

Environment-Related Business



Mitsui engages in a wide range of businesses in the world around us, and, under the action guidelines Environmental Policy Action Guidelines, it positions active participation in finding industrial solutions for environmental issues as one of its highest management priorities. Accordingly, we carry out a broad spectrum of environment-related business activities on a global Group basis. As such issues as global warming and population growth have become more serious, society's concerns have increased regarding preserving the natural environment, sustaining biodiversity, making the low-carbon society a reality, and expanding the use of natural energy. Themes related to these concerns that should be addressed have mounted in number. Mitsui is taking initiatives through its core business in many areas to help find solutions to respond to these concerns, and some of these are introduced here.

Renewable Energy

Mitsui has set an objective of substantially increasing the ratio of renewable energy among its holdings of energy assets as a policy for dealing with global warming and realizing global sustainability. Accordingly, Mitsui is pursuing and strengthening its initiatives related to renewable energy projects in the United States, Europe, Australia and so on.

Project	Company name	Country	Generating capacity/Scale
Solar power generation business	IPM Eagle Desarrollos Espana	Spain	1.5MW
	ISAB Energy Solare	Italy	1MW
	Haneda Solar Power Co., Ltd.	Japan	2MW
	SoftBank / Tottori-Yonago Solar Park	Japan	42.9MW
	SoftBank / Izumiotsu Solar Park	Japan	19.6MW (Under Construction)
	SoftBank / Tomatou Abira Solar Park	Japan	111MW (Under Construction)
	SoftBank / Kumamoto Arao Solar Park	Japan	22.4MW (Under Construction)
	SoftBank / Omuta Miikeko Solar Park	Japan	19.6MW (Under Construction)
	Tahara Solar-Wind Joint Project	Japan	50MW (Under Construction)
	Okumatsushima "Kizuna" Solar Park (Higashimatsushima City reconstruction project)	Japan	3.9MW (Under Construction)
	Brockville Solar	Canada	10MW
	Beckwith Solar	Canada	10MW
Solar thermal power generation business	Guzman Energia S.L.	Spain	50MW
Wind power generation business	Brazos Wind, LP	U.S.A.	160MW
	Bald Hills Wind Farm Pty Ltd	Australia	106.6MW (Under Construction)
	Zajaczkowo Windfarm Sp.	Poland	48MW
	NS Wind Power Hibiki Co., Ltd.	Japan	15MW
	Tahara Solar-Wind Joint Project	Japan	6MW (Under Construction)
	Wind Farm Hamada	Japan	48MW (Under Construction)
	Norway Wind	Canada	9MW
	SOP Wind	Canada	40MW
	West Cape Wind	Canada	99MW
	Caribou Wind	Canada	99MW
	Harrow Wind	Canada	40MW
	PAR Wind	Canada	49MW
	Plateau Wind	Canada	27MW
	ELSC Wind	Canada	99MW
	Erieau Wind	Canada	99MW
	Cape Scott Wind	Canada	99MW
	Eoliatic del Istmo S.A.P.I. de C.V.	Mexico	164MW
Eoliatic del Pacifico S.A.P.I. de C.V.	Mexico	160MW	

Biomass power generation business	Green Power Ichihara Co., Ltd.	Japan	50MW
Run-of-river hydroelectric power generation business	Energia Sustentavel do Brasil S.A.	Brasil	3,750MW
	Spanish Hydro	Spain	84MW

Example: Japan, Okumatsushima “Kizuna” Solar Park (Higashimatsushima City reconstruction project)

A 3.9 MW solar park was installed on the coast of Higashimatsushima City in Miyagi Prefecture, which incurred damage from the Great East Japan Earthquake, and began operating and selling power in August 2013. Also, carport solar power facilities that can operate independently were installed as emergency power supplies for use during disasters in parking areas of three public facilities in the city that serve as disaster response bases, and began commercial operation in March 2013.



Okumatsushima “Kizuna” Solar Park
(Higashimatsushima City reconstruction project)

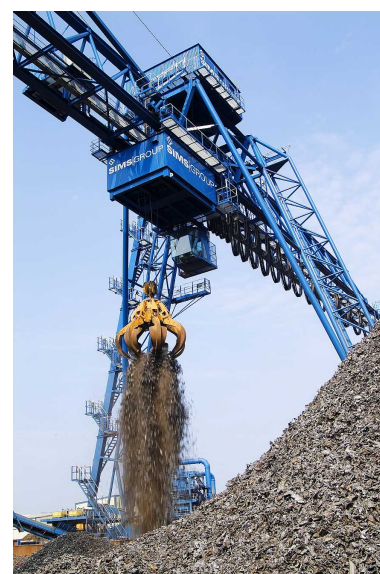
Recycling

In addition to development of underground resources, Mitsui has positioned the recycling of aboveground resources as an area for emphasis within its comprehensive energy and environmental strategy. The objective of these activities is to offer industrial solutions to environmental problems and provide stable supplies of various resources.

