

Promoting Environmental Initiatives

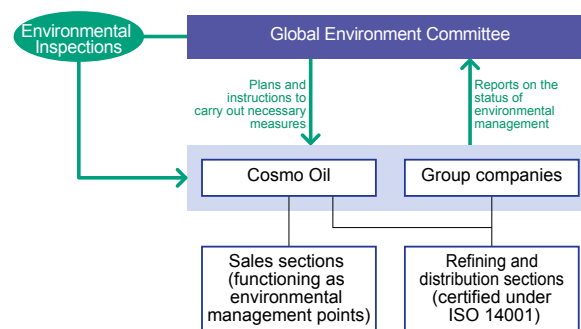
Environmental Initiatives

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 prevent global warming while ensuring continuation of business, 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 prevent global warming while ensuring continuation of business	Theme 2: Reduce environmental impact	Theme 3: Promote environmental contribution activities
<ol style="list-style-type: none"> 1. Reduce CO₂ emissions: Reduction of CO₂ emissions by 853 kt between fiscal 2013–2017, from the emissions level in fiscal 2010 2. Manage greenhouse gas (GHG) emissions: Energy management consistent with Japan’s Act on the Rational Use of Energy 	<ol style="list-style-type: none"> 1. Respond to environmental issues in business activities 2. Reduce industrial waste 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 	<ol style="list-style-type: none"> 1. Continue promoting environmental communication 2. Promote protecting biodiversity

Reducing Industrial Waste

Cosmo Oil Co., Ltd. has set a goal of keeping final landfill disposal of industrial waste generated from refineries, oil depots, and the Research & Development Center to less than 0.5%, in an ongoing effort to reduce waste. In fiscal 2013, only 0.35% of this waste was disposed in landfills.

Percentage of Industrial Waste Disposed in Landfills in Fiscal 2013 ✓

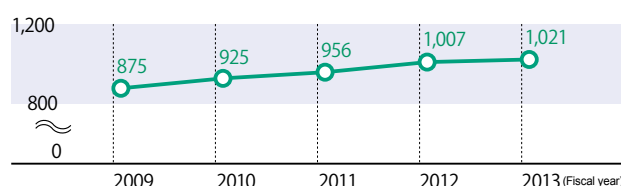
	Target	Actual
Cosmo Oil	Less than 0.5%	0.35%
Cosmo Oil Group	—	4.01%

Note: Target not established for Cosmo Oil Group, based on the difficulty of establishing a target due to the variety and volume of industrial waste generated by the dismantling project managed by Cosmo Engineering Co., Ltd.

Addressing Soil Contamination

The Cosmo Oil Group conducts soil surveys for service stations and sites, seeking to prevent soil contamination and to 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

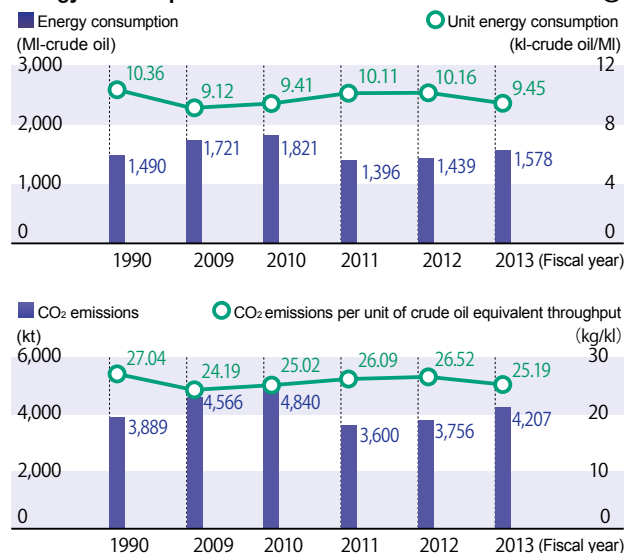
Energy Conservation in Refining and Manufacturing

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.

