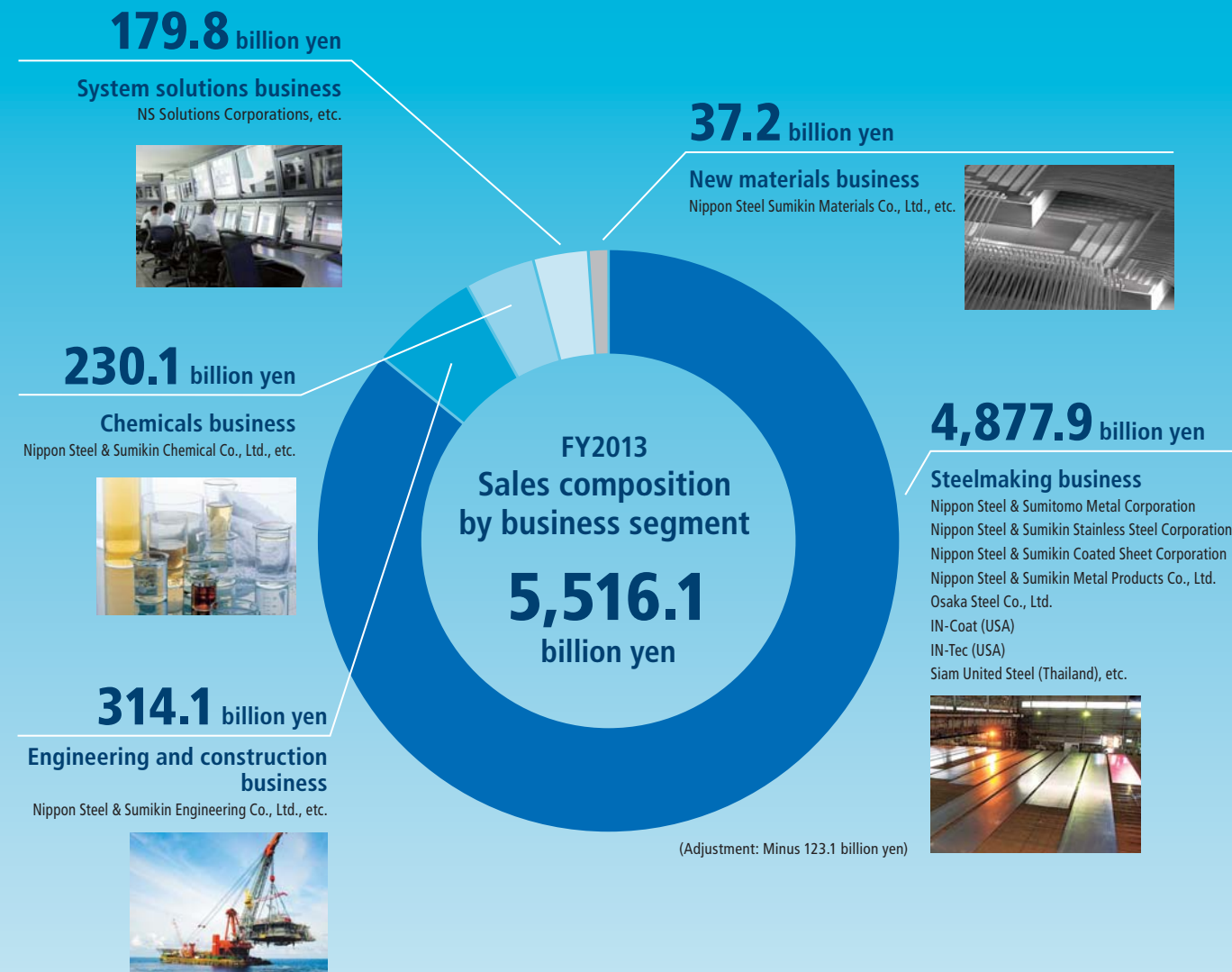
2008
Lehman Shock (Global Financial Crisis)

2011
Opening of the entire line of the Kyushu Shinkansen Line

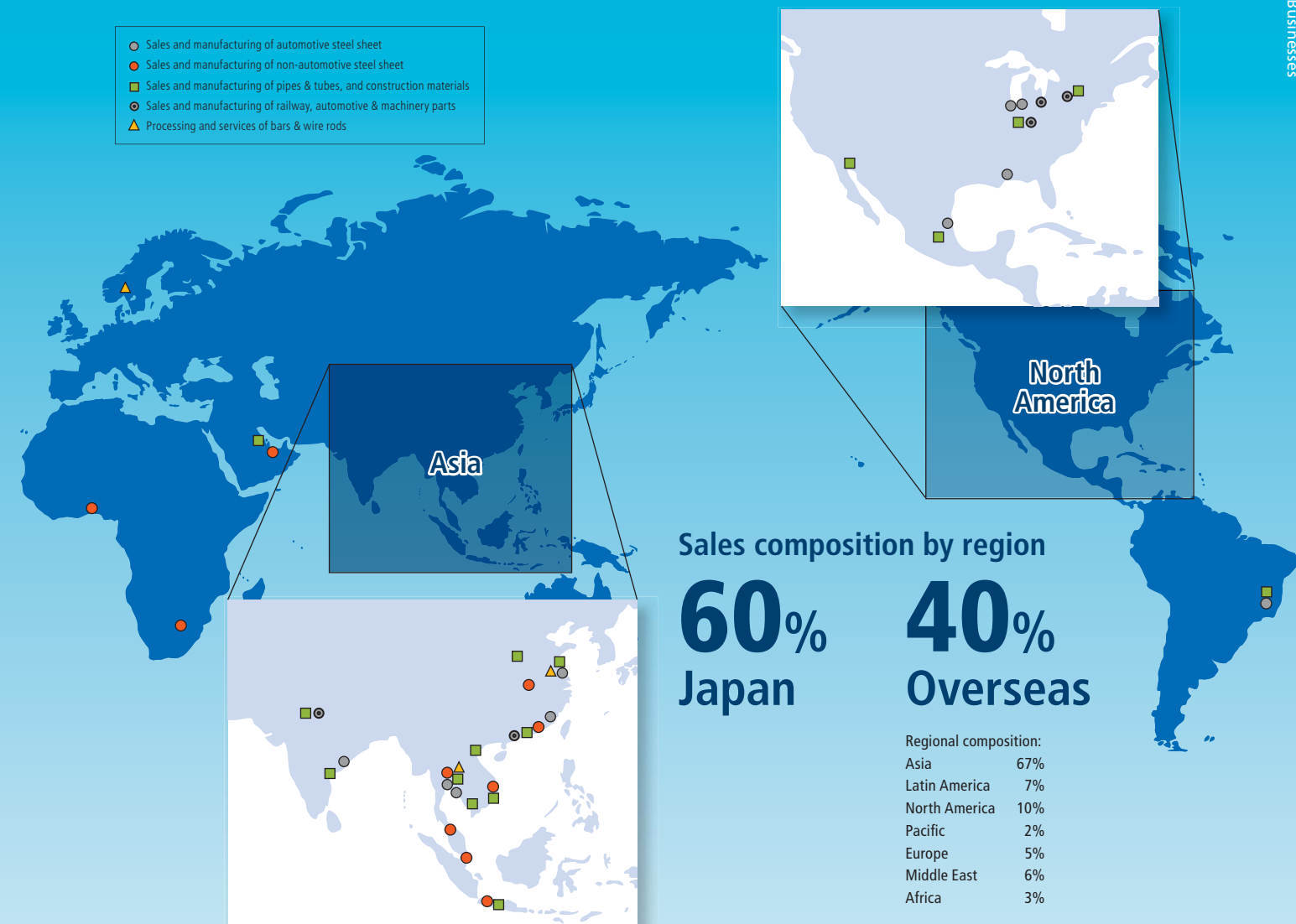
2012
Opening of the Tokyo Skytree

NSSMC's Business

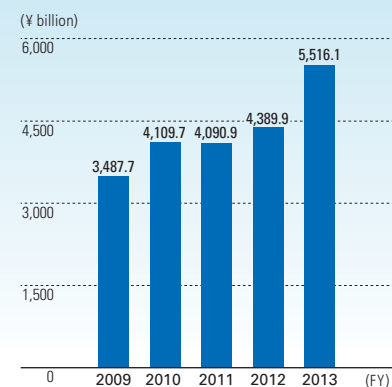
Based on the long accumulation of technology through steelmaking, the Nippon Steel & Sumitomo Metal Corporation (NSSMC) Group operates businesses in five areas: steelmaking, engineering, chemicals, new materials, and system solutions, with the core business being steelmaking.



The NSSMC Group is steadily progressing in establishing a global business structure which enables it to capture overseas growth markets and to readily respond to customers' overseas expansion.

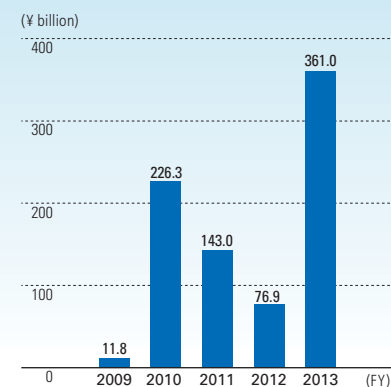


► Net sales (consolidated basis)¹

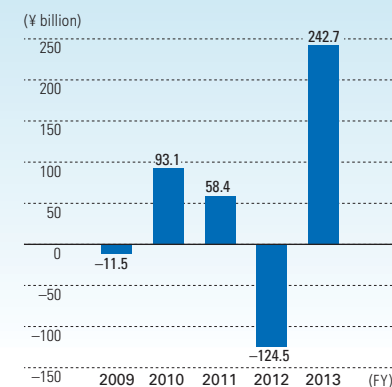


¹ Net sales from fiscal 2009 to fiscal 2011 are those of Nippon Steel.

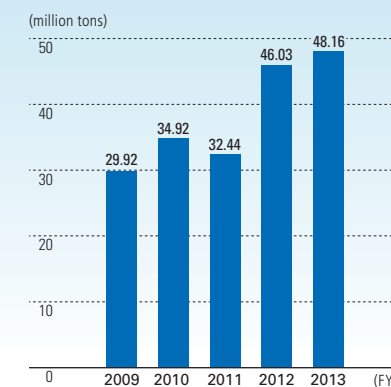
► Ordinary profit (consolidated basis)¹



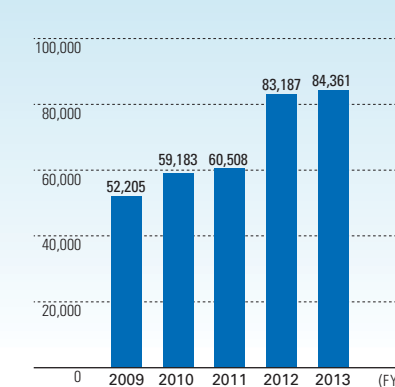
► Net income (consolidated basis)¹



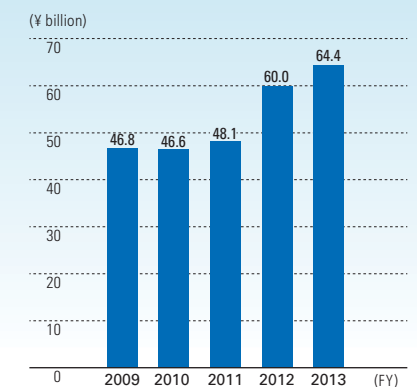
► Crude steel production volume (consolidated basis)¹



► Number of employees (consolidated basis)¹



► R&D expenditures (consolidated basis)¹



Message from Top Management



Aiming to Connect with Society Based on Reliability

Nippon Steel & Sumitomo Metal (NSSMC) is a corporation whose business activities exert a large influence on the environment. This is borne out by the fact that we consume approximately 5% of the total energy used throughout Japan. For this reason, as a corporation we have determined the Basic Environmental Policy, and we are fulfilling our commitment to contribute to the creation of an environmental-preservation oriented society with lower environmental impact under the principle of "Ecological Management."

First, to address the problem of global warming, the NSMMC Group achieved its CO₂ emission reduction target in the voluntary action plan by FY2012. Now, with the aim of achieving the action plans for a low carbon society by the target date of FY2020, we are promoting initiatives with a strong sense of mission and sense of ownership so that we can effectively fulfil our responsibility to society.

In addition, we keenly sense the fact that environmental risk management, which includes the control of accidents and trouble, is indispensable to NSSMC's business survival. Accordingly, we are implementing detailed environmental impact reduction measures, based on actual conditions at each operating base, including not only compliance with laws and regulations but also conformity to local government ordinances and standards. At the same time, we are ceaselessly continuing measures aimed at enhancing environmental preservation through the use of both equipment and services.

Through three "ecos" of eco process, eco products® and eco solutions and the development of innovative technologies, NSSMC will continue to be actively involved various environmental issues from the local community level to the global scale. These areas encompass measures to address global warming and the maintenance and improvement of good living environments as well as the promotion of reduction and recycling of waste and the maintenance and improvement of biological diversity.

As this *Sustainability Report* introduces NSSMC's various initiatives related to the environment, including details of the topics mentioned above, please take a look at it.

The NSSMC Group advocates the following as the first point of its Management Principles: "We continue to emphasize the importance of integrity and reliability in our actions." I myself, while being responsible for environmental matters until I was appointed as President, have conducted business operations while remaining strongly aware that environmental initiatives, including not only measures to address global warming but also the reinforcement of environmental risk management and the promotion of resource recycling, are a vital commitment in terms of connecting the Company with society based on reliability.

By developing bilateral communication with all stakeholders, i.e., local communities, customers, shareholders, investors, researchers, and environmental NGOs, we intend to continue to further enhance the quality of our ecological management.

We are ready to learn from your candid opinions regarding our environmental and other activities.

Kosei Shindo

Representative Director and President



NSSMC's Commitment to the Three Ecos and Innovative Technological Development

Nippon Steel & Sumitomo Metal Corporation (NSSMC) manufactures high-grade steel products at the world's highest levels of energy efficiency. Being manufactured by *Eco Processes*, our *Eco Products*® contribute to saving of energy and resources and are provided to our users worldwide. By using our steelmaking infrastructure, we are developing *Eco Solutions*, which include recycling of waste plastic and tires, and harmonious activities with nature. Those three ecos are based on innovative technological development, to which we are firmly dedicated. NSSMC, with its advanced technologies, is committed to contributing to realization of a sustainable society.

Three ecos



ECO PROCESS

The way we manufacture is "eco-friendly"

NSSMC manufactures steel products with world-leading resources and energy efficiency and is aiming to develop eco-friendly steelmaking processes by further improving efficiency.



ECO PRODUCTS

What we produce is "eco-friendly"

We produce and offer eco-friendly "products" using our world-leading technological capabilities, thus conserving resources and energy and thereby contributing towards building a sustainable society.



ECO SOLUTION

Sharing our "eco-solutions"

We contribute to the reduction of CO₂ emissions and other environmental burdens on a global scale by diffusing our Group's world-class environmental and energy-saving technologies in Japan and overseas.



DEVELOPMENT OF INNOVATIVE TECHNOLOGIES

Based on the objective of offering to society technologies and products that contribute to the saving of resources and energy and the reduction in environmental burden, we are developing innovative advanced technologies from a medium- to long-term perspective.

