

Promoting Environmental Initiatives

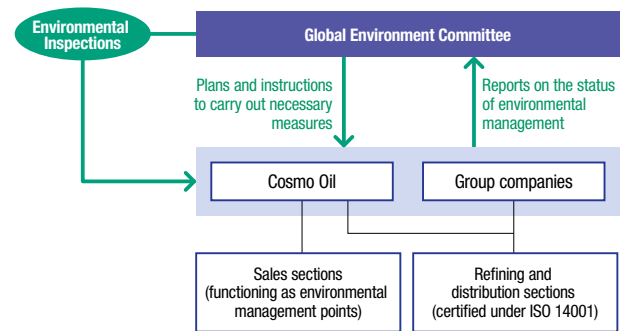
Environmental Initiatives

The Cosmo Oil Group has been focusing on strengthening its environmental initiatives since fiscal 2002. Under the Consolidated Medium-Term Environmental Plan (Fiscal 2013–2017), the Group has three priorities: responding strategically to global warming while ensuring business continuity, reducing environmental impact, and promoting environmental contribution activities. All of these efforts are aimed to realize Cosmo Oil’s corporate message, “Living with Our Planet.”

Environmental Management Structure

The Cosmo Oil Group has acquired ISO 14001 certification for 10 sites, including refineries, which have significant environmental impact. In addition to internal audits, external audits are conducted by certification verification agencies to regularly confirm that environmental management systems are operating effectively. The Group operates a cross-divisional Global Environment Committee which drives its overall environmental management, formulates the Consolidated Medium-Term Environmental Plan, reports on performance and evaluates results under the plan, and provides feedback to business divisions.

Environmental Management System



Consolidated Medium-Term Environmental Plan (Fiscal 2013–2017)

Theme 1	Respond strategically to global warming while ensuring continuation of business	Theme 2	Reduce environmental impact	Theme 3	Promote environmental contribution activities
1.	Reduce CO ₂ emissions: Reduction of CO ₂ emissions by 853 kt in fiscal 2017 compared to the emissions level in fiscal 2010	1.	Respond to environmental issues in business activities	1.	Continue promoting environmental communication
2.	Manage greenhouse gas (GHG) emissions: Energy management consistent with Japan’s Act on the Rational Use of Energy	2.	Reduce industrial waste	2.	Promote protecting biodiversity
		3.	Enhance internal/external audits for thorough environmental management		
		4.	Adopt rigorous measures to ensure soil preservation		
		5.	Promote Eco Office activities and green purchasing		

Reducing Industrial Waste

For fiscal 2014, Cosmo Oil tightened the target percentage of industrial waste disposed of in landfills from refineries, oil depots, and the R&D Center to 0.3% from the previous target of 0.5%. In fiscal 2014, the Company achieved a 0.29% rate, thanks to ongoing efforts to reduce landfill waste.

Group companies set their own targets, with Cosmo Matsuyama Oil, Cosmo Oil Lubricants and Hokuto Kogyo achieving their targets. Cosmo Engineering did not achieve its target due to dismantling work involved in redeveloping

the Sakaide Refinery into a distribution terminal and construction of the Hirogawa-Hidakagawa Wind Farm.

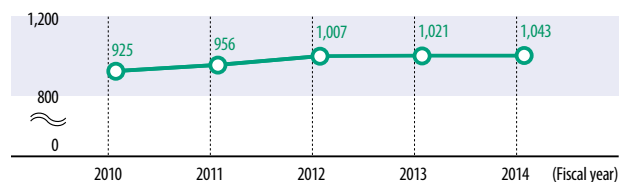
Percentage of Industrial Waste Disposed in Landfills in Fiscal 2014

	Target	Actual
Cosmo Oil	Less than 0.3%	0.29%
Cosmo Engineering	Less than 15%	21.45%
Cosmo Matsuyama Oil	Less than 1%	0.05%
Cosmo Oil Lubricants	Less than 1%	0.25%
Hokuto Kogyo	Less than 1%	0.53%

Addressing Soil Contamination

The Cosmo Oil Group conducts soil surveys for service stations and sites, seeking to prevent soil contamination and ensure a quick response if an oil leak is detected. If needed, soil remediation and monitoring are undertaken to address environmental impacts.