The Group's unit energy consumption¹ and CO₂ emissions per crude oil equivalent throughput improved in fiscal 2013 due to recovery of production volume at the Chiba Refinery and review of group-wide operational efficiency. The rise in total energy consumption and total CO₂ emissions was impacted by the restart of the Chiba Refinery, which had been mostly shut down since 2011. Compared with fiscal 2010 data, the shutdown of refining operations at the Sakaide Refinery and energy-savings measures at other refineries resulted in a decrease of 633 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/Ml). Total energy consumption is calculated by converting heat, electricity, and other energy use into the megaliters of crude oil equivalent (Ml-crude oil).

Energy Consumption and CO₂ Emissions at Four Refineries

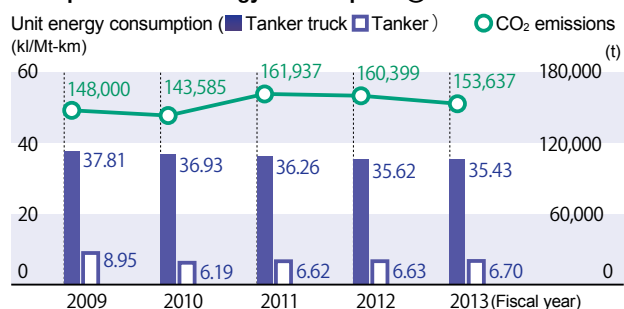


Note: In addition to the figures shown in the graph, N₂O released from the catalyst regeneration tower amounted to 18 kt of CO₂ equivalent in fiscal 2013.

Reducing Transport-related Energy Consumption

The Cosmo Oil Group continues to transition to larger vessels and transport trucks and is securing higher stowage rates, seeking to improve energy efficiency in distribution. The unit energy consumption¹ for marine transport using coastal tankers decreased to 6.70 kiloliters per million tonne-kilometers (kl/Mt-km), down 0.07 kl/Mt-km year-on-year due to reduced transport between refineries made possible by the restart of the Chiba Refinery. For truck-based ground transport, the volume transported per vehicle was flat year-on-year at 19.12 kiloliters, but unit energy consumption was 35.43 kl/Mt-km, up 0.18 kl/Mt-km due to steps taken to improve transport efficiency.

Transport-related Energy Consumption



1. Unit energy consumption in transport (kiloliters/million tonne-kilometer) is calculated by energy consumption (kiloliters of crude oil equivalent) divided by cargo tonne-kilometers (weight in tonnes of material transported multiplied by the number of kilometers transported).

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.

Performance Criteria:

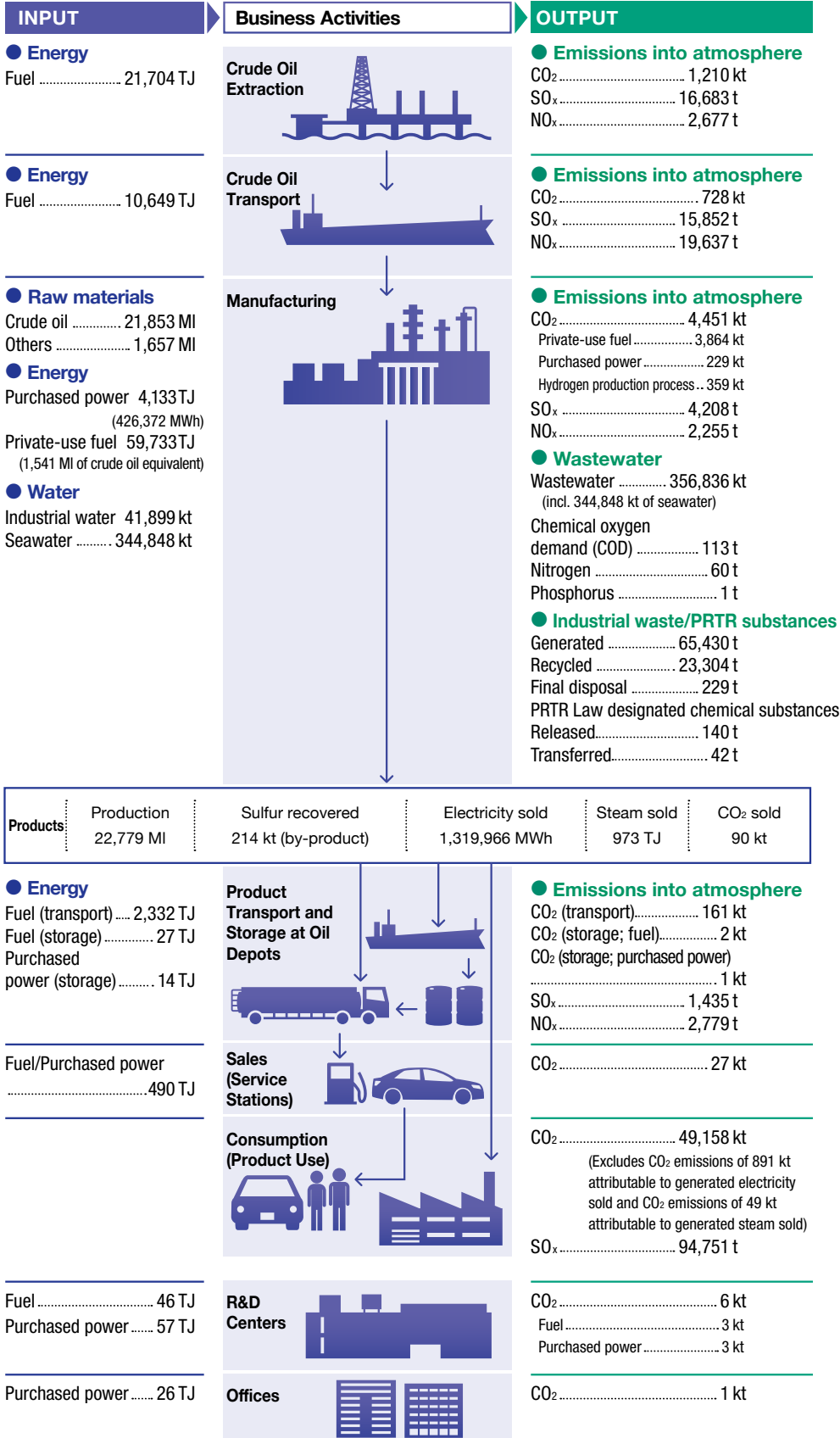
Copy paper, fuel consumption of company vehicles, office electricity consumption:
 ○ Achieved △ Not achieved, but down year-on-year × Not achieved
 Green purchasing (percentage purchased): ○ 70% or above × Below 70%

Eco Office and Green Purchasing Performance in Fiscal 2013

Area	Unit	Organization	Goal	Result	% Compared to Goal	Performance
Copy paper	10 thousand sheets	Cosmo Oil	1,132	1,009	-10.9%	○
		Group companies	1,888	1,899	+0.6%	△
Company car fuel consumption	kl	Cosmo Oil	206	178	-13.5%	○
		Group companies	783	705	-10.0%	○
Office electricity consumption	MWh	Cosmo Oil	740	682	-7.8%	○
		Group companies	1,799	1,616	-10.2%	○
Green purchasing	%	Cosmo Oil	70.0	89.4		○
		Group companies	70.0	77.9		○

Environmental Impact of Business Activities

Environmental Impact in Fiscal 2013



- 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, Yokkaichi Kasumi Power Station, 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, Yokkaichi Kasumi Power Station, and Cosmo Matsuyama Oil. CO₂ emissions from "Manufacturing" were calculated by deducting the portion of CO₂ emissions attributable 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 3,896 kt CO₂ equivalent, and its indirect (Scope 2) emissions were 314 kt CO₂ equivalent.

Detailed information

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