R&D group of approximately
800 researchers

Total number of patents held
Approximately **23,000** patents issued
in around 70 countries

Contributing to solving environmental and energy issues through steelmaking





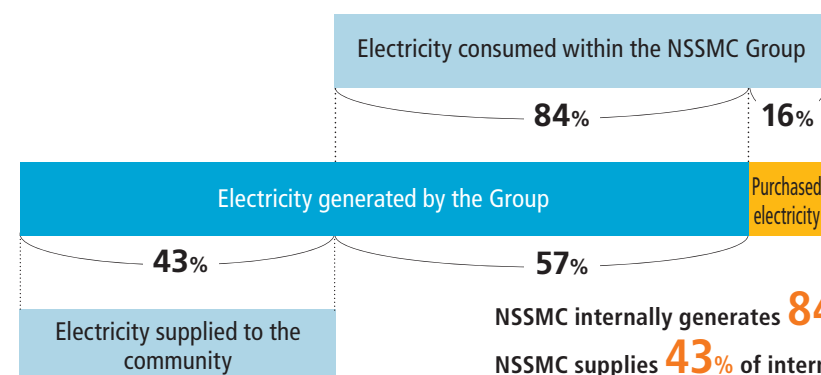
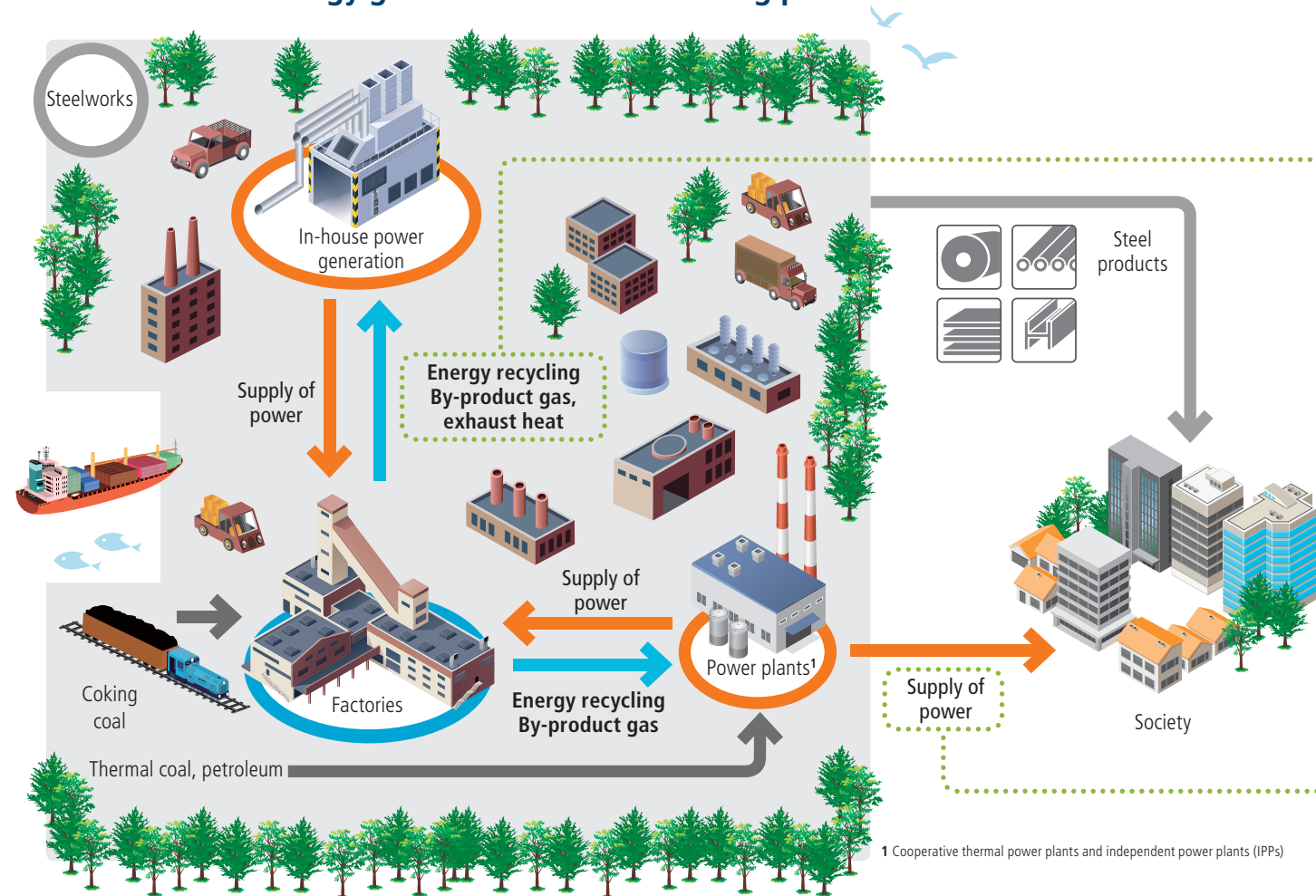
The way we
manufacture is
"eco-friendly"

Energy-preservation technologies used in steelmaking processes

Effective and economic use of energy

Nippon Steel & Sumitomo Metal Corporation (NSSMC) collects and effectively uses gas, which is generated in large volumes as by-products of steelmaking processes, and heat energy and pressure energy. The gas recovered is used as source of fuel for making steel materials and, together with heat energy and pressure energy, for power generation. NSSMC self-generates most of the electric power it needs, and the remaining power is supplied to general households and industries through electric power companies. We will enhance our world-class technologies and continue to make effective use of limited natural resources and energy.

Flow chart of energy generated from steelmaking processes



NSSMC internally generates **84%** of the electricity it uses.

NSSMC supplies **43%** of internally-generated electricity in the local community.

Major energy collection facilities

Coke Dry Quenching (CDQ) facilities

The hot coke is quenched and cooled down not with water but with inert gas, which primarily consists of nitrogen gas and CO₂. Waste heat is recovered for power generation, while dust generation is almost fully curbed. ▶ See p. 25



Gas holders

A gas holder is a storage container used for gas by-product that is to be used as fuel. Gas by-product is stored at night and is used as fuel for power generation during the daytime when power demand is high. Through this, we accommodate to fluctuation in the level of demand for power and reduce use of petroleum in power plants.



Kalina cycle power generation

The Kalina cycle captures waste heat from hot water of about 100 °C, which has condensed from converter gas, and turns it into power. NSSMC is the first in the world to be successful in this mode of practical use, at the Kashima Works in 1999. In the past, low-temperature waste heat was difficult to capture but can now be collected for power generation.



Major power generation facilities

Top Pressure Recovery Turbine (TRT)

This equipment drives a turbine using blast furnace gas generated in large volumes in a blast furnace to generate electric power. Pressure energy is effectively used, while greenhouse gases such as CO₂ are not generated and involve no use of fuel. In the case of the Kashima Works, the TRT generates nearly 10% of power consumed at the site.



Cooperative thermal power plants

Joint power generation with local electric power companies

Through joint investment with local electric power companies, NSSMC has constructed power plants and generate electric power by using gas by-product generated within a steelworks, thermal coal, and petroleum as the fuel source. Power is supplied to general households and industries through the local electric power company.





What we produce is
"eco-friendly"

SuperDyma®, the steel sheet that is considerate of the overall lifecycle

Corrosion Resistance Has Lengthened the Product Life by Four Times

SuperDyma® has enhanced corrosion resistance by four times by the composite effect of adding aluminum, magnesium, and silicon to the conventional galvanized (zinc coating) steel sheet. It has thus extended the product life. Less energy is consumed during the manufacturing process, consumption of steel materials is reduced, and product durability is enhanced – advantages that have led to increasing adoption of SuperDyma® as exterior construction material, contributing to longer life of buildings.

SuperDyma®

High corrosion resistance enables four times longer product life

SuperDyma® steel sheet lasts four times longer than the conventional hot-dip Zn-coated sheets.

High corrosion resistance enables reduced use of resources and energy

- The amount of coating materials needed can be about 25% that of hot-dip Zn-coated sheets for a given duration of life.
- Due to elimination of post-coating and post-painting on cut-end surfaces, consumption of coating and painting materials and energy for fabrication is reduced.
- The conventional hot-dip Zn-coated sheets require a heavy sheet thickness to prevent distortion during post-coating. SuperDyma® products, with no need of post-coating, can be thinner and lighter, which also means a lower cost of fabrication.

High corrosion resistance justifies wide diffusion as a construction material

SuperDyma® is used in various applications, including construction, electric appliances, automotive parts, and solar panel installation mounts, as it has the advantage of longer life and lower cost.

Can be recycled after the end of its product life

SuperDyma® can be recycled and reused as steel material, after the product made of SuperDyma® is no longer used at the end of its service life.



Exterior material of the new Kobe plant of Rock Field, Co., Ltd.



Pillar modified for earthquake-resistance inside a station

Cable rack inside a fire department building

VOICE



Somkiat Pintatham
President
NS BlueScope (Thailand) Ltd.

Expect to curb social costs in ASEAN and reduce environmental impact

NS BlueScope Coated Products has decided to commence production of SuperDyma® in Thailand in 2015. This is the first time that SuperDyma® will be produced outside Japan. SuperDyma® is a product that was developed at Nippon Steel & Sumitomo Metal and has been widely used in construction materials to home appliances due to its outstanding corrosion resistance. It acquired a Japanese Industrial Standard (JIS) in 2012 and its applications are expected to expand further.

We are convinced that SuperDyma® will curb social costs in ASEAN countries and also contribute to a reduction in environmental impact. We will strive to expand the use of this wonderful ecological product in ASEAN.

Strong points of steel from a total life cycle perspective

The greatest strong point is unlimited recycling

Even after the service life of products such as automobiles ends, steel materials are recovered as scrap and recycled as new steel products. The greatest strong point of steel materials is the fact that unlimited recycling is possible. When recovered scrap is used again as steel material, it is possible to proportionately reduce the amount of natural resources that is newly consumed and the CO₂ generated at the time of iron ore reduction. In other words, scrap has "environmental value."

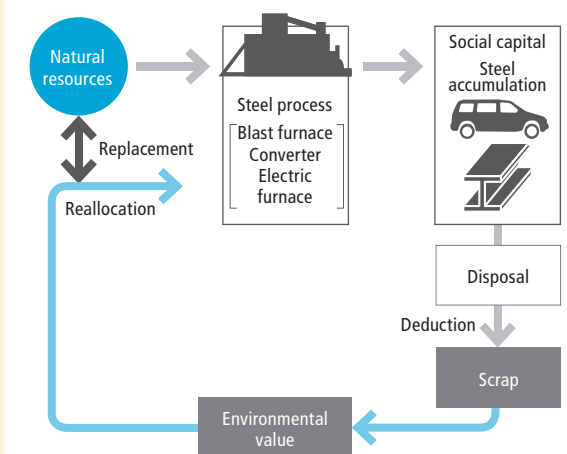
The World Steel Association is focusing on this point and has established a method to evaluate environmental impact that factors in scrap recycling after product disposal. For example, this is a method where the environmental value possessed by scrap that is recovered at the time of the disposal of automobiles is deducted and reallocated if scrap is reused. If this method is used, the effect of the improvement to the environment caused by scrap recovery can also be appropriately evaluated and it is possible to fairly evaluate the entire steel process for making products from both natural resources and scrap.

In addition, there is a limit on the amount of scrap that is generated when steel products whose service lives have ended become a source of supply, and it is impossible to provide for all the supply of steel, for which demand is expanding worldwide.

The supply of steel that society requires is founded on an integrated system where iron ore, which is a natural resource, is seen as the principal source of supply and scrap recycling is also incorporated.

System for evaluation of CO₂ emissions over entire life cycle

Emphasis that considers entire life cycle

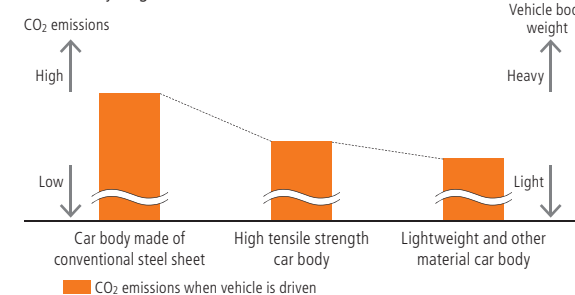


The lighter an automobile is, the better its fuel economy is and the more it is possible to reduce CO₂ emissions when driving. Accordingly, the application of lightweight materials aimed at improving fuel economy is likely to continue to accelerate. However, at the stage of manufacturing lightweight materials, a large amount of energy is consumed, and if it is not possible to

recycle materials after automobiles are disposed of, CO₂ emissions can conversely end up increasing over the entire life cycle. It is therefore important to consider environmental impact over the entire life cycle, including the recycling of materials, and not just based on a cross section of products.

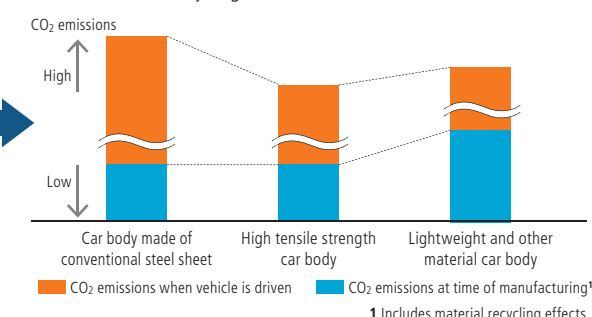
Viewpoint based only on vehicle fuel efficiency requirements

If the vehicle body is lightened, CO₂ emissions can be reduced → How about CO₂ resulting from material manufacturing and recycling?



Consideration from manufacturing to material recycling

In addition to the driving stage (vehicle fuel efficiency), it is necessary to consider the entire life cycle, including the manufacture and recycling of materials



Prepared based on data published by WorldAutoSteel (automotive group of the World Steel Association)

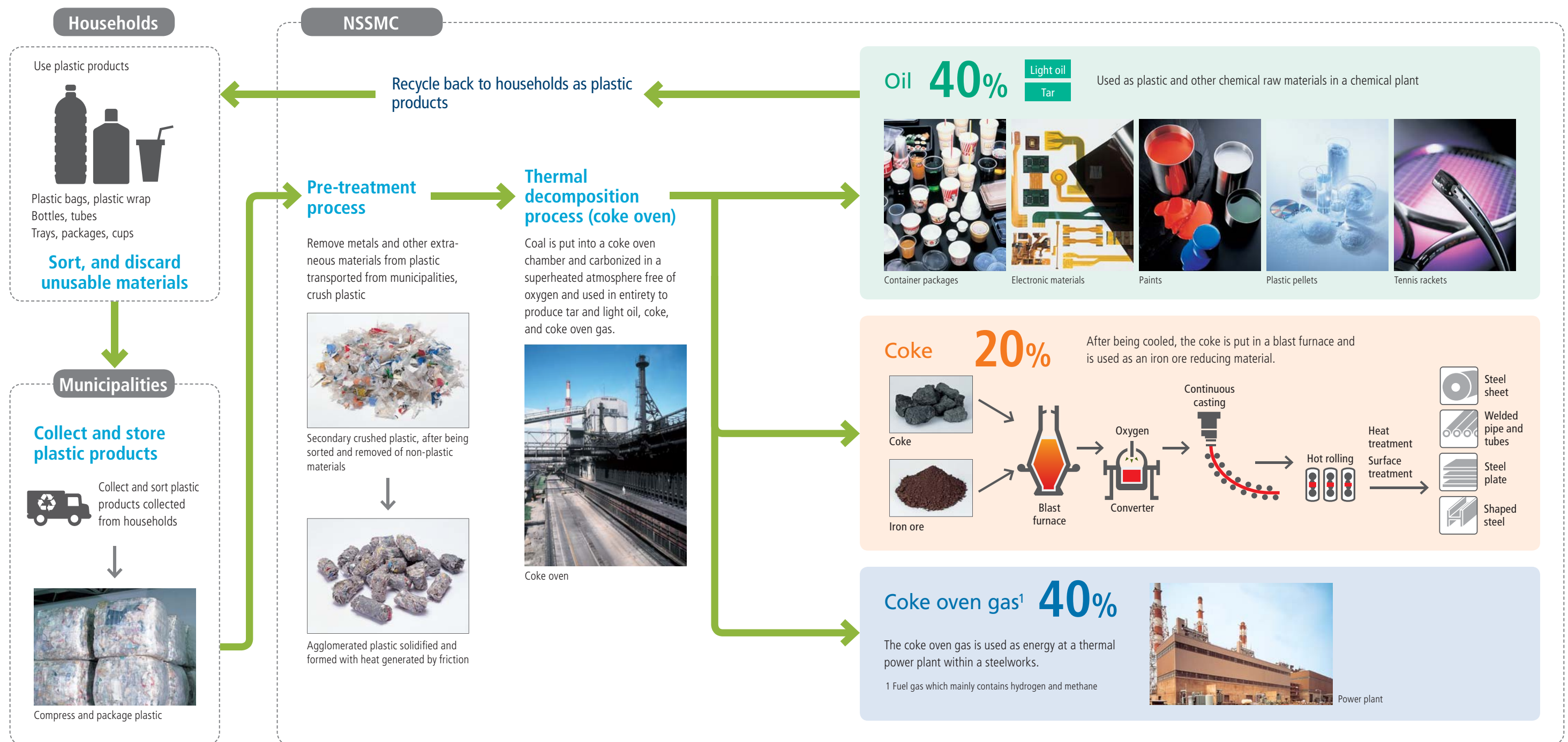


Contribute to a recycle-oriented society by use of the steelmaking technology

Waste Plastic Recycling

Since 1997, Nippon Steel & Sumitomo Metal Corporation (NSSMC) has been doing a research on waste plastic recycling with a focus on the thermal decomposition process (in coke ovens). Since the fall of 2000 when we installed our first waste plastic treatment equipment, at our Nagoya Works and Kimitsu Works, four other steelworks have installed the equipment and we have established a nationwide system to collect waste plastic. At present, NSSMC recycles about 30% of waste plastic which is collected by municipalities across Japan.