Cumulative Number of Soil Surveys at Service Stations



Initiatives in Response to Global Warming

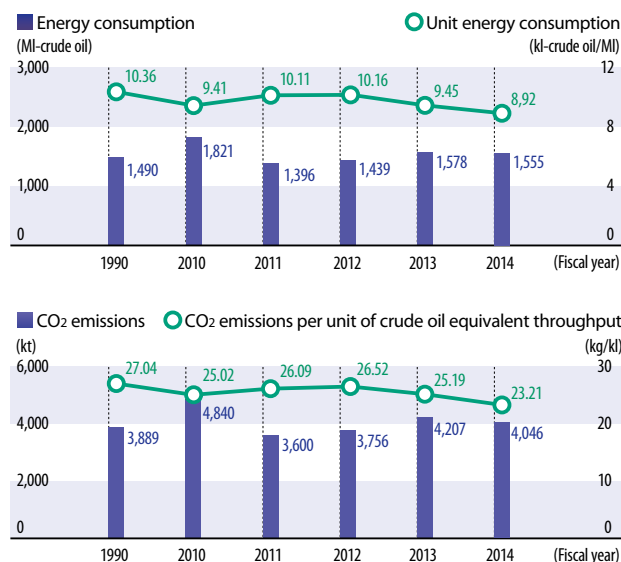
Energy Conservation in Refining and Manufacturing

Approximately 60% of the Cosmo Oil Group's CO₂ emissions are generated by refining. The Group is working to reduce this figure and conserve energy by introducing high-efficiency equipment and improving operational performance.

In fiscal 2014, unit energy consumption¹ and CO₂ emissions per crude oil equivalent throughput improved after the Chiba Refinery restored production to former levels. Energy consumption and total CO₂ emissions were down due to the end of refining operations at the Sakaide Refinery in July 2013, leaving three operating refineries. Compared with fiscal 2010 data, the end of refining operations at the Sakaide Refinery and energy-savings measures at other refineries resulted in a decrease of 794 kilotonnes of CO₂ emissions.

1. Unit energy consumption indicates total energy consumption divided by the total crude oil equivalent throughput, taking into account the complexity of refining technology. The unit used is kiloliters of crude oil equivalent/megaliters (kl-crude oil/MI). Total energy consumption is calculated by converting heat, electricity, and other energy use into the megaliters of crude oil equivalent (MI-crude oil).

Energy Consumption and CO₂ Emissions at Three Refineries



Note: In addition to the figures shown in the graph, N₂O released from the catalyst regeneration tower amounted to 18 kt of CO₂ equivalent in fiscal 2014.

Eco Office Initiatives

The Cosmo Oil Group engages in Eco Office initiatives in an effort to conserve energy and resources in offices. Focusing on four areas listed in the table at right, the Group tracks performance at each site, with each office and affiliated company responsible for achieving targets set for each fiscal year. The Cosmo Oil Group as a whole achieved its targets in fiscal 2014.

Performance Criteria:

Copy paper, fuel consumption of company vehicles, office electricity consumption: ○ Achieved × Not achieved
Green purchasing (percentage purchased): ○ 80% or above × Below 80%