Business investment (Company name)	Main business	Country	Scale
Sims Metal Management Ltd.	General recycling business (metal scrap and home appliances recycling, etc.)	North America, Europe, Australia, New Zealand, and elsewhere	Handles 13 million tons/year of metal scrap, etc.
Mitsui & Co. Steel Ltd.	Trading of ferrous/non-ferrous metal scrap and provision of environmental solutions	Japan	Handles 4.5 million tons/year of metal scrap
Kyoei Recycling Co., Ltd.	Industrial waste processing and gas production	Japan	Processing capacity of 27,000 Mt/year, 140,000 Nm ³ /day

Example: Comprehensive Recycling Business for Metal Scrap, Home Appliances, etc.

Mitsui invested in Sims Metal Management, the world’s largest recycler of ferrous and non-ferrous metal as well as electronics, in June 2007, and, as of March 31, 2014, Mitsui had become the largest shareholder with a 17.7% ownership. Today, Sims Metal Management has more than 270 locations on five continents with a focus on North America, and more than 6,100 employees. In addition to metal scrap business, the company also operates the world’s largest electrical and electronics recovery and recycling business as well as New York City municipal waste processing business. Sims Metal Management is, therefore, continuing to grow as a total recycling enterprise.



Sims scrap yard (U.S.)

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Modal Shift

Building and improving the social infrastructure is a top-priority issue for the economic growth and promotion of industrial development in countries around the world. To respond to related needs, Mitsui is strengthening its functions and capabilities on a global Group basis. Mitsui has leveraged its accomplishments in the rolling stock leasing business, which has grown especially over the past 10 years, and focused on the railway logistics infrastructure projects. In this field, Mitsui is promoting the modal shift to railway transportation through the development of railway terminals and new businesses related to the cargo transport value chain.

Business investment (Company name)	Main business	Country	Quantitative effect (annual CO ₂ emissions)
Tri-net Logistics Co., Ltd.	Tokyo Bay barge transportation (Ichihara to Yokohama)	Japan	92.3% reduction in CO ₂ emissions compared to truck transportation
MRC (Mitsui Rail Capital, LLC)	Railway freight car leasing	U.S.A.	Total number of rolling stocks at four global basis. Freight cars : approx. 20 thousand Locomotives : approx. 3 hundred
MRCE (Mitsui Rail Capital Europe B.V.)	Railway locomotive leasing	Europe	
MRC-LA (Mitsui Rail Capital Participações)	Railway freight car leasing	Brazil	
MRC1520 (MRC1520 LLC)	Railway freight car leasing	Russia	
Via Quatro	Operation of Line Four of São Paulo Metro	Brazil	Transporting 173 million people annually

Example: Railway Rolling Stock Leasing

The MRC group, which is developing its operations on four global bases in the United States, Europe, Brazil and Russia, is supporting its customers enhance the efficiency of their operations by meeting their needs for leasing different types of rolling stock as well as drawing on Mitsui capabilities as a general trading company to offer added value by providing operation and maintenance management services.

Also, by promoting the modal shift from truck transport to rail transport, the MRC group works to reduce the emission of greenhouse gases and contribute to improving the earth's environment.



Bombardier made electric locomotive hauling the freight wagons

Tree Plantations

Tree Plantations	Country	Scale of operations (*target)
BTP (Bunbury Treefarm Project)	Australia	20,000ha*
GTP (Green Triangle Treefarm Project)	Australia	10,000ha*
VTP (Victoria Treefarm Project)	Australia	8,000ha*
AAP (Australian Afforestation Pty., Ltd.)	Australia	2,000ha*
PTP (Portland Treefarm Project)	Australia	3,000ha*
BFP (Bunbury Fibre Plantations Pty., Ltd.)	Australia	14,000ha

Example: Tree Farming in Australia

Mitsui has been engaged in five tree-farming projects in Australia since 1996. By cultivating sustainable forests, these projects contribute to preserving valuable natural resources, absorbing and chemically immobilizing carbon dioxide, preserving biodiversity, and preventing soil erosion and salt pollution.