Waste plastic recycling process, using coke ovens for steelmaking



VOICE



Yaichi Aoshima

Professor
Institute of Innovation Research
Hitotsubashi University

Japan faces the very difficult issue of having to resolve environmental and energy problems while realizing industrial competitiveness and economic development. One of the keys to resolving this issue is making the maximum effective use of existing resources, including multiple uses for various applications. In this regard, I think that recycling waste plastic by using a coke oven is an ideal technology. The dechlorination process is not required and initial investment is substantially restrained due to the use of existing coke ovens. Waste plastic can be reused by changing its form to coke, heat, electricity and chemical products, for example. Steelworks certainly emit large quantities of CO₂. However, that's why they are also a treasure house of ideas to solve environmental problems. We should be able to learn a great deal from steelworks in terms of solving environmental, energy and economic problems.



ECO PROCESS (The way we manufacture is "eco-friendly")

Recycling and environmental aspects of energy and natural resources

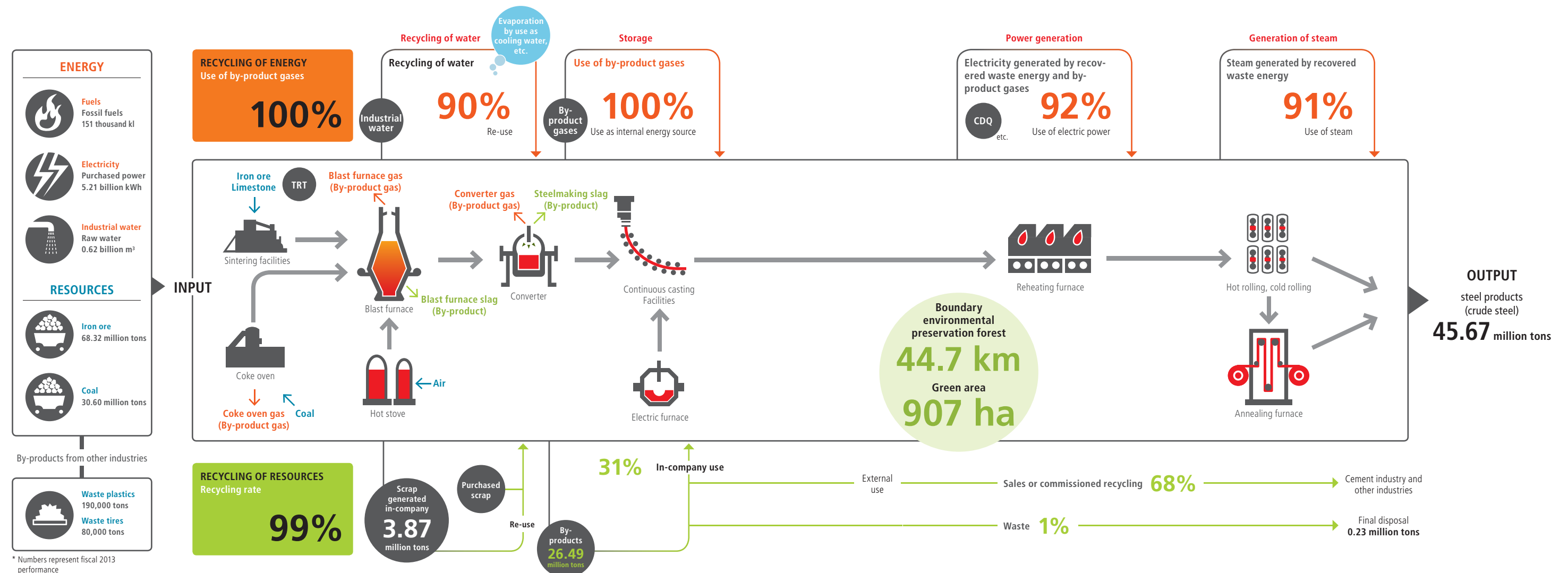
Nippon Steel & Sumitomo Metal Corporation (NSSMC) is committed to reduction of the environmental burden created by production activities and manufacturing processes.

We make continuous efforts in all processes to not waste limited resources and energy.

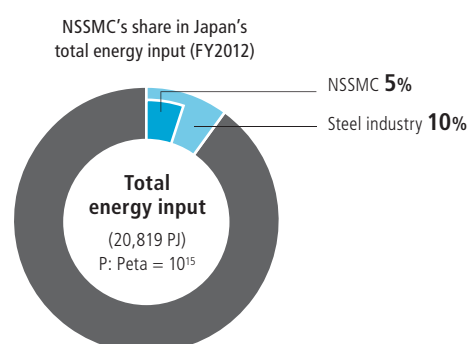
NSSMC uses iron ore mined overseas, coal as an iron ore reductant, and scrap generated by society as its main raw materials for steel production. By-product gases, such as coke oven gas generated by dry distillation of coal in the coke manufacturing process and blast furnace gas generated from blast furnaces, are fully utilized as fuel

gas for steel heating furnaces or energy sources for power generation plants on the premises of steelworks.

Electricity generation by recovering waste heat helps raise the heat efficiency of the whole steelworks to around 70%. In addition, more than 90% of water for cooling or washing products and production facilities

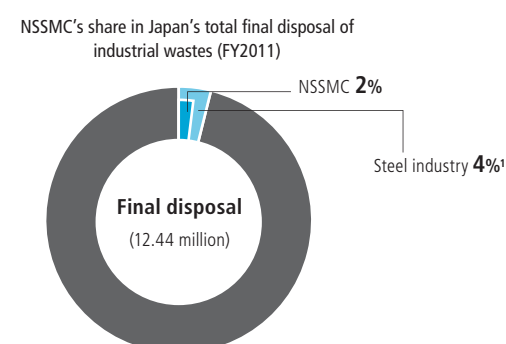


Energy inputs



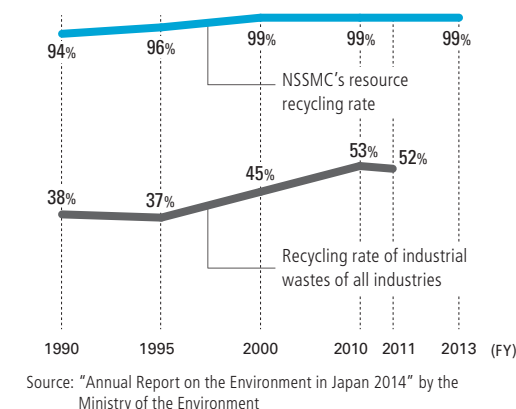
Source: "General Energy Statistics" by the Agency for Natural Resources and Energy JISF (Japan Iron and Steel Federation)

Emissions



Source: "Annual Report on the Environment in Japan 2014" by the Ministry of the Environment
1 Estimate

Resource recycling rate



is recycled and reused. When one ton of iron is produced, the amount of by-products generated exceeds 600 kg, but the steel slag, dust, and sludge are reused in-house as raw materials, or are used by society or other corporations as raw materials for cement, construction materials, and so forth.

These efforts have resulted in the achievement of a very high recycling rate of approximately 99%.

We are also engaged in the recycling of various types of by-products generated by society or other industries by utilizing our steelmaking processes that are carried out at high temperature and high pressure. In recent years, we have been actively recycling waste plastics, waste tires, and other waste materials.

Global Warming Countermeasures

Nippon Steel & Sumitomo Metal Corporation (NSSMC) promotes energy conservation and CO₂ emissions reduction throughout the entire supply chain: manufacturing, transportation, and final use of products. We also actively work at innovative technology development and transfer of established technology to our overseas operations, helping them to contribute to CO₂ reduction over the medium- and long-term.

Activities for reducing CO₂ and conserving energy during production processes

From the time of the first oil crisis until around 1990, NSSMC intensively promoted continuous processing, exhaust heat recovery, and other measures, all to enable significant energy conservation. The Japan Iron and Steel Federation (JISF) members including the former Nippon Steel and the former Sumitomo Metals adopted voluntary action plans with a goal of 10% reduction in energy consumption (CO₂ emissions reduction of 9%) for FY2008 through FY2012 relative to the FY1990 level, and made efforts to achieve this goal. As a result, both NSSMC and the JISF have succeeded in achieving the goal.

As the energy management activities of NSSMC and other members of the JISF had been highly evaluated, the JISF acquired ISO50001 (Energy management system) certification as the first in the world as an industrial organization. This acquisition is a credential of transparency, reliability, and viability of the JISF's voluntary action plans and its subsequent version of the action plan for a low-carbon society, in light of requirements of international standards.

From FY2013 on, NSSMC will continue energy conservation efforts to achieve the FY2020 goal of JISF's action plans for a low carbon society (CO₂ reduction of 5 million tons from expected CO₂ emissions under certain production assumptions, through the maximum use of cutting-edge technologies).

Energy conservation and CO₂ emissions reduction

The most effective measure against global warming is energy conservation, and, therefore, NSSMC is striving to improve energy efficiency by using energy generated in steelmaking processes, including power generation through use of by-product gas or exhaust heat recovery, or by reusing waste plastics and discarded tires. As a result of these efforts, the NSSMC and affiliated electric furnace companies¹ consumed 1,126 PJ energy in FY2013 and emitted 97.6 million tons² of CO₂.

- ¹ Affiliated electric furnace and other companies
Osaka Steel Co., Ltd., Godo Steel, Ltd., Nippon Steel & Sumikin Stainless Steel Corporation, Nakayama Steel Works Ltd., Nippon Coke & Engineering Co., Ltd, three Cooperative Thermal Power Companies (Kimitsu, Tobata and Oita), and two Sanso Centers (Nagoya and Oita)
- ² A provisional value based on the assumption that the CO₂ level in a unit of purchased electricity in FY2013 is the same as in FY2012.

Japan Iron and Steel Federation's action plans for a low carbon society

In the voluntary action plans, the Japanese steel industry promotes three ecos: energy conservation in own manufacturing process (eco process); CO₂ reduction related to final products containing high-performance steel materials (eco products); and CO₂ reduction on a global scale by transferring and promoting energy-saving technologies (eco solutions). From a medium- and long-term perspective on CO₂ reduction, the industry also is promoting development of innovative steelmaking processes ("COURSE 50"). From FY2013 onward, we

will continue to promote 4-pronged anti-warming measures consisting of the three ecos and COURSE 50, under action plans for a low carbon society.

CO₂ reduction efforts in transportation of products

NSSMC transports approximately 13.4 billion ton-kilometers⁷ of steel products and semi-finished products per year. Historically, we have made joint efforts for logistics efficiency with the logistics companies within the NSSMC Group, such as the improvement of transportation efficiency and fuel economy.

Efforts to improve the transportation efficiency include shortening ships' time at berth for loading and unloading by improving cargo handling efficiency or using larger vessels (changing from 700 ton to 1,500 ton vessels) in domestic transportation, in addition to maintaining and improving high modal shift rates⁸.

To improve fuel economy, in land transportation for example, we have promoted fuel-efficient driving (i.e., use of digital tachometers) and introduced energy efficient tires and lightweight vehicles. In marine transport, fuel economy improvement measures have also been implemented and expanded the range of application.

In addition to efficiency in transportation, we have achieved some progress in reduction of packing materials by creating and expanding adoption of shipping systems for sheet products that do not require packing.

Going forward, with the aim of transporting large quantities of steel products in one shipment, we are also working on adopting a new optimal ship and land vehicle distribution system by use of the ship and land vehicle scheduling know-how accumulated over many years. We will thus further improve transportation efficiency.

We will further strive to significantly reduce CO₂ emissions through realization of synergy effects of the merger, in addition to

improving logistics efficiency through an optimal production system and transportation efficiency by reviewing the logistics system.

Logistics sector's ton-kilometer achievements for FY2013

	Transportation quantity: 10,000 tons/year	million ton-kilometers/year
Ship	2,068 (56%)	11,718 (87%)
Railway	6 (0%)	41 (0%)
Truck and trailer	1,647 (44%)	1,662 (13%)
Total	3,721(100%)	13,421(100%)

- ⁷ Ton-kilometer
Total sum of the weight of load (ton) transported multiplied by transport distance (km)
- ⁸ Modal shift rate
A modal shift indicates the domestic freight transport shift from truck carrier to coastal shipping and railroad carrier as a countermeasure against global warming. A modal shift rate is a percentage of cargo volume transported over a distance of 500 km and more by rail or sea (including ferry) (as defined by the Ministry of Land, Infrastructure, Transport and Tourism).

Efforts made in office and at home

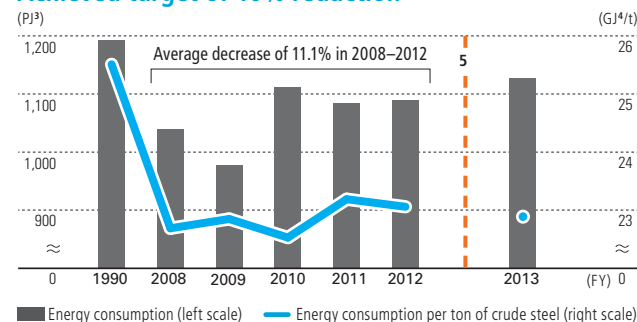
In addition to concerted efforts to reduce CO₂ emissions in the manufacturing process, NSSMC has implemented a policy of lights-out during lunch breaks, a business-casual dress code during summer, eco no-working days, etc. in offices, as part of the energy-saving activities.

In order to encourage our employees make energy-saving efforts at home and actually reduce emissions, we have promoted eco-Kakeibo (household bookkeeping) on a company-wide scale. Our "eco-Kakeibo" system is used by over 10,000 employees' families. They keep records of usage of electricity, gas, kerosene, gasoline, etc. and to thereby know the actual amount of household CO₂ emitted. Doing so contributes to reducing CO₂ emission at home by visual representation of data, such as CO₂ emissions per family member and comparison with the average of families for each business division.

Changes in energy consumption

1990 vs. average in 2008–2012

Achieved target of 10% reduction

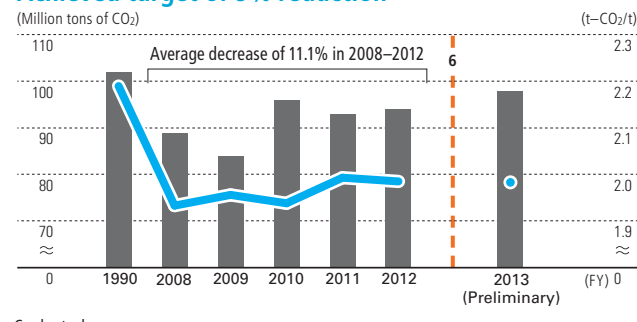


- ³ PJ indicates peta-joules (10¹⁵ joules).
A joule is a unit of energy or amount of heat.
- ⁴ GJ indicates giga-joules (10⁹ joules)
- ⁵ Transmission loss is included in 2013 but excluded in and before 2012

Energy-derived CO₂ emissions

1990 vs. average in 2008–2012

Achieved target of 9% reduction

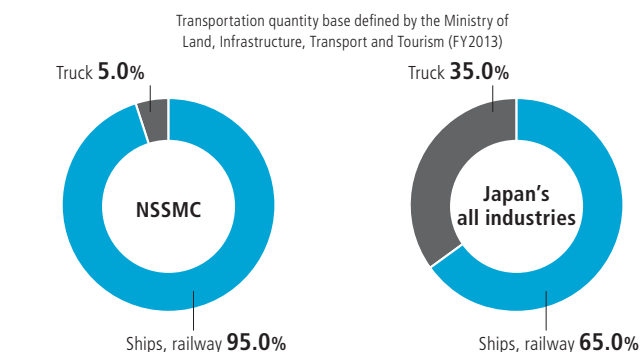


- ⁶ Transmission loss is included in 2013 but excluded in and before 2012

Japan Iron and Steel Federation's Action Plans for a Low Carbon Society

Eco process	Eco products	Eco solution
Aims at improving energy efficiency in the steelmaking process, which is currently the most efficient in the world. (CO ₂ reduction of 5 million tons from the amount of CO ₂ emissions expected under certain production assumptions.)	By providing high-performance steel materials, which are essential to build a low carbon society, contribute to emissions reduction when they are used in final products. (Typical high-performance steel materials are estimated to help reduce approximately 33 million tons of CO ₂ emissions in 2020.)	By transferring to and promoting the world's best energy-saving technologies cultivated through the eco process mainly in developing countries, contribute to a global reduction in energy use. (This is estimated to contribute to a reduction of approximately 70 million tons in 2020.)
Development of innovative steelmaking process "COURSE 50"		
The level of CO ₂ emissions is reduced by approximately 30% in the steelmaking process through iron ore reduction with hydrogen and separation/recovery of CO ₂ from blast furnace gas. The project's goal is to commercialize the first unit by around 2030 ¹ and adopt the technology elsewhere by around 2050, depending on the timing of replacing blast furnace equipment.		
¹ Based on the assumption that CO ₂ retaining infrastructure and commercialization are economically rationalized.		