Eco Office and Green Purchasing Performance in Fiscal 2014

Area	Organization	Goal	Result	% Compared to Goal	Performance
Copy paper (10 thousand sheets)	Cosmo Oil	992	894	-9.9%	○
	Group companies	1,837	1,899	+3.4%	×
	Cosmo Oil Group total	2,829	2,793	-1.3%	○
Company car fuel consumption (kl)	Cosmo Oil	218	171	-21.9%	○
	Group companies	775	656	-15.5%	○
	Cosmo Oil Group total	994	826	-16.9%	○
Office electricity consumption (MWh)	Cosmo Oil	680	641	-5.7%	○
	Group companies	1,625	1,463	-10.0%	○
	Cosmo Oil Group total	2,305	2,103	-8.7%	○
Green purchasing (%)	Cosmo Oil	80.0	88.2	+8.2%	○
	Group companies	80.0	88.7	+8.7%	○
	Cosmo Oil Group total	80.0	88.3	+8.3%	○

CO₂ Emission Reductions from Renewable Energy

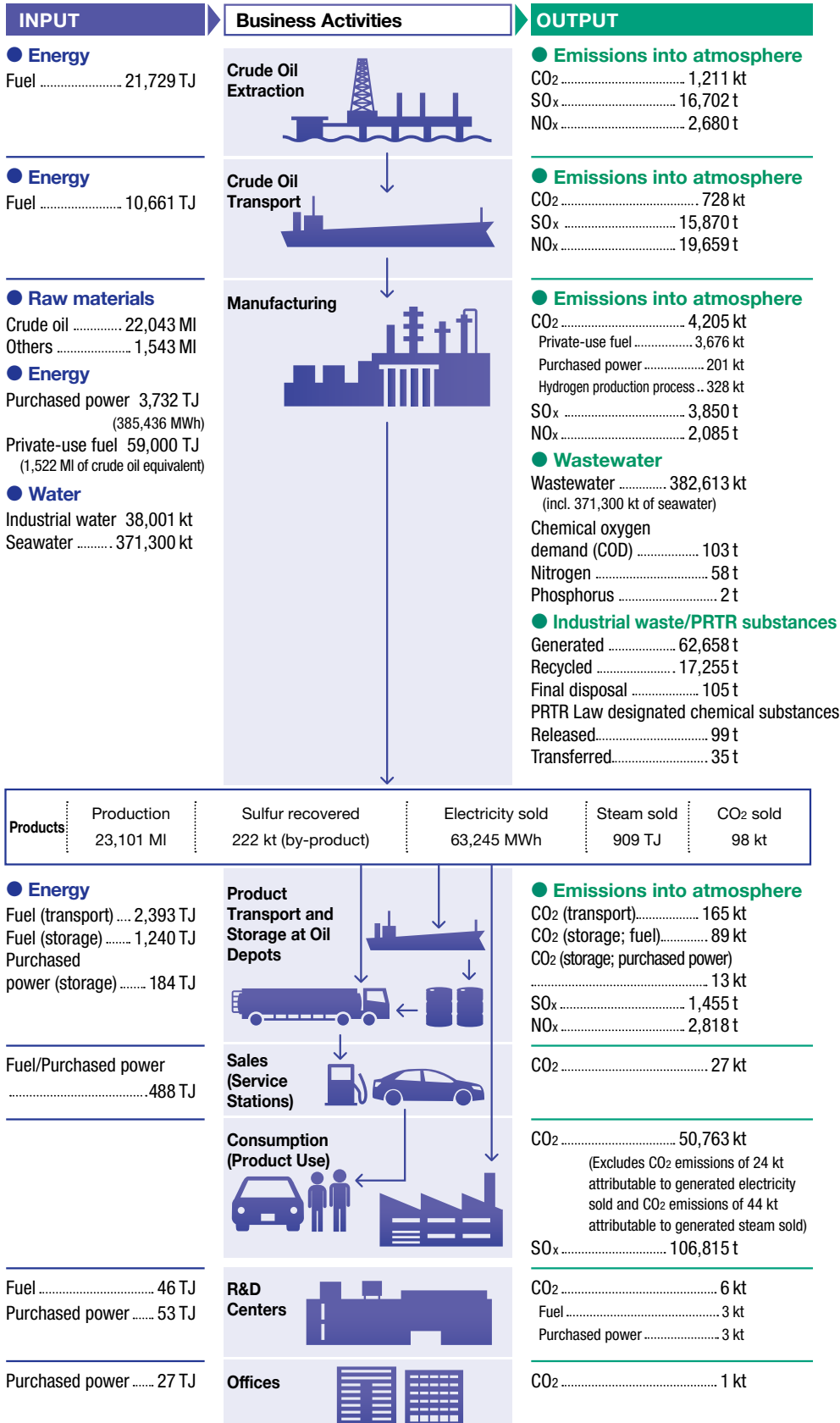
The Cosmo Oil Group actively pursues wind and solar power businesses to supply clean energy. In fiscal 2014, the Group operated 137 wind turbines and five solar power generation sites, generating a total of 301,058,150 kWh of electricity, equivalent to a reduction of 165,883 t-CO₂ of emissions.¹