Tree Farming in Western Australia

Other Environment-Related Business

Project	Main businesses
Water treatment business in Mexico	Through subsidiary Atlatec which is a water treatment engineering company headquartered in Mexico, Mitsui has participated jointly with Mitsui & Co. (U.S.A.) in the sewage processing business in the state of Queretaro de Arteaga in that country and in the effluent processing business for projects of PEMEX, Mexico's national oil company. In addition, in December 2008 and again in September 2009, an order was received for a sewage processing project from the water utility of the state of Jalisco in Mexico. Also, in January 2010, an order was obtained from Mexico's water utility for a sewage processing facility that, on completion, will be the largest single plant of its kind in the world. One facility was completed and commenced operation in May 2012 and the other two facilities are currently under construction
Water treatment business in China	In August 2010, Mitsui and Hyflux Ltd., a leading provider of integrated water management solutions based in Singapore, established Galaxy NewSpring Pte. Ltd, with each company investing an equal amount. Subsequently, Galaxy NewSpring completed acquisition of 22 assets of drinking water, sewage, and water recycling businesses in China by the end of December 2010 and commenced joint business operations. Two additional assets were acquired in December 2012, and, in the future, the two parent companies plan to expand Galaxy NewSpring's business operations to help mitigate China's water environmental problems
Water and sewer concession business in the Czech Republic	In September 2013, Mitsui and FCC Aqualia, a leading water management company in Spain, entered water concession business in Ostrava, Czech Republic. The business is currently supplying drinking water, including bulk water, and waste water treatment service for approximately 1.3 million users
Photovoltaic modules, parts, and materials	Structuring systems for the stable production and supply of equipment for photovoltaic modules and their principal materials (including silicon materials and products)
Materials for secondary battery use	Structuring systems for the stable production and supply of secondary battery materials, including principally those used in lithium-ion batteries
Investment in the clean-tech field	Glycos Biotechnologies Inc. (U.S.): Development and manufacture of chemicals produced from biomass including mainly isoprene Proterra, Inc. (U.S.): Manufacture and sales of EV buses and rapid electrical chargers for bus companies BioAmber, Inc. (Canada): Development and manufacture of bio-succinic acid and its derivatives Inventys Thermal Technologies, Inc. (Canada): Development of technologies that separate and capture CO ₂ from flue gas Nihon Itomic Co., Ltd. (Japan): Development and manufacture of electric hot water dispensers and heat pump water heaters
High-pressurized tank for NGVs and FCVs	Import and sale of tanks for installation on vehicles powered by natural gas and fuel cells
Rooftop gardening, green wall building, and greening at educational institutions	Proposal sales of greening (landscape)-related materials and development of sales business for greenery to improve the environment through Mitsui Bussan Agro Business Co., Ltd. (Japan)
Building energy conservation engineering business in China	Participation in an affiliate joint venture established jointly by Taigo Co., Ltd., of China, and Panasonic Corporation, which is engaged in promoting the automation of buildings and energy-conserving engineering
Car-sharing business	Operation of a car-sharing business that utilizes high fuel-efficiency, low-pollution vehicles
Environmental electronics business in Asia	Please refer to p.88
High-grade urea solution AdBlue® business	Please refer to p.88
The Callide Oxyfuel Project - Demonstration for zero-emission electricity generation with coal	Please refer to p.88
Investment in development of gas fermentation technology using microorganisms	Please refer to p.88
Electric buses on routes demonstration project in the UK	Please refer to p.89
Solar power generation monitoring service	Please refer to p.89
Cloud-based energy-saving service	Please refer to p.89

Example: Environmental electronics business in Asia

Mitsui contributes to realizing a society consuming sustainable energy by providing solutions to save electricity through our business participation in Tianjin EV Energies Co., Ltd., which manufactures and sells lithium-ion secondary batteries in China.

We also aim to contribute to a society conserving energy and to reducing CO₂ emissions by popularizing LED light sources through our business participation in Formosa Epitaxy which manufactures and sells LED wafers and chips.



Tianjin EV Energies factory construction

Example: High-grade urea solution AdBlue® business

Mitsui Chemicals' AdBlue® is a detoxifying agent of water and nitrogen which works as a reduction agent for nitrogen oxides including gas emissions of trucks and buses.

Mitsui is building and enhancing a nationwide sales and logistics locations and infrastructure as an AdBlue® distribution network. Mitsui contributes to the environment by steadily supplying AdBlue® for diesel vehicles supporting the gas emission regulations set down by the country. As automobile exhaust emissions regulations are tightened (Japan's Post New Long-Term Regulations), the need for ensuring a stable supply of AdBlue® is continuously increasing.