Modal Shift



The data for "All industries (except basic industrial substances, i.e. iron & steel, oil, coal)" was obtained from "Transport material of different distance bands different transportation" issued by the Ministry of Land, Infrastructure, Transport and Tourism.

Contributing to creation of a recycling-oriented society

Nippon Steel & Sumitomo Metal Corporation (NSSMC) not only works for the realization of zero emissions and low environmental impacts, and recycling of in-house waste, but also is actively engaged in recycling of by-products generated by society or other industries, by utilizing its iron-making process.

Promotion of in-house zero emissions

By-products generated and the amount finally disposed

In the iron-making process, over 600 kg of by-products are generated for every ton of iron produced. In FY2013, NSSMC produced 45.67 million tons of crude steel and generated 26.49 million tons of by-products. The majority of these by-products were recycled inside and outside the company. Approximately 230,000 tons were ultimately disposed, making our recycling ratio reach 99%.

Recycling of steel slag

Steel slag is almost entirely utilized. Approximately 70% of blast furnace slag is used for cement, while steelmaking slag is used for materials for road bases, civil engineering work, fertilizer, soil improvement, etc. For example, Calcia modified soil, a mixture of steelmaking slag and dredged soil, has the beneficial effects of improving the strength and inhibiting the elution of phosphorus, the generation of hydrogen sulfide, etc. in dredged soil. It has also been used to improve the marine environment, including restoration of seaweed beds and creation of wetlands and tideland. Moreover, as post-disaster restoration, work was conducted to transform tsunami sediment mixed with rubble washed ashore in the wake of the Great East Japan Earthquake into high-quality soil for use as a construction material, using the CALSPIN method. "Blast furnace cement," a mixture of pulverized blast furnace slag and ordinary Portland cement, contributes to a 40% reduction of CO₂ emissions during manufacturing, since the cement-making process can be omitted. It also exhibits superior long-term strength and is registered as an Eco Mark product. Due to the effects of reduction in mining of natural crushed

stone and less energy consumption in the cement making process, steel slug products are designated as a "designated procurement item" under the Green Purchasing Law, and included in the Common Specifications for Civil Engineering Work compiled by the Ministry of Land, Infrastructure, Transport and Tourism.

Recycling of dust and sludge

To recycle the dust and sludge generated in the iron manufacturing process to be used as raw materials, NSSMC operates a dust reduction kiln (RC: Resource circulating oven) at Kashima Works and a rotary hearth reduction furnace (RHF) at Kimitsu Works, Hirohata Works, and Hikari Works¹. This enables us to recycle all internally-generated dust. In March 2009, we obtained special approval for RHF under the Waste Disposal Act to carry out recycling of externally-generated dust as well.

¹ Hikari Works: Transferred to Nippon Steel & Sumikin Stainless Steel Corporation.

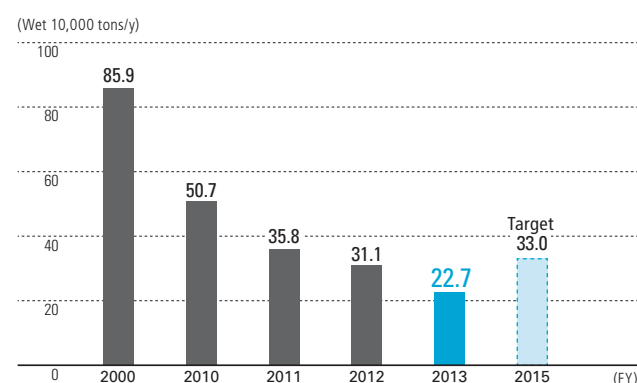
Promotion of the adoption of an electronic manifest

NSSMC is promoting use of an electronic manifest to enhance manifest control. In FY2013, approximately 80% of manifests issued at all of our steelworks and factories were digitized. As a new project, we are also working on digitizing industrial waste outsourcing contracts, while ensuring full compliance.

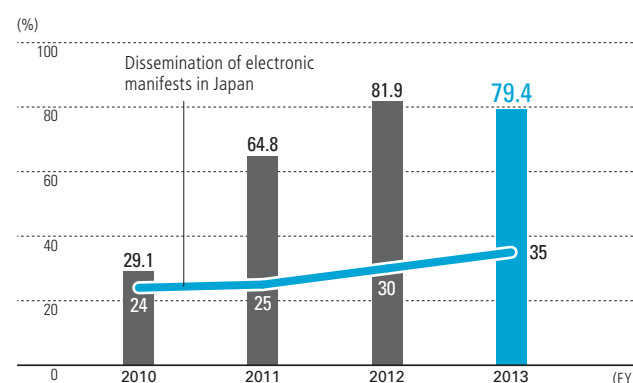
Recycling of waste plastics and waste tires

NSSMC recycles 100% of plastic containers and packaging and all discarded tires by using them in the steelmaking processes. ▶ See p. 14

► NSSMC's final disposal amounts



► NSSMC's progress in dissemination of electronic manifests



Promotion of environmental risk management

NSSMC is promoting management of environmental risk with the aim of continually enhancing preservation of the environment in various regions, with due consideration of environmental risks, which differ by each steelworks and factory, and with due consideration to compliance with Japan's Air Pollution Control Act and other regulations. We also are engaged in reducing environmental risk throughout the Group.

Activities for reducing environmental risks

Atmospheric risk management

In order to reduce emissions of sulfur oxides (SO_x) and nitrogen oxides (NO_x), NSSMC is taking measures such as using low-sulfur fuel, and installing effective equipment, including equipment that reduces SO_x and NO_x emissions, low NO_x generating burners, and exhaust gas treatment units. To curb emissions of soot and dust, we try to choose equipment based on air pollution risk analysis through scientific simulation. We also conduct constant monitoring and regular patrols to ensure that no abnormal emissions are released outside.

Water quality risk management

NSSMC uses approximately 6 billion m³ of freshwater a year at all of our steelworks and factories combined. Approximately 90% of this is re-circulated or reused. We try not to waste precious water resources, and to limit wastewater discharge to a minimum. To achieve this, we make daily efforts to maintain and improve the performance of wastewater treatment equipment, and the inspection and control of wastewater quality.

In consideration of the importance of preventing water pollution, we have installed devices such as detectors, control valves, and emergency water storage pits. We also strive to check, repair, and maintain equipment in order to prevent water pollution, and to train our personnel in methods of checking of operations and controlling work procedures.

Soil risk management

We are taking appropriate measures in compliance with the Soil Contamination Countermeasures Act, guidelines issued by the Ministry of the Environment, local government ordinances, and so on. We report to the local government when performing landform modification work such as excavation which is required to be reported. We conduct pollution surveys when needed.

Chemical substances discharge control

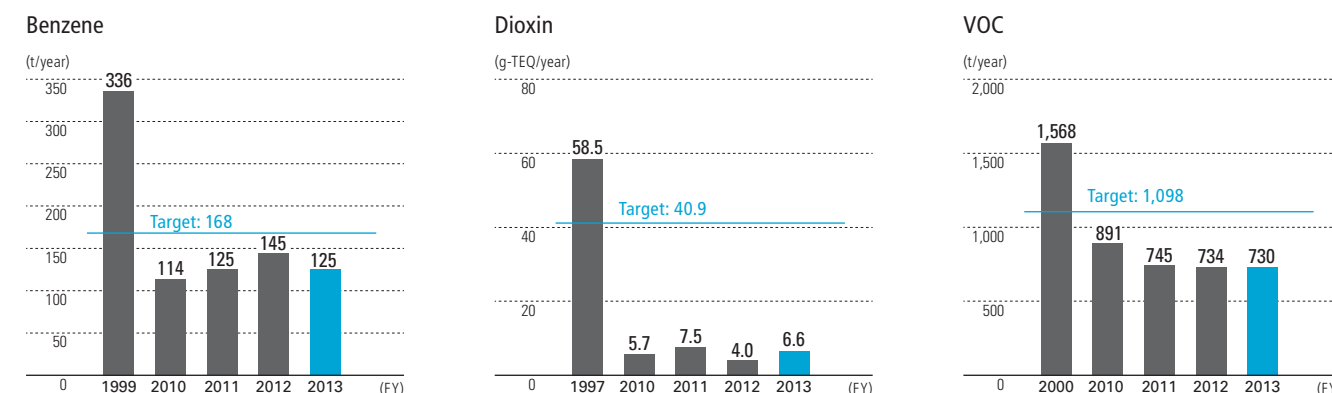
Comprehensive control of discharge

NSSMC appropriately manages and tries to improve the production, handling, and discharge or disposal of chemical substances in accordance with the PRTR Act¹, Chemical Substance Control Law², Volatile Organic Compounds (VOC)³ voluntary management, and other laws concerning the management of chemical substances as well as following the requirements of relevant management procedures.

NSSMC also took the lead to promote use of alternatives to steel-making materials and equipment that contain hazardous materials such as asbestos and polychlorinated biphenyl (PCB). We have been replacing or disposing of possibly risky parts and materials, according to handling standards which ensure safety.

- ¹ PRTR Act
An abbreviated name of the Act on Confirmation, etc., of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof. PRTR stands for Pollutant Release and Transfer Register.
- ² Chemical Substance Control Law
An abbreviation of the Law Concerning the Examination and Regulation of Manufacture of Chemical Substances.
- ³ Volatile organic compounds (VOC)
Organic chemical compounds emitted into the atmosphere in the form of gases, which are considered to be the source of undesirable airborne particles and photochemical oxidants, which became subject to control under the Air Pollution Control Act of 2004, as amended.

► Voluntary intensive control of chemical substances





ECO PRODUCTS (What we produce is “eco-friendly”)

NSSMC's eco-friendly products help reduce environmental burden

Our Group's products, that have advanced or highly specialized functions, technological capabilities, and reliability, are used in diverse areas including energy, transport and construction equipment, and household products. They typically help our customers become more efficient while making their products lighter or lengthening product life. That translates into the saving of resources and energy, and into a reduction in carbon emissions at the point of use at our customers, contributing to lessening the environmental burden.

Pure titanium sheet for aircraft and titanium alloy rods for aircraft engines

The use of high-strength, low-density titanium contributes to the reduction of the weight of aircraft, thereby achieving higher energy efficiency. Nippon Steel & Sumitomo Metal Corporation (NSSMC) supplies titanium alloy rods used in aircraft engine blades and pure titanium sheet used in pylons that connect wings and engines.



Airbus A350XWB
©AIRBUS

Steel slag-based fertilizer

Steel slag, a by-product of the steel-making process, is mainly composed of calcium and silicon and contains magnesium, iron, phosphorus, manganese, and boron, elements which help plants to grow, and has long been used as fertilizer.

Prepainted VIEWKOTE® steel sheet

The prepainted VIEWKOTE® steel sheets are aesthetically appealing and highly corrosion-resistant and are used for washing machines, refrigerators, and other electric appliances. Use of the VIEWKOTE® eliminates the coating process at customers, thereby eliminating problems caused by waste treatment of coating materials, waste gas processing, and noxious odors, and contributing to reduction of the environmental burden.



Electrolytic zinc-coated ZINKOTE® Black steel sheet

Featuring corrosion resistance and aesthetic appeal, the ZINKOTE® Black is used in the back covers of flat screen TVs and other electric appliances. Reduction of CO₂ emissions has been achieved by eliminating some coating processes, enabling thinner coating, and adopting a special low-temperature drying coating.

ZINKOTE® Black being used in the back cover of a flat screen TV



Electromagnetic steel sheet for high-efficiency motors

Electromagnetic steel sheet efficiently converts magnetic energy into electric energy by enhancing the property of the iron to convey magnetic lines of force. This material enables high efficiency and high

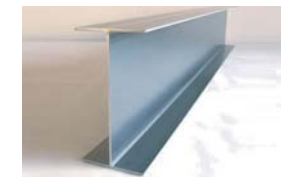


Example of high-efficiency motor using electromagnetic steel sheet

power output and is used for motors of fuel-efficient hybrid and electric vehicles (EVs), contributing to high performance in the vehicles and thereby to reduction of energy use.

Welded light gauge steel H sections

Welded light gauge steel H sections, manufactured from a hot-rolled steel strip by welding, are light in weight and thus save more resources by enabling thinner plate thickness compared to hot-rolled H sections, for use in steel-structure buildings and plants. The welded H sections are used as steel frames in applications such as prefabricated housing and wooden houses and highly valued for their more accurate cross-sectional dimensions and high durability.



SMart BEAM™

High-strength steel wires for suspension bridges

Our high-strength steel wires for cables are used as the main cables of many long bridges that have been constructed at major straits in Japan and overseas. NSSMC is contributing to the prevention of climate change by supporting activities of daily living including travelling, and limiting CO₂ emissions in transportation and construction of bridges.



Rainbow Bridge, Tokyo

Wheelsets (wheels and axles) for high-speed railways

NSSMC manufactures almost all wheels and axles for the Shinkansen and other high-speed railways in Japan. While pursuing weight reduction and thus contributing to energy conservation in railway transport, we have also developed technology to dampen the noise of meshing of a gear unit or hissing sound of brake disks.



Railway wheels and axles

Railway rails

NSSMC's railway rails are widely used in Japan and overseas. By developing various technologies, such as for control of the amount of carbon in order to enhance the durability of the surface of the steel, the life of the rails has been extended by 20-40%. Less frequent need to replace the rails means limiting CO₂ emissions in construction and railway transportation.

ABREX® Series abrasion-resistant steel plate

The ABREX® Series abrasion-resistant steel plate is 5-6 times harder than ordinary steel and wears out less. This material is eco-friendly and helps extend the maintenance cycle of machinery, and reduces the weight of the product where it is used. It is often chosen for applications that require high durability.



An excavator's bucket made of ABREX™ steel
©Volvo

High-tensile-strength steel materials

High-tensile-strength steel materials can overcome two contradictory challenges to help reduce vehicle body weight and at the same time to ensure the safety of passengers in case of a collision. The materials are not only strong but also superior in workability.



Drop impact test (the middle two products are high-tensile-strength steel materials)

Steel tire cord

Radial tires for automobiles use wires made with steel cords that are as thin as three human hairs. NSSMC's high-strength steel cord, the strongest in the world, helps reduce the number of wires in a tire, thus contributing to weight reduction of tires. This is another way to help preserve the global environment through improved fuel efficiency.



A cross-section view of a tire, showing steel cord

Steel materials for offshore wind power generation

The NSSMC Group is participating in the world's first offshore wind power generation project that uses a floating wind farm. We are providing high-tensile lightweight materials with high-performance weldability for chains. Supply of this material contributes to reduced CO₂ emissions in transportation and construction.



Offshore wind power generation (Courtesy of Fukushima Marine Wind Power Consortium)

Technical cooperation and technology transfer promoted on a worldwide scale

With the understanding that the transfer of Japan's advanced energy-saving technologies overseas can be one of the most effective ways to globally reduce CO₂ emissions, Nippon Steel & Sumitomo Metal Corporation (NSSMC) is participating in many energy-saving and environmental initiatives in Japan and overseas. For example, we work with the World Steel Association, the Global Superior Energy Performance Partnership (GSEP), and directly with countries such as China and India.

Japanese steel industry's international cooperation on environmental preservation and energy conservation

Japan's steel industry, including NSSMC, plays a leading role in the Global Sectoral Approach¹, a worldwide initiative to preserve the environment and conserve energy based on technologies accumulated in the steelworking industry.