1. Calculated using a factor of 0.000551 for kWh to t-CO₂ conversion, as per fiscal 2013 guidelines for actual and adjusted emissions coefficients for power utilities published by the Ministry of the Environment.



Environmental Impact of Business Activities

Environmental Impact in Fiscal 2014



- SO_x and NO_x figures for "Crude Oil Extraction," "Crude Oil Transport," and "Product Transport and Storage at Oil Depots" are estimated based on LCI for Petroleum Products by Fuel and Environmental Impact Assessment for Petroleum Products, published in March 2000 by the Japan Petroleum Energy Center.
- For "Manufacturing" and subsequent stages, energy consumption is calculated in accordance with the Act on the Rational Use of Energy.
- CO₂ emissions for "Manufacturing," "Product Transport," and "Sales (Service Stations)," which is based on data from Cosmo Oil Sales Corp., are calculated in accordance with a manual for GHG emissions accounting, reporting, and disclosure systems published by Japan's Ministry of the Environment and Ministry of Economy, Trade and Industry.
- Figures given for "Manufacturing" include data from the Cosmo Oil refineries, Cosmo Matsuyama Oil, and Cosmo Oil Lubricants. However, data from Cosmo Oil Lubricants is not included in the figures for water, wastewater, SO_x, and NO_x.
- "Industrial waste" refers to waste generated during business activities, which includes waste that could be sold.
- "Electricity sold" refers to electricity supplied externally by the Chiba Refinery and Cosmo Matsuyama Oil. CO₂ emissions from "Manufacturing" were calculated by deducting the portion of CO₂ emissions attributed to electricity sold. CO₂ emissions from utility (power) were included in the CO₂ emissions from "Manufacturing."
- "Steam sold" refers to steam sold by the Chiba Refinery and Cosmo Matsuyama Oil. CO₂ emissions for "Manufacturing" were calculated after deducting the portion of CO₂ emissions that results from the generated steam sold.
- CO₂ emissions from product transport include data from the specified consigners in accordance with the Act on the Rational Use of Energy.
- CO₂ emissions for "Consumption (Product Use)" are calculated by multiplying shipped volume of fuel products (such as gasoline and heavy fuel oil) by CO₂ emission coefficient. CO₂ emissions attributable to generated electricity and steam sold are calculated separately.
- SO_x emissions for "Consumption (Product Use)" are included for reference, and were estimated from the sulfur content of products without accounting for sulfur reduction during use. Accordingly, actual SO_x emissions are lower than the estimate.
- Data for "R&D Centers" includes the R&D Center of Cosmo Oil and the R&D Laboratory of Cosmo Oil Lubricants.
- Figures given for "Offices" include data from the Cosmo Oil Head Office and branch offices.
- The Cosmo Oil Group's total direct (Scope 1) emissions from business activities were 4,046 kt CO₂ equivalent, and its indirect (Scope 2) emissions were 297 kt CO₂ equivalent.

Detailed information

Environmental accounting
http://www.cosmo-oil.co.jp/csr/environment/ev_accounting.html