AdBlue® is a registered trademark of the German Association of the Automobile Industry (VDA)

Example The Callide Oxyfuel Project – Demonstration for zero-emission electricity generation with coal

Mitsui is continuing to jointly advance the Callide Oxyfuel Project in Australia which is supported by both the Japanese and Australian governments. The project has been demonstrating the new technology to capture carbon dioxide through coal-fired boiler operations for zero-emission electricity generation at the Callide A Coal-Fired Power Station in Queensland. This is world's first to "bolt-on" the oxyfuel technology to an existing commercial-operated power station and on a large scale. The project also aims to demonstrate the storage of the carbon dioxide captured in the underground.



Oxyfuel combustion boiler at the Australia Callide-A coal-fired power station in Queensland, Australia

Example: Investment in LanzaTech, a venture company which is developing gas fermentation technology using microorganisms

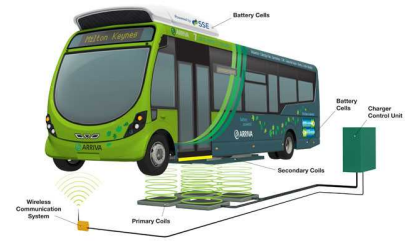
Mitsui invested in a venture company that is developing microorganism gas fermentation technology which converts carbon monoxide (CO) and carbon dioxide (CO₂) into fuel and chemicals such as ethanol and butadiene. We aim to develop businesses that can tackle global warming by commercializing technology that converts emissions containing carbon dioxide into energy.



Demonstration project with Shougang Steel in China

Example: Demonstration Project for Use of Electric Buses on Routes in the UK

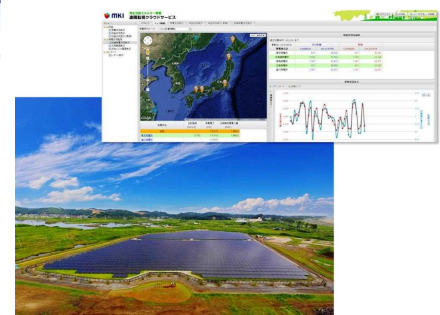
Milton Keynes, a medium-sized city in the United Kingdom, is turning its attention to switching public transportation to electricity, which is expected to reduce urban greenhouse gas emissions. In particular, it is focusing on electric buses on regularly-scheduled routes, which will likely be the first segment where electricity is widely used, and has replaced all eight buses used on one of its busiest routes with electric vehicles. The buses will recharge their batteries at the start and end of each trip (incremental charging). Recharging will not use a cable connection, and instead will employ contactless recharging that can be started with the push of a button (inductive power transmission). Incremental charging makes it possible to reduce the battery capacity, and the project will confirm whether the bus prices and capacity can reach economical levels. Data from operations on the actual bus route will be collected and analyzed. It will then be used in simulations to determine the optimal battery capacity and number of charging facilities when electric buses are deployed on other routes, with the aim of providing a one-stop solution from planning to application.



Inductive power transmission for contactless charging of electric vehicle buses

Example: Solar Power Generation Monitoring Service

Solar power facilities are said to be maintenance free, but in fact, panels can be damaged or contaminated, equipment failures can occur, and facilities deteriorate with age, making systems to rapidly detect these irregularities is essential. Mitsui Knowledge Industry Co., Ltd., a consolidated subsidiary, uses its abilities in integration of information and communication technologies to provide cloud services for remote monitoring of solar power generation facilities.



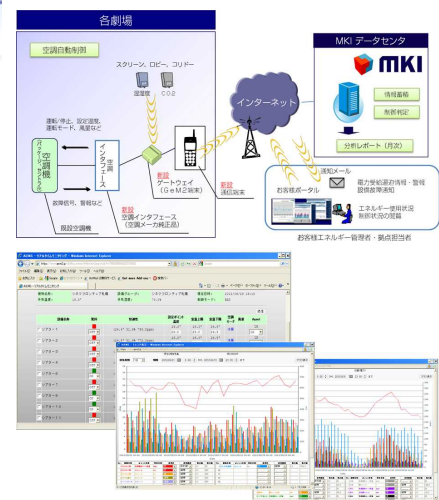
Conceptual image of solar power generation facilities and a remote monitoring screen

Example: Cloud-Based Energy Saving Services

Mitsui Knowledge Industry Co., Ltd., a consolidated subsidiary, uses information technology to provide energy saving services to commercial facilities, enabling customers to easily save energy while maintaining a comfortable environment.

Features of Energy Saving Services

- Automated remote control of air conditioning to eliminate wasteful energy consumption and cut costs
- Effective use of existing air conditioning facilities without dependence on a specific manufacturer or energy source (electricity or gas).
- Fast and inexpensive installation
- Real-time automated operation based on measured values
- Control areas can be precisely divided for individual control of each area
- Flexible control, even in environments susceptible to temperature changes, for efficient energy use without waste



System overview and control screen

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