Since 2005, China and Japan have held "Japan-China Steel Industry Advanced Technology Exchange Meetings for Environmental Preservation and Energy-saving" to exchange industry-based technology between Japanese and Chinese specialists. NSSMC has been participating in this activity from the first meetings.

The Japanese government is currently proposing a new approach called a "bilateral offset credit scheme" as a means to contribute to CO₂ reduction overseas. This is a system, under a bilateral agreement with a developing country, to smoothly and flexibly evaluate and recognize contributions of low carbon technologies to emissions reduction and distribute the merits among the parties concerned (governments of Japan and a partner country, and companies concerned). As part of these activities, the Japanese government and Japan's steel industry, with Indian steel industry participants, initiated a "Public and private collaborative meeting between the Japanese and Indian iron and steel industries" in FY2011 and began drawing up a List of Energy-Saving Technologies which is suitable for the current situation of the Indian steel industry. In FY2013, NSSMC participated in analyzing the status of energy saving of the Bhilai Steel Works of the Steel Authority of India Limited (SAIL), based on the List of

Energy-Saving Technologies in December 2013 and played a central role in revising the list at a conference held in Tokyo in February 2014. We also began similar initiatives with the Southeast Asian steel industries in FY2013.

Regarding multinational efforts, a steel section Working Group (WG) of the GSEP (with Japan as the chair) was launched in FY2011. In March 2012, the first conference was held in Tokyo. The new partnership aims at regional collaboration with more countries including the EU in promoting energy-saving and environmental technologies. In FY2013, a steel section WG workshop was held in Tokyo with participation by Japan, the U.S.A., China, India, and South Korea. Energy management issues were discussed and NSSMC made a presentation on the Japanese steel industry's initiatives on climate changes.

NSSMC also participates in the Climate Action Program of the World Steel Association, which uses universal methods to calculate and report on the CO₂ emitted by steelworks. We have been selected as a Climate Action member. Recently, quite a few customers have sought confirmation that their steelmakers are Climate Action members. Efforts to standardize these calculation methods as ISO have been spearheaded by the Japanese steel industry. This has resulted in international standardization of the procedure as ISO14404 "Calculation method of carbon dioxide emission intensity from iron and steel production" in March 2013. It has enabled steelworks not participating in the World Steel Association to calculate CO₂ intensity using universal methods. This marked the first step forward in greatly facilitating the global sectoral approach sought by the steel industry. NSSMC is promoting diffusion of ISO14404 through the initiatives taken by Japan and India, Japan and Southeast Asia, and other relations.



Climate Action member certificate

¹ Global Sectoral Approach is a method to help solve global warming problems by seeking CO₂ reduction potential based on sector-specific technologies and adopting the world's best energy-saving technologies.

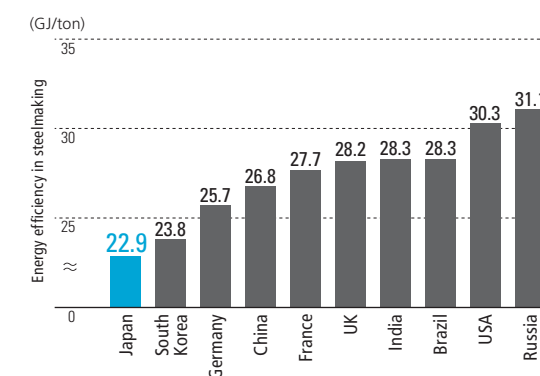


The meeting of India and Japan

Coke Dry Quenching (CDQ): system and features

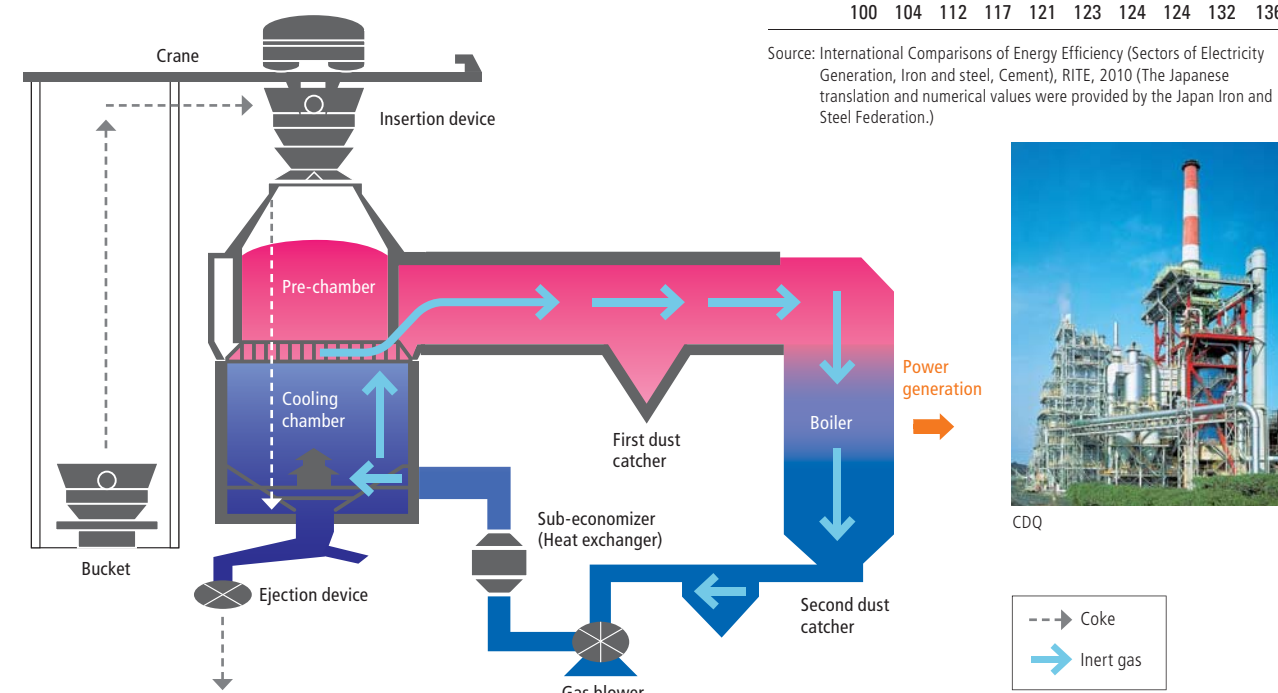
Hot coke made in the coke oven is transported in a bucket to the CDQ equipment where it is injected from its top part down to the chamber. The coke is quenched with inert gas, while the hot gas (approx. 950°C) from the exhaust heat is collected, and transferred to the boiler where it generates steam for power generation. The hot gas can be fully recycled by being quenched and circulated back to the chamber. By not using water as a cooling medium, the CDQ method raises the strength of the coke and contributes to stable operation of the blast furnace, an increase in tapping quantity, and reduction in consumption of the reducing agent.

Energy efficiency in steelmaking by country (2010)



Comparison when Japan is assumed to be 100
100 104 112 117 121 123 124 124 132 136

Source: International Comparisons of Energy Efficiency (Sectors of Electricity Generation, Iron and steel, Cement), RITE, 2010 (The Japanese translation and numerical values were provided by the Japan Iron and Steel Federation.)



VOICE



Miki Yanagi

Researcher
The Institute of Energy Economics,
Japan

In India, by 2025, thanks to rapid economic growth, steel production is projected to expand to 300 million tons. This will be about three times higher than the present production volume in Japan. This increase means that energy saving is becoming more of a challenge for India.

Japan's steel industry has developed and commercialized many energy-saving technologies since the oil crisis in the 1970's and has achieved the world's highest level of energy efficiency. I am involved in the research on technological transfer to emerging markets, and in particular India. Diffusion of those energy-saving technologies and energy management systems in India, if realized, can contribute to a significant CO₂ reduction. I believe that the NSSMC Group's operation of the CDQ in India is a representative case.

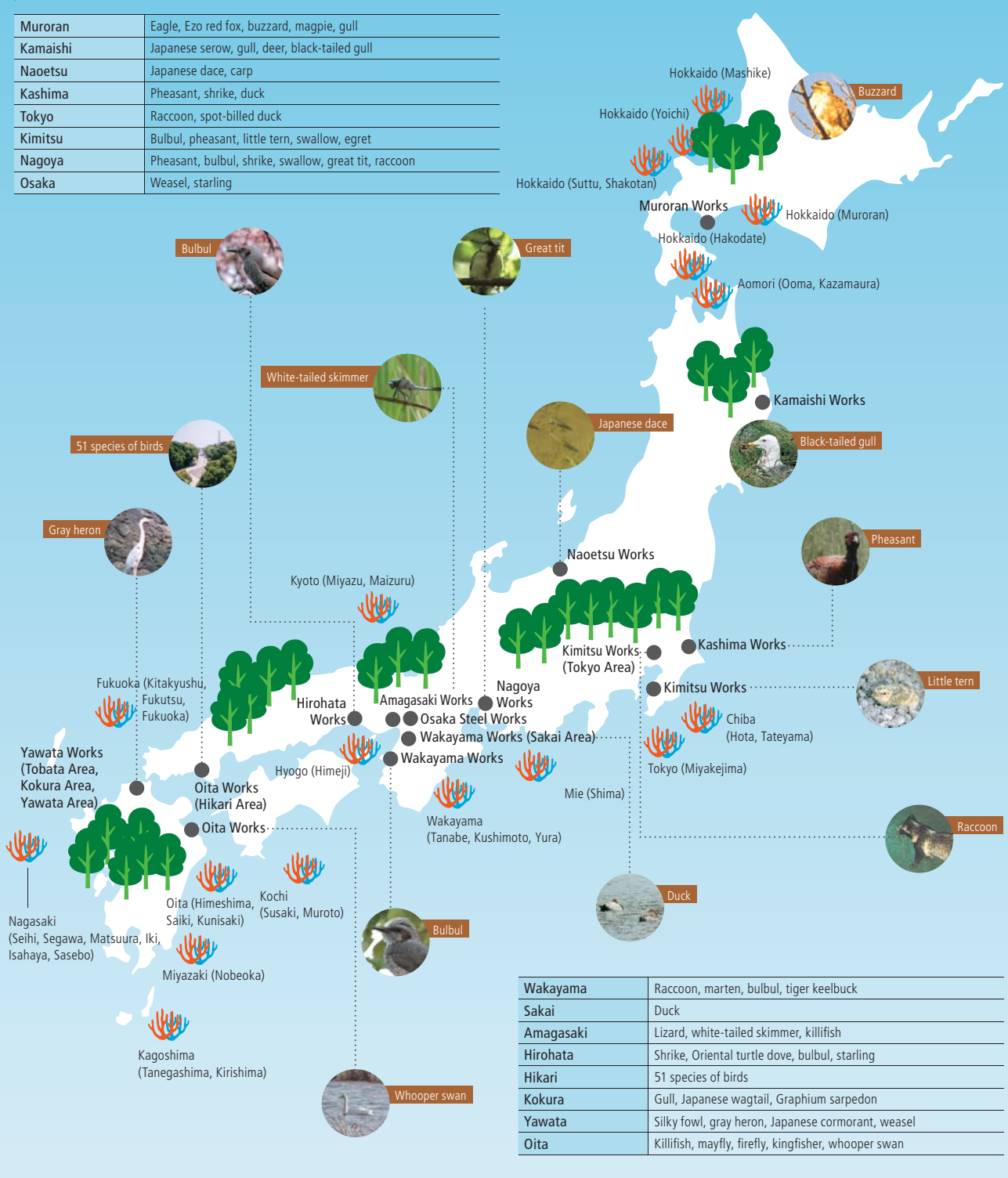
Consequent to adoption of energy-saving regulations and measures for conservation of water and reduction of air-pollution CDQ equipment from Japan has been introduced in India, in intense competition with Chinese engineering companies. Further adoption of this type of equipment is anticipated, based on stable operating performance, which is a notable feature of the Japanese equipment.

Creation of Hometown Forests and Creation of Sea Forests

In order to realize a sustainable society, companies have to take effective initiatives to live in harmony with nature. Among eco-solutions that the Nippon Steel & Sumitomo Metal Corporation (NSSMC) Group provides, “Creation of Hometown Forests” and “Creation of Sea Forests” are two ongoing activities we believe are well representative of our policy initiatives in this regard. Here, we provide an update on both.

► Some animal inhabitants of the Hometown Forests

Muroran	Eagle, Ezo red fox, buzzard, magpie, gull
Kamaishi	Japanese serow, gull, deer, black-tailed gull
Naoetsu	Japanese dace, carp
Kashima	Pheasant, shrike, duck
Tokyo	Raccoon, spot-billed duck
Kimitsu	Bulbul, pheasant, little tern, swallow, egret
Nagoya	Pheasant, bulbul, shrike, swallow, great tit, raccoon
Osaka	Weasel, starling



“Creation of Hometown Forests”

Reproducing a forest similar to a nearby grove of the village shrine in steelworks

We have carried out the “Creation of Hometown Forests” projects at our steelworks and factories in Japan under the guidance of Dr. Akira Miyawaki, director of the Japanese Center for International Studies in Ecology (professor emeritus of Yokohama National University), with the aim of facilitating harmonious coexistence between nature and humans. This project comprises research on the natural vegetation inherent to a certain area in a nearby grove associated with a historical shrine, careful selection of suitable trees, growth of their saplings in pots, and planting them in designated places by local residents and our employees.

This was the first project by a private company in Japan to create a forest that harmonizes with the local scene and is based on an ecological approach. This is one way we try to raise the awareness of our employees regarding the environment. At present, our forests in aggregate have grown to total around 900 hectares (about the size of 190 Yankee Stadiums).



Dr. Miyawaki (right) teaches tree-planting to new employees.

Conserving biodiversity and sequestering CO₂

Wild birds such as bulbuls and eagles gather and animals such as Ezo red fox and deer visit the forests we make and maintain at our steel works sites across Japan. Wild birds and animals inherent to the land return to the forests. Thus, the “Creation of Hometown Forests” helps conserve biodiversity, and sequester CO₂.

VOICE



Sumiko Takeuchi

Board Member and Senior Researcher
International Environmental Economic Institute

I visited NSSMC’s Kimitsu Steel Works, which is said to be the forerunner of factory-led afforestation in Japan, and was impressed with such deep greenery. This was not merely a green space in a factory. This was a factory in a forest. NSSMC’s forest-creating projects, which were begun in the early 1970’s, were ahead of the times. But I would like to point out the significance of undertaking the projects together with local residents of the community. I walked around the “Hometown Forest”

with Mr. Shigeta, Manager (at that time) of the Safety, Environment & Plant Safety Division. He told me that he had participated in growing saplings in pots when he was an elementary school student. That has reminded me the words by Japanese novelist Wahei Tatematsu, “planting trees in people’s hearts.” Japan’s steel industry has an eminent presence in the world with regard to its reduction of greenhouse gas, energy conservation, and recycling. In particular, NSSMC is playing a significant role. I believe that the “Creation of Hometown Forests” activities spanning more than 40 years has enriched many employees’ understanding, appreciation, and commitment toward our environment and social contribution. I am expecting that various initiatives will continue to bloom from this rich soil in the future.

“Creation of Sea Forests”

Implemented in 35 spots in Japan to improve sea desertification

Sea desertification, a problem of the sea bed losing ability to support life due to a decline in kelp, brown seaweed, and other varieties of seaweed, is happening along about 5,000km of the sea shore in various parts of Japan. To offset a part of the decline in the supply of iron from nature, which is said to be one of the causes for sea desertification, NSSMC has developed “Beverly® Series,” iron supply units composed of steel slugs, humus, and soil and steel slag and has been promoting regeneration of seaweed beds by use of these units.



Deserted sea bed



Installing iron supply units



After one year, kelp is flourishing at Mashike Town in Hokkaido

VOICE



Shigeatsu Hatakeyama

Head of Mori-wa-umi-no-koibito, an incorporated NPO

During the Golden Week holidays in May 2014, I visited Khabarovsk, Russia, as I had longed to see firsthand the Amur River and the surrounding forest along the river.

It has been found that iron fulvate¹ that was created in the big forest and the wetland along the watershed of the Amur River has a role in generation of phytoplankton, which supports the bottom of the food chain in Sanriku offshore in northeastern Japan. The area is said to be one of the three major fishing grounds in the world. (Please note that Sanriku was the area hit hardest by the earthquake and tsunami in March 2011.)

The forest in the watershed of the Amur River is five times the size of the overall Japan. The river in Khabarovsk is as wide as 20km and flows 800km into the Okhotsk Sea. I took a round trip of the river in a sightseeing vessel and saw that the color of the river was undoubtedly the color of iron fulvate. I had a chance to lecture at the Pacific National University, the largest university in the Russian Far East. Many students showed interest in my lecture and participated in a planting festival the next day. Plants cannot grow without iron. The sea is suffering from anemia. How can we supply iron into the sea? I believe that we need to keep on our research.

¹ Iron fulvate is a water-soluble chemical compound of iron ions.

Research & development for global warming prevention

With the aim of preventing global warming, Nippon Steel & Sumitomo Metal Corporation (NSSMC) is taking on a challenge in the form of the “CO₂ Ultimate Reduction in Steelmaking Process by Innovative Technology Project,” in addition to making efforts to reduce CO₂ by further improving its world’s highest energy efficiency.

The COURSE 50 Project (Technological Development and Innovative Steelmaking Process)

Since FY2008, four blast furnace steelmakers including us, and Nippon Steel & Sumikin Engineering, have been working on the “CO₂ Ultimate Reduction in Steelmaking Process by Innovative Technology for Cool Earth 50 (COURSE 50) Project” which is aimed at developing dramatically new CO₂ reduction technology. Its goal is to reduce CO₂ emissions in the steelmaking process by 30% through technology that reduces iron ore using hydrogen amplified coke oven gas to curb CO₂ emissions from blast furnaces as well as technology that uses hitherto-unused exhaust heat to separate and recover CO₂ from blast furnace gas.

Regarding iron ore hydrogen reduction technology, by FY2012, we comprehended hydrogen reduction characteristics at a laboratory bench level and conducted property elucidation and performance qualification tests of the hydrogen reduction process at a test blast furnace in Sweden as well as verification tests of hydrogen amplification of coke oven gas at Kimitsu Works. With regard to CO₂ separation and recovery technologies, verification tests of CO₂ separation and recovery from blast furnace gas were conducted at Kimitsu

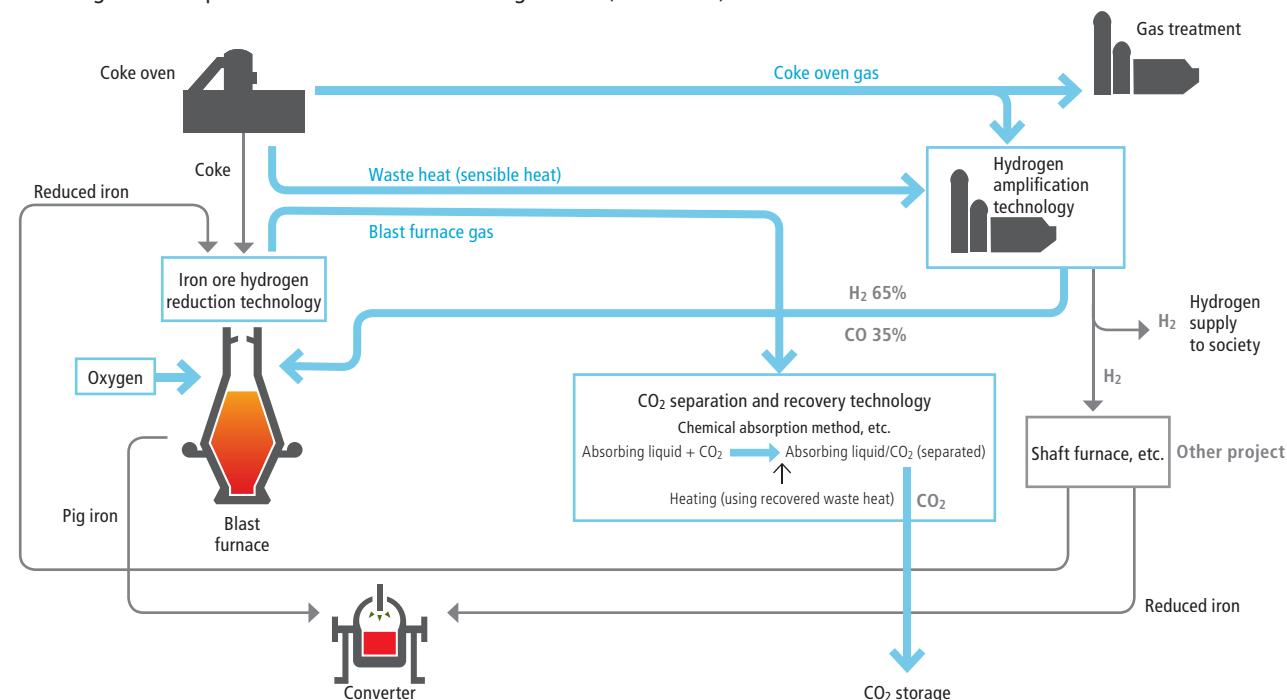
Works, while low-temperature exhaust heat recovery verification tests were conducted at Kashima Works, among others. These tests played a substantial part in obtaining desired research results of Phase 1.

In Phase 2 (FY2013 to FY2017), which began in FY2013 as a project sponsored by NEDO (New Energy and Industrial Technology Development Organization) in preparation for commercialization in 2030, we are verifying technologies to reduce CO₂ emissions from a blast furnace in a comprehensive manner. We are leading R&D efforts mainly in the research on a test blast furnace which aims for establishing reaction control technologies that maximize effects of hydrogen reduction, as well as in the second verification tests that target advanced hydrogen amplification of the coke oven gas. (The test blast furnace is being constructed by incorporating individual element technologies that were acquired during the Phase 1 and is scheduled to start operation for the main test in FY2016 at the Kimitsu Works.)



CAT30 (CO₂ absorption and separation tower)

► Technological Development and Innovative Steelmaking Process (COURSE 50)



Next-generation coke-making technology (“SCOPE 21”)

Coke, which is carbonized coal, is indispensable in production of steel materials. As raw materials for coke, high-quality caking coal has long been used. However, for this type of caking coal used in steelmaking there are very low reserves and they are in limited areas of the world, compared to general coal used as fuel. Thus, we are facing a credible threat of a surge in price of the coal.

“SCOPE 21” is the next-generation coke-making technology developed as a national project to better address resource problems and open up great potential. For the first time in the world, this technology has enabled the raising of the blending ratio of poor-coking coal up from 20% as in the conventional method to 50%. This is a promising innovative technology that can contribute to the stable supply of energy in the future.

There are three basic processes in the SCOPE21 technology: coal pretreatment, carbonization (destructive distillation of coal by

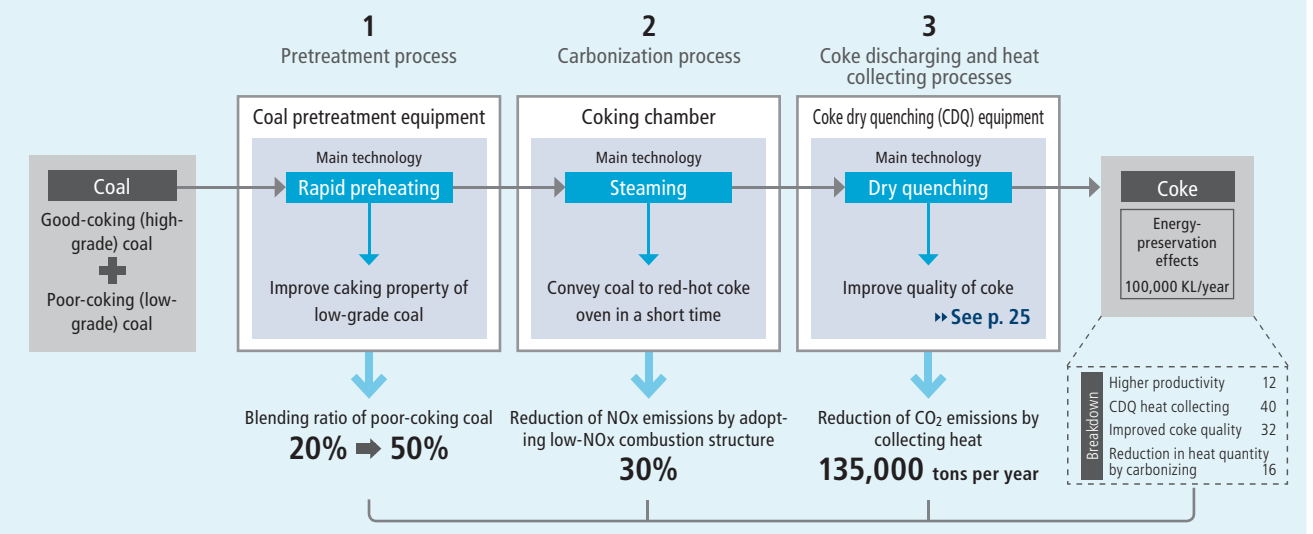
blocking oxygen down), and heat collection. During the coal preheating process, the rapid preheating enables to improve coke quality, shorten coke-making time, achieve high energy-saving effects, and ultimately contribute to CO₂ reduction. NO_x (nitrogen oxides) in the exhaust gas in the coke oven can also be reduced by 30%, further improving environmental conditions.

We began operation of the first commercial model that fully embodies the innovative environmental technology “SCOPE 21” at our Oita Works in May 2008. Based on this experience, the second commercial model began operation at our Nagoya Works in June 2013. Both models have been operating smoothly up to the present.



SCOPE 21 (Nagoya No.5 coke oven)

Next generation coke-making technology “SCOPE21”: Structure and Features



VOICE



Yu Ujisawa
Chief Researcher
Ironmaking Technology Division

The COURSE50, with the aim of making a drastic reduction of CO₂ emission by Japan’s steel industry, has advanced from a stage of element technology development to a stage of integrated technology development. With regard to the “technology to reduce CO₂ emissions from a blast furnace,” one of the major themes, we plan to make the process assessment of a blast furnace that uses hydrogen as alternative to carbon, by using a newly-constructed test blast furnace. The objective is to reduce consumption of carbon, which is a source of CO₂ in a blast furnace. The key point of this development is a total verification by incorporating various individual element technologies that have been developed, in the test furnace. Regarding another theme, “technology to reduce CO₂ emissions from a blast furnace gas,” we have realized the world’s top-level specific heat energy consumption in development of CO₂ separation and recovery by a chemical absorption technique. The first commercial model for manufacturing carbon dioxide gas is scheduled to start operation at the Muroran Works in October 2014. With the chemical absorption technique, we will work on pursuing higher efficiency in the process and realizing the technology to recover heat energy needed for the process from the unused heat output.

Promotion of environmental management

Nippon Steel & Sumitomo Metal Corporation (NSSMC) has built an environmental management system that includes not only its own steelworks and factories, but also its group companies in Japan and abroad. Activities to reduce environmental risks are promoted by combining internal and external audits and following the plan-do-check-act (PDCA) cycle.

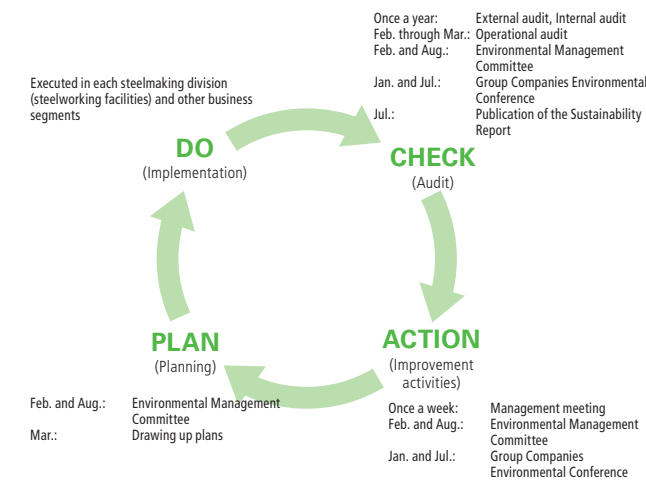
Environmental management Management system

NSSMC effectively follows the management cycle of PDCA, primarily through the work of the Environmental Management Committee, which meets twice a year, to promote improvement. As part of governance enhancement efforts the committee also regularly holds meetings for the general managers of the environment departments and meetings for the environment group leaders at all the steelworks and factories. In particular, with respect to airborne dust, drainage, and waste that pose critical environmental risks, specialists in each field hold meetings to devise measures for risk prevention and reduction.

Environmental audits

In accordance with the international standard ISO 14001, NSSMC has built an environmental management system, with each steelwork or facility general manager serving as the responsible person. Each year, in addition to an internal auditing of each steelworks or facility and a management review by its general manager, each steelworks or facility and factory is audited by the Head Office Environment Department. Environment officers of other steelworks and facilities also participate in these audits to cross-check. In addition, periodical reviews are conducted by the ISO certification agency.

Annual environmental management cycle

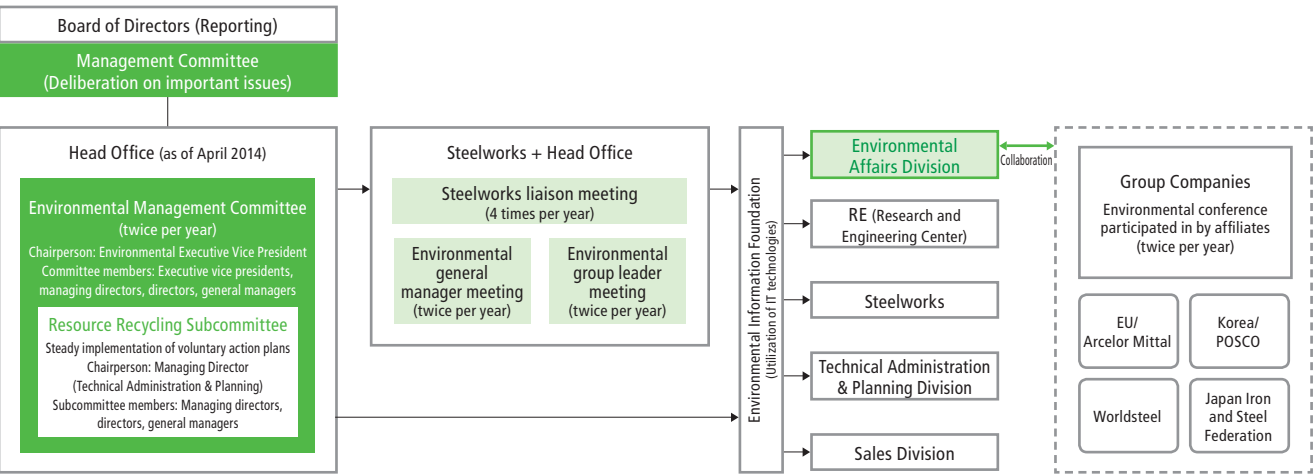


For the group companies including those overseas, a direct interview is conducted by a member of the Head Office Environment Department to improve management levels. This is part of the corporate governance conducted by the Head Office Internal Control/Audit Department.

Environmental meeting for affiliate companies

From the group companies in Japan, NSSMC has identified companies (68 companies) with certain environmental burdens and holds meetings for those companies twice a year. In the meetings, the latest trends of environmental laws and regulations are studied, cases of environmental initiatives are reported, and other information is shared with the goal of reducing environmental risks.

Environmental management system



Environmental education

NSSMC regards environmental management as an important basis for our business and continuously provides environmental education to each rank of new employees, mid-career engineers, and managers on the subject of basic environmental policies, medium-term environmental management plans, environmental compliance, etc. In addition, seminars on the environment are led by the general manager of the Head Office Environment Department at all steelworks and facilities. We encourage our employees to acquire national qualifications, such as those of pollution prevention managers and energy managers, as well as to take ISO 14001 internal auditor training.

Environmental accounting Philosophy of environmental accounting

NSSMC has adopted environmental accounting to be used as guidelines for corporate activities, and to accurately track the environmental costs and effects. The iron and steel industry is an equipment-intensive industry. We have achieved environmental preservation and energy conservation by installing environmental-friendly equipment such as dust collectors and improving the efficiency of production equipment. Costs of environmental preservation are quantified by adding the costs of capital investment associated with environmental measures, energy-saving measures, and recycling measures to expenses incurred to preserve the environment.

Environmental preservation costs

Our environmental preservation costs for FY2013 include 11.1 billion yen for investment in equipment for environmental measures, 9.0 billion yen for investment in energy-saving equipment, and 90.5 billion yen for expenses incurred to preserve the environment. The sum of equipment investment costs for environmental, energy-saving, and recycling measures accounted for approximately 7% of the total cost of equipment investment. On the expenses side,

atmospheric prevention costs amounted to 45.5 billion yen and water contamination prevention costs, 12.8 billion yen. In addition, 9.8 billion yen was spent as environmental research and development costs. As environmental measures, we invested in preventive measures for visual smoke emitted from steelworks chimneys, of dust emissions, and leakage of water from the revetments and quay walls at steelworks. For saving of energy, measures were taken to improve the efficiency at power generation stations as well as overall energy-saving measures in each manufacturing process. Among the environmental preservation costs, atmospheric prevention costs including measures to prevent dust generated at steelworks accounted for the largest share. We also implemented checking and repair of the revetments on a timely basis and invested a similar amount in capital expenditure and expenses as in the previous year.

Effects of environmental preservation

It is difficult to quantify environmental preservation effects in monetary terms, since such calculation would require many assumptions. Therefore, environmental preservation performance is reported as effects vs. costs of taking environmental measures in this report and on our website. For example, reduction in energy consumption is shown under "promotion of measures against global warming." Water consumption volume and reductions in water consumption and various resources spent are shown under "water quality risk management" and "energy and material balance," respectively. For atmospheric substances, SOx and NOx emissions are shown; for water quality and soil, individual performance indicators are used; for hazardous chemical substances, actual reduction volume of substances such as dioxins, benzene, and VOCs are stated; and for waste products, reduction in final disposal volume is stated. NSSMC will continue efforts to improve accuracy in environmental accounting and use it as a management benchmark to effectively invest in equipment and attempt to further preserve the environment and conserve energy.

Environmental preservation costs

		(100 million yen)		
Item	Definition	FY2013		
		Capital investment	Expense	
Pollution Prevention Costs	Countermeasures against air pollution	87	Total	455
	Countermeasures against water pollution	24	111	128
Global Warming Prevention Costs	Energy saving measures	9		25
Costs of Recycling Resources	Treatment of by-products and industrial waste	—		98
	Treatment of general waste from business activities	—		7
Environmental Management Activities Cost	Construction of EMS and acquisition of ISO14001 certification	—		0.3
	Monitoring and measurement of environmental loads	—		9
Research and Development Costs	Personnel expenditures related to environmental measures	—		26
	Development of eco products	—	54	Total
Social Activity Costs	Development of products which have low environmental impact during manufacture	—	44	98
	Greening, supporting environmental organizations, and advertising	—		24
Other Environmental Costs	Payments to health damage prevention businesses specified by the Law Concerning Pollution-Related Health Damage Compensation and Other Measures	—		35
Total		120		905

Targets and achievements in FY2013

Nippon Steel & Sumitomo Metal Corporation (NSSMC) has strived to attain an average of 9% reduction of CO₂ emissions from the level of FY1990 during the first five-year commitment period of the Kyoto Protocol (FY2008 to FY2012) and, as a result, exceeded the target by achieving an 11.2% reduction, through the energy conservation activities and reduction in production, despite increased use of energy such as resulted from implementation of environmental measures and production of high-end steel. From FY2013, we are committed to continue working on energy saving toward the FY2020 goal in the context of action plans for a low-carbon society.

With the aim of creating a recycling-oriented society, we made efforts to reduce the volume of final disposal through increased recycling of by-products. With regard to environmental management, the PDCA management cycle is efficiently implemented with the Environmental Management Committee at the core of its efforts, raising the level of environmental management of the entire group. Eco products® and eco solutions were successfully developed and offered to the market in an active manner.

[Evaluation legend] ◎ : Overachieved, ○ : Largely achieved, △ : Not achieved

Medium-Term Environmental Management Plan (from FY2009)			Priority target	Achievements in FY2013 (by NSSMC and some group companies)	Evaluation	Pages or website
Enhancement and promotion of environmental management	Promptly and surely execute the PDCA cycle in addressing issues related to global warming countermeasures, environmental regulations, and relations		Enhance and promote an environmental management system	●Improved operational rules of each worksite, reviewed measures against individual risk, and promoted equipment-related countermeasures, following the rules and guidelines of the integrated company	○	30
			Conduct environmental management in coordination with group companies	●Strengthened coordination with group companies which are subject to environmental management such as sharing information on revision of laws and regulations through the environmental conference of affiliates, air and water quality management, waste management, etc. ●Conducted on-site hearings to group companies, by newly including overseas companies	○	30
			Renew ISO 14001 certification	●Naoetsu, Tokyo, Nagoya, Hirohata, and Yawata Works had respective certifications renewed	○	WEB
Promotion of global warming countermeasures	Execute and promote the action plans for a low carbon society through three Ecos and innovative technological development	1) Eco process: enhance efficiency of natural resources and energy	Aim at higher energy efficiency based on JISF's action plans for a low carbon society	●¥900 million invested in energy saving	○	10, 11, 16, 17, 18, 19, 31
		2) Eco products®: Develop products that help preserve natural resources and energy	Develop eco products® based on the LCA viewpoint	●Developed the 7% Ni Steel for LNG Tank. ●The "Smart-Beam" method, using steel for beams, was adopted for three-story wood-frame house ●Developed high-strength steel materials for the anchor chains of offshore wind power generation devices	○	12, 13, 22, 23
		3) Eco solution: Internationally contribute through overseas transfer of CO ₂ reduction technologies	Contribute to the reduction of CO ₂ emissions on a global scale through technology transfer	●Participated in a national research project for transfer of energy conservation technology to India and contributed to the development of a master plan for feasible technology transfer	○	14, 15, 24, 25
		4) Advance development of innovative technologies for CO ₂ reduction on a longer-term basis	Proceed with development for the COURSE50	●Determined basic specifications for 10m ³ experimental blast furnace as planned for the Step 2 development period up to FY2017	○	28
			Increase the SCOPE21-type of coke ovens	●The 2nd commercial facility began operation at Nagoya Works in June 2013	○	29
Participation in creating a recycling-oriented society	Promote zero emissions in the workplace		●Reduce the final disposal volume of by-products by 330,000 tons by 2015 ●Reduce generation of by-products and effectively use steel slag and dust	●The final disposal volume was 230,000 tons/y in FY2013, maintaining a decreasing trend, and exceeded the target value ahead of schedule. ●Recycled 99% of the 26.49 million tons of the by-products generated	○	16, 17, 20
	●Recycle by-products generated by other industries and in society ●Expand efficient use of resources, in light of regulatory reforms and other improvements		Promote the effective use of waste plastics and enhance discarded tire recycling business from the viewpoints of recycling and CO ₂ emission reduction	●About 190,000 tons of waste plastics were recycled (corresponding to about 30% of the nationwide recycling level) ●About 80,000 tons of discarded tires were recycled (corresponding to about 10% of the nationwide recycling level)	○	14, 15, 16, 17
Initiatives for prevention of environmental accidents	Comply with environmental laws and regulations in business activities		Reduce environmental risks of the air, water, soil, etc.	●Held a conference with experts to promote risk reduction activities; prepared guidelines ●¥11.1 billion capital expenditures as environmental measures	○	21, 31
	Contribute toward preservation of the local environment by advanced measures to reduce environmental burden		Maintain and enhance preservation of the local environment	●Smoke was generated by the release of coke oven gas generated by the overall power failure at Nagoya Works	△	WEB
			Benzene: Voluntary reduction based on national voluntary management plan (168 tons/y)	●Achieved the self-management target for emissions (143 tons/y) and promoted further enhanced control in view of an increase in benzene emissions seen in recent years	△	21
			Dioxins: Voluntary reduction based on Japan Iron and Steel Federation guidelines (40.9 g-TEQ/y)	●Already achieved the voluntary target (6.6g-TEQ/y)	○	21
			Promote control of specified chemical substances in accordance with the PRTR Act	●The amounts discharged were 485 tons/y to the atmosphere and 42 tons/y to public waters; the amount transferred outside the worksites was 6,621 tons/y	○	WEB
			VOC: Voluntary reduction (1,098 tons/y)	●Continuously achieved the voluntary emission target (730 tons/y)	○	21
	Promote environmental risk management at group companies and in overseas business operations	Environment management jointly with group companies	●Conducted on-site hearings at group companies including overseas companies	○	30	
Appropriately deal with new environmental regulations		Understand the trend of law revision and appropriately deal with it	●Dealt with the revision of the Air Pollution Control Act and laws concerning fluorocarbons	○	21	
Development of environmental and energy solution business	Environmental contribution through business in each sector	Engineering and construction business	●Contribute through the utilization of steelmaking plant technology ●Develop and promote waste treatment and biological technologies ●Promote soil and groundwater purification systems	●Received an order for the 1st commercial ESCAP®, energy-saving CO ₂ -absorbing equipment ●Received orders for earthquake-debris treatment facility (melting furnace, J-COMBI system) and an on-site high-efficiency cogeneration facility ●Developed the "Bioremediation method" to clean contaminated soil by using the function of microorganisms	○	WEB
		Chemical business	Offer materials that help reduce environmental burden	●Industrialized for the first time in the world the polarized emission materials with high light-conversion efficiency in red and green for use in organic electroluminescent devices	○	WEB
		System solutions business	Offer solutions that help reduce environmental burden in society	●Contributed to Kitakyushu Smart City Development Project; realized, through the use of information technology, assistance in estimating energy consumption in houses, offices and plant as well as in energy conservation efforts	○	WEB
		New materials business	Offer raw materials that help use of natural energy	●Newly commercialized a high-strength ultra-thin rolled stainless foil as a cladding material for secondary batteries	○	WEB
	Contribute to national resilience and infrastructure development with consideration to the natural environment and the scenery		Utilize the NSSMC Group's proprietary technologies and eco products®	●Promote use of the non-frame method in Japan and overseas	○	WEB
	Accelerate contribution to the environment and energy saving overseas by using the Group's advanced technologies		Provide the Group's advanced technologies and eco products® overseas and make across-the-border contributions in dealing with the environment	●Received orders for 4 CDQ units (59 units on an accumulated basis) in China and 2 CDQ units (8 units on an accumulated basis) in India ●Developed high-strength wheels for U.S. railway cars which carry heavy freight (product service life was doubled) ●Received the first order from Thailand for high-efficiency cogeneration system that uses natural gas, which is clean energy	○	24, 25
	Contribute to recycling of resources by expanding use of steel slag and other steel by-products		Efficiently use steel slag and other steel by-products	●The steel slag fertilizer helped rice paddy recovery from damage by salt in Soma City, Fukushima Prefecture ●Developed the CALSPIN method for refining the soil with tsunami sediments and dredged soil by mixing calcia modified soil	○	20, 22
Promotion of environmental relation activities	Appropriately and timely disclose environmental information and actively communicate to be trusted in society		Enhance the "Environment & CSR" pages on the corporate website	●The column "Environment & CSR Topics" was added on the "Environment & CSR" cover page on the corporate website	○	WEB
	Steadily enhance environmental relation activities through exchanges and dialogues with stakeholders		Proactively communicate with various stakeholders on environmental issues for harmonious coexistence	●Participated in Eco Products 2013 with the theme of "the NSSMC Group helping create the affluent society with its three Ecos" ●Participated in various environment-related academic conferences	○	WEB
	Create hometown forests by planting trees and sea forests by restoring seaweed beds as for contributing to local communities		"Creation of Hometown Forests" and "Creation of Sea Forests" to ensure sources to absorb CO ₂ and maintain bio-diversity	●In the "Creation of Sea Forests," spread efforts to restore seaweed beds across the country (35 locations) ●Made a DVD on "Creation of Homeland Forests" and announced it	○	26, 27
	Enhance training of environmental staff and thorough awareness of environmental compliance for each career level, from workers in steelworks to managers		Implement education by career level	●Conducted environmental education rooted in local communities at respective steel works and other plants ●Conducted environmental recurrent training to respective environmental staff	○	31, 35, WEB

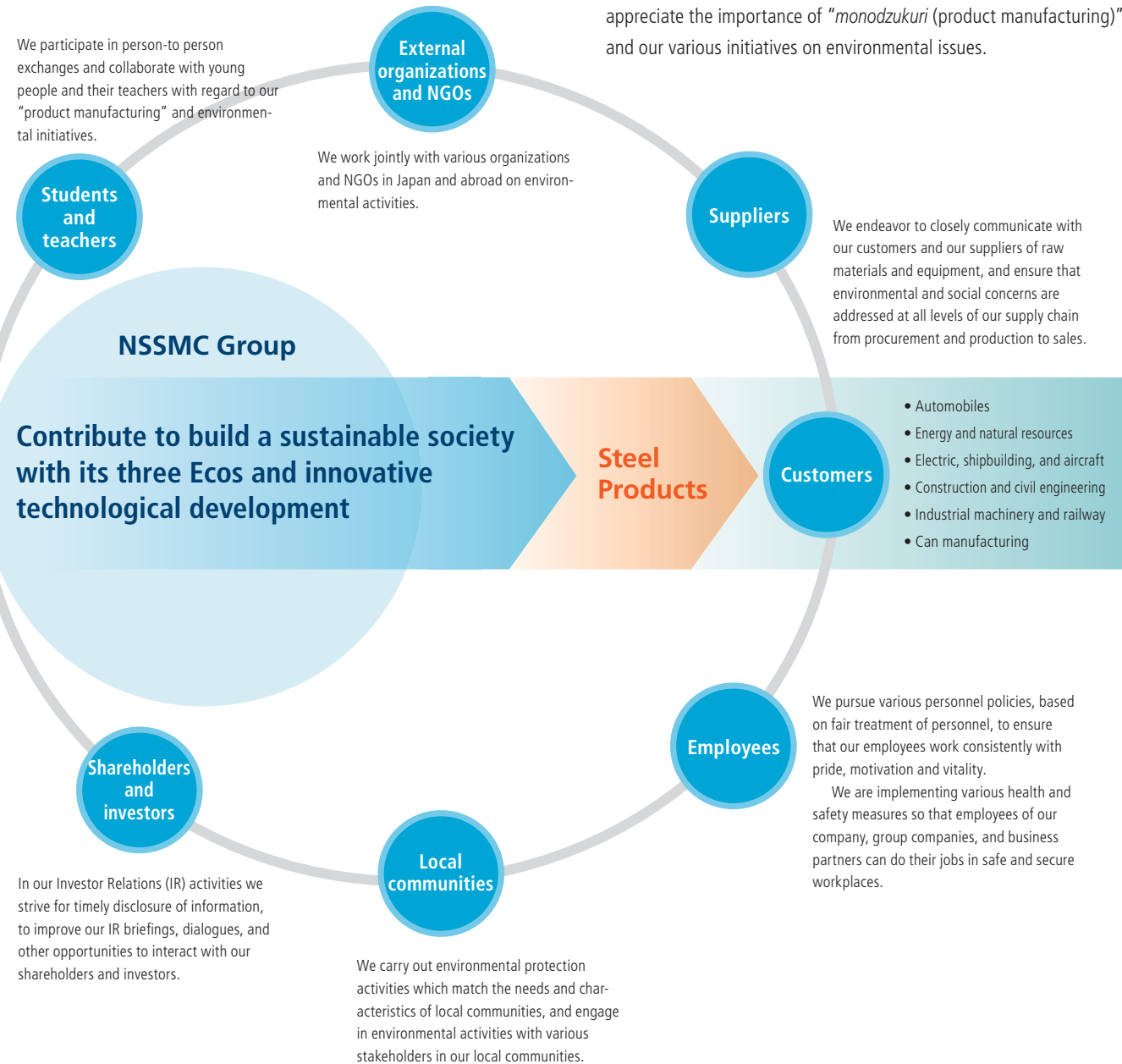
Nippon Steel & Sumitomo Metal Group and its stakeholders

The NSSMC Group treasures its partnership with all its stakeholders and aims to improve its corporate value by enhancing its relationships with them through better communication.

At NSSMC, we aim to become a company trusted by all stakeholders including our customers, suppliers, and local communities at all times, and endeavor both to offer our shareholders and investors sufficient opportunities for communication and to ensure timely disclosure of information. We also strive to create workplaces in which employees can work with pride and enthusiasm.

NSSMC will continue to make social contribution activities that are closely tied to local communities, and fulfill our corporate social responsibilities as a member of society. We are also actively promoting environmental activities with various organizations in local and international communities.

In particular, we find it important to make young people and their teachers, who are fostering future generations, understand and appreciate the importance of "monozukuri (product manufacturing)" and our various initiatives on environmental issues.



Community-based educational support Providing education on the environment and manufacturing

NSSMC hosts a number of programs in its steelworks nationwide and nearby elementary and junior high schools, such as "tatara ironmaking" demonstrations, workshops, and lectures in classroom.



1 Tatara ironmaking is a traditional Japanese method of making iron that uses iron sand as the source material. A bellows is used to help burn charcoal to make iron.

Diverse communication activities Participation in Eco-Products 2013

In December 2013, NSSMC exhibited products and technologies at Eco-Products 2013, the largest ecological exhibition in Japan, which was held at Tokyo Big Sight (Tokyo International Exhibition Center). Our presentations showed how we addressed environmental and energy issues through our focus on three Ecos, and attracted the attention of many visitors.



Environmental conservation in local communities Environmental conservation agreements

Each of our steelworks in Japan has concluded an environmental conservation agreement (anti-pollution agreement) and an agreement for the greening of plant sites with their local municipality. We work hard to fully comply with these agreements, in order to ensure environmental conservation in the local communities.

Number of shareholders 550,000 shareholders



We invite shareholders to take tours of our steelworks in various locations and attend IR briefings in major cities in Japan, so that they can better understand our business.

Internship programs

211 students (FY2013)

We have been offering internship opportunities at steelworks and research centers to students to help them learn about our business and gain some work experience.

Mecenat Kioi Hall

The Nippon Steel & Sumitomo Metal Arts Foundation operates the Kioi Hall (in Chiyoda-ku, Tokyo), where it holds classical concerts by Kioi Sinfonietta Tokyo. The foundation also helps popularize traditional Japanese music by using the Kioi Hall's small hall exclusive for Japanese music performance, a rare type of hall even in Japan.



Awards from external organizations

NSSMC's technological advances and response to needs of our customers have been highly evaluated and we have received various awards from many organizations.

Collaboration with an NPO, "Mori wa Umi no Koibito"

Since 1989, Mr. Shigeatsu Hatakeyama, a fisherman cultivating oysters and scallops in Kesenuma City, Miyagi Prefecture, and the leader of the NPO, *Mori wa Umi no Koibito* (which literally means "The forest is longing for the sea, the sea is longing for the forest"), along with his fellow fishermen, commenced the Forests are Lovers of the Sea campaign to plant trees in the vicinity of the upper reaches of the Okawa River, which flows into Kesenuma Bay. In June 2014, approximately 1,400 students and others, including 39 employees of our Group, joined their tree-planting festival.



See
p. 27

Corporate Governance

In line with its corporate philosophy, Nippon Steel & Sumitomo Metal Corporation (NSSMC) aims at building the dynamic NSSMC Group. To that end, we are establishing a corporate governance structure and internal control system and mechanisms for cooperation among Audit and Supervisory Board Members, the Internal Control and Audit Division, and Accounting Auditors. By doing this, we seek to ensure management's efficiency, soundness, and transparency, and enhance our corporate governance with the ultimate aim of achieving sustainable improvement in corporate value and being trusted by society.

Corporate governance structure

NSSMC's Articles of Incorporation stipulate that, as a corporate governance structure, the Company shall have a Board of Directors and not more than 20 Directors as well as the Audit and Supervisory Board and not more than 7 Audit and Supervisory Board Members, and accounting auditors. Based on that article, 14 Directors (including 2 Outside Directors), 7 Audit and Supervisory Board Members (including 4 Outside Audit and Supervisory Board Members), and one accounting auditor are elected at present.

NSSMC's Board of Directors oversees the execution of duties by Directors, adequately and swiftly makes decisions regarding the Company's business execution, and contributes to the quality enhancement of corporate management. The Audit and Supervisory Board Members, who hold legally strong auditing authority, are required to maintain integrity, objectivity, and independence when overseeing the execution of duties by Directors. NSSMC believes that its structure, underpinned by division of assignment of these two boards, is effective for the Company to achieve sound and sustainable growth.

In addition, to clarify responsibilities for the results of each business unit/division, the Company has introduced an executive officer system under which executive officers strive to ensure the proper execution of business activities.

Directors and Audit & Supervisory Board Members

Based on internal rules, executive decisions on key issues that may affect the activities of NSSMC and the NSSMC Group are determined by the Board of Directors, which convenes once or twice a month, after

such matters have been discussed by the Corporate Policy Committee, a group that includes participation by the Chairman, the President, Vice Presidents, and other members and that normally meets once a week.

In addition, NSSMC has set up 17 Companywide committees, each with its own objective, where details on designated themes are hashed out before the Corporate Policy Committee and the Board of Directors embark on decision-oriented discussions.

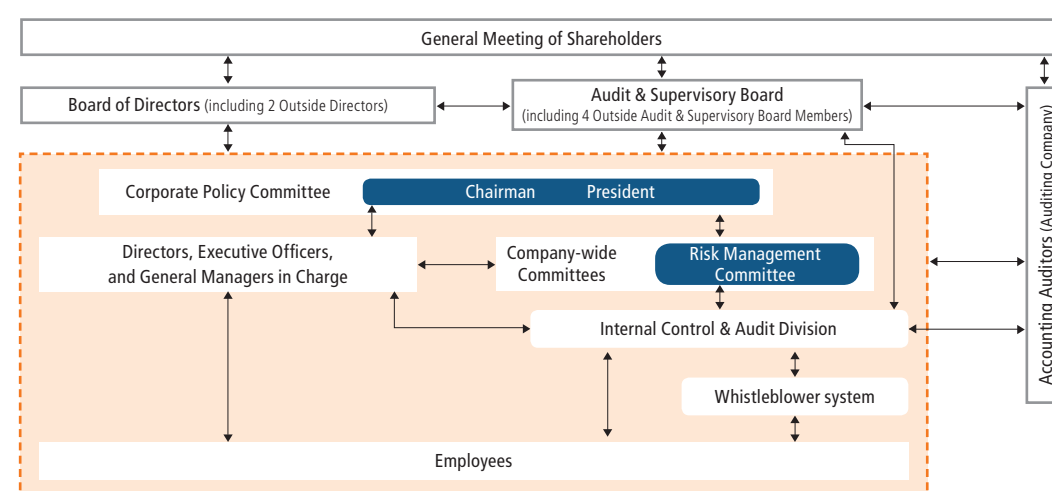
At present, NSSMC's Board of Directors comprises 12 Directors in charge of execution of duties and 2 Outside Directors.

Outside Directors, who have vast experience and deep insights in corporate management, international relationship, and other fields, are expected to contribute to decision making from diverse perspectives on NSSMC and enhancing the overseeing function of management, by proactively providing their opinions and exercising voting power from their independent status at the Board of Directors and other meetings.

The present Audit and Supervisory Board comprises 3 full-time Audit and Supervisory Board Members and 4 Outside Audit and Supervisory Board Members.

The Outside Audit and Supervisory Board Members, who have vast experience and deep insights in fields such as legal affairs, accounting, financials, and corporate management, proactively provide their opinions at the Board of Directors, the Audit and Supervisory Board, and other meetings and perform auditing activities including research on corporate operations and status of assets. They thus contribute to NSSMC's sound and fair management.

Corporate governance structure and internal control system



The Company has notified Japanese bourses on which its stock is listed of the designation of Outside Directors and Outside Audit and Supervisory Board Members as independent directors and auditors, pursuant to the Securities Listing Regulations of these bourses. All these bourses have accepted the Company's notifications of all independent directors and auditors.

Prompt and appropriate execution of business strategies

The execution of business strategies mandated by the Board of Directors and other executive structures is promptly addressed by the Directors responsible for these businesses, other executive officers, and the general managers of relevant units/divisions, under the direction of the Representative Director and Chairman, as well as the Representative Director and President.

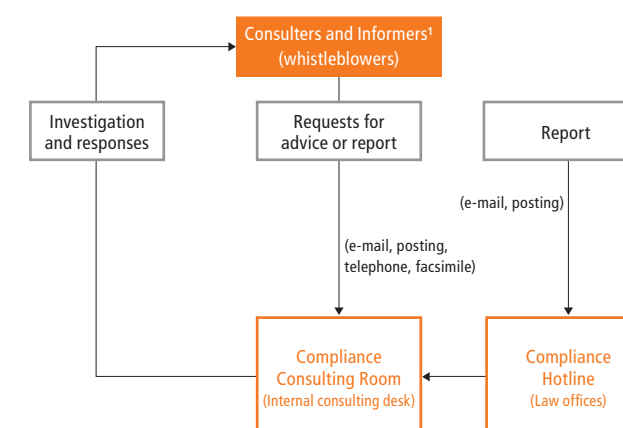
These actions are accomplished by stipulating in writing the ordering authority, oversight responsibility, and procedures required to implement strategies.

Internal controls and risk management system

NSSMC resolves the Basic Policy concerning Internal Control System at its Board of Directors' meeting and stipulates its Basic Rules for Internal Control for establishing a system for internal controls and risk management.

- NSSMC establishes an annual plan on internal controls and risk management and acts accordingly
- It regularly verifies the status of internal controls and the risk management system through the Risk Management Committee, chaired by the Executive Vice President in charge of Internal Control & Audit
- Each division of the Company designates a person in charge of risk management, while each Group company designates a person responsible for risk management. This is to encourage each division and company to take initiatives and share information about risk

Structure of internal consulting and internal report systems



¹ Consultants and informers (whistleblowers)
Employees of group companies, temporary workers, employees of contractors, suppliers, and their families

management among the Company and Group companies through regular meetings and other means

- NSSMC regularly checks the Groupwide status of internal controls by establishing measures to check and supervise matters related to internal controls and risk management
- NSSMC has set up a whistleblower system—namely, the Compliance Consulting Room within the Company and the Compliance Hotline run by the Company's attorney—as a conduit for communication, to handle risk-related concerns among Group employees, and other Group employees regarding the execution of operations. This helps prevent accidents and the violation of laws and regulations preemptively and also improves operations.

Compliance education

"We continue to emphasize the importance of integrity and reliability in our actions." This is the first principle we stated in the Management Principles. Through messages from top management, periodic legal training programs, and other activities, we make certain that all employees fully understand NSSMC's basic policy of ensuring fair management.

In particular, in order to ensure full compliance with the Antimonopoly Act, the Company has designated every December as the "Antimonopoly Act Compliance Campaign Month." Specific activities conducted in December every year include: to hold seminars to all sales and marketing personnel who receive a strict order from the President to prevent the recurrence of violations; to thoroughly inform and implement the "guideline to prohibit contact with competitors"; and regularly check the status of implementation of the guideline every year.

In addition, we have prepared "30 Don'ts of Business Behavior," a set of compliance guidelines that include simple examples of violations of the Antimonopoly Law and other laws governing business activities, "Guidelines to Prevent Sexual and Power Harassment in the Workplace," "Handbook for Proper Business Practices as a guide for proper administrative practices on financial reporting and tax affairs, and "Anri-Bribery Guidelines" to prevent bribery to government officials. These original written materials are designed for our employees to conduct fair and appropriate business. We also conduct educational programs and e-learning programs for each rank, to cultivate a strong awareness of these guidelines and the importance of complying with laws and regulations among everyone at the NSSMC Group.

Violations of laws and regulations in the past five years

Year	Company name	Contents
2009	Nippon Steel & Sumikin Coated Sheet Corporation	Steel sheet products A levy due to offences based on the Anti-Monopoly Act
	Hokkai Kokai	Temporary suspension of use of the JIS certification mark
	Former Nippon Steel Corporation and former Sumitomo Metal Industries	Bidding for construction work on steel bridge A levy due to offences based on the Anti-Monopoly Act

Third-party Opinion



Eiji Hosoda
Professor, Faculty of Economics, Keio University
Major: Environmental economics and theoretical economics

Two key points of Sustainability Report

Many work-related sustainability reports and CSR reports reach my office. Recently, all reports have been ingeniously designed and many are unique. Sometimes there are also reports that I find fascinating. So, what kind of features does the *Sustainability Report* of Nippon Steel & Sumitomo Metal Corporation (NSSMC) display? Two key points come to my mind. The first is the fact that the report has a solid structure and I can rapidly grasp its contents, and the second is that systematic ideas have been spelled out.

“Three ecos” that form the core of ecological management

Let’s start by discussing the first point. The core of NSSMC’s ecological management is the three “ecos,” namely, eco process, eco products® and eco solutions. Environmental and energy-related initiatives are systematically explained by focusing on the three ecos. I can clearly understand the underlying way of thinking regarding why and how the company has saved energy or promoted the recycling of resources. In the first place, the facts that NSSMC itself generates 84% of the electricity it consumes and that it supplies 43% of the electricity produced to society are important. The fact that the company has controlled the rusting of steel and prolonged its life by four times is also marvellous. The recycling of waste plastic is a specialty of NSSMC and I always find it astounding.

However, if these matters were explained as merely an accumulation of individual facts, their appeal would be reduced by half. It is precisely because they are supported by a certain “philosophy,” that is, the three ecos, that they display great force and appeal to the reader in a persuasive way. They also raise great expectations of further development into the future.

“Total verification” that incorporates individual elemental technologies

The second point is the fact that the systematic ideas are clear. This feature is best expressed in the part of the report that explains the “strong points of steel.” The greatest strong point of steel is the fact that unlimited recycling is possible. Certainly, if we consider fuel economy alone, the reduction of car body weight has the effect of reducing CO₂ emissions. However, if we take into account the total process from manufacturing to material recycling, high tensile strength car bodies are more effective in reducing CO₂ emissions than car bodies made of other lightweight materials.

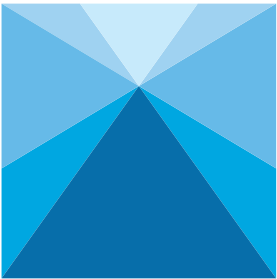
A way of thinking that is based on the overall system rather than thinking based on small individual points is often good for the environment. This is liable to be forgotten but it is an important point. The same concept is also apparent in the development of innovative manufacturing technologies. The concept of COURSE50, which is to control CO₂ emissions from blast furnaces more efficiently by carrying out a “total verification” that incorporates individual elemental technologies, is novel. It is a technique that has been enabled precisely because of the existence of a systematic concept.

At present, steelmaking is not only a key industry of the economy but also a leader in environmental conservation and energy saving, and we can see such assurance in this report. This point is put forward clearly and with confidence precisely because NSSMC has a “philosophy” called the three ecos.

Corporate profile

Company name	Nippon Steel & Sumitomo Metal Corporation
Head office	2-6-1, Marunouchi, Chiyoda-ku, Tokyo 100-8071, Japan Phone: +81-3-6867-4111
Date of Establishment	March 31, 1970
Chairman	Shoji Muneoka
Vice Chairman	Hiroshi Tomono
President	Kosei Shindo
Capital	¥419.524 billion (Total number of shareholders: 551,109)
Stock listings	Tokyo, Osaka, Nagoya, Fukuoka, and Sapporo
Number of employees	84,361 (consolidated basis)
Group companies	377 consolidated subsidiaries and 109 equity-method affiliates

NSSMC’s logotype



The central triangle in the logo represents a blast furnace and the people who create steel. It symbolizes steel, indispensable to the advancement of civilization, brightening all corners of the world. The center point can be viewed as a summit, reflecting our strong will to become the world’s leading steelmaker. It can also be viewed as depth, with the vanishing point representing the unlimited future potential of steel as a material. The cobalt blue and sky blue color palette represents innovation and reliability.

Photo on the cover:
Oita Works’ forest, where the “Creation of Hometown Forests” activities began.

Editorial policy

While this is the second sustainability report issued by Nippon Steel & Sumitomo Metal Corporation (NSSMC), it is the 17th report since the former Nippon Steel Corporation issued the first sustainability report by a Japanese steel manufacturer, in 1998. This report mainly presents contents of NSSMC’s “Environmental Report” and “Social Report,” with some reference made to activities conducted by NSSMC’s group companies in Japan and overseas.

Period covered

The period covered in the report is fiscal year 2013 (from April 2013 to March 2014). For some activities, the period from April 2014 to June 2014 is included.

Scope of report

- Environmental and social aspects: Activities of NSSMC and its group companies in Japan and overseas.
- Economic aspects: The Annual Report for 2014 (issued in July 2014) also covers the contents of the economic report.

Reference for guideline

- GRI (Global Reporting Initiative)
“Sustainability Reporting Guidelines Version 4.0”
- “Environmental Reporting Guidelines,” by the Ministry of the Environment

Nippon Steel & Sumitomo Metal Corporation Sustainability Report 2014

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