

## Result of Medium-term Environmental Plan “Blue Earth 21”

The Blue Earth 21 plan uses slogans to convey the message of the Medium-term Environmental Plan, which covers nine themes. Each department sets objectives and works to achieve them.

2002 - 2004 result of the Medium-term Environmental Plan, “Blue Earth 21”

Theme	Objective	Medium-term Target (Fiscal 2004)
1. Prevention of climate change Reduction of CO <sub>2</sub> emissions from business activities and introduction of new energy	• Energy conservation	<ul style="list-style-type: none"> <li>• Reduce unit energy consumption at refineries by ▲10.7% (from 1990 level) ◇ (As the initial objective was achieved in the Medium-term, a higher objective was established.)</li> <li>• Reduce fuel consumption for transportation.</li> <li>• Tanker trucks ▲20%, coastal tankers ▲17% (vs. Fiscal 1990)</li> </ul>
	<ul style="list-style-type: none"> <li>• Utilization of the Kyoto Mechanisms</li> <li>• Introduction of new energy</li> </ul>	<ul style="list-style-type: none"> <li>• Promotion of energy conservation at the offices</li> <li>• Reduce office electricity consumption by ▲5% (compared to Fiscal 2003); reduce company car fuel consumption by ▲7% (compared to Fiscal 2003)</li> <li>• Consideration of Kyoto Mechanisms utilization</li> <li>• Consideration of introducing new energy (promote application and commercialization of wind-generated power; SS solar panels: more than 2 cases/year)</li> </ul>
2. Reduction of pollutant emissions Control of emissions levels for air and water pollutants below the regulatory standards and reduction of industrial waste, etc.	• Air pollution control	• Maintain the level of NO <sub>x</sub> , SO <sub>x</sub> , and particulate emissions from oil refineries (below the regulation value).
	• Water pollution control	• Maintain the level of COD discharge from oil refineries (below the regulation value).
	• Industrial waste reduction	<ul style="list-style-type: none"> <li>• Reduce landfill volume (average of Fiscal 2002-2004) by ▲81% from the 1990 level.</li> <li>• Landfill volume/generated volume = less than 1.5%.</li> </ul>
	• Management of chemical substances	• Implement and promote management of chemical substances in accordance with laws and regulations.
3. Soil environment measure Assessment of current situation and promotion of preventive measures	• Reduction of VOCs based on voluntary standards	• Take appropriate measures in accordance with the revised Air Pollution Prevention Law. ◇
	• Service stations (SS)	• Promote prevention of soil contamination at service stations, service stations to conduct self-inspections and implement countermeasures
4. Resource conservation Reduction of non industrial waste through the promotion of 3R (reduce, reuse and recycle)	• Other facilities	• Soil contamination investigations and countermeasures conducted by each business site.
	• Paper	<ul style="list-style-type: none"> <li>• Reduce the amount of electronic vouchers and slips by over ▲33% (as compared to the Fiscal 2002 level) ◇</li> <li>• Reduce the amount of paper purchased for copying use by ▲8% (as compared to the Fiscal 2003 level) ◇</li> </ul>
5. Reduction of environmental impact of products Providing petroleum products with lower environmental impacts	• Daily use items	• Maintain the system of sorting, collection, and recycling at every business site.
	• Water	• Introduce wastewater recycling systems at service stations (2 or more locations).
6. Green purchasing Expansion of items covered by green purchasing	• Diesel fuel	• Establish system for supplying sulfur free diesel fuel (with a sulfur content of 10ppm or less).
	• Gasoline	• Establish system for supplying sulfur free gasoline (with a sulfur content of 10ppm or less).
7. Research & development Development of petroleum products and environmental technologies related to business activities and development of new energy technologies	• Material, equipment, and works	• Expand items covered under green purchasing to include more materials (such as construction materials), process supplies (such as chemicals and catalysts), and construction work.
	• Office supplies	• Continue implementing purchases in accordance with the standard.
	• Purchasing from green suppliers	• Implement purchasing from green suppliers, and expand the scope of green suppliers.
	• Petroleum product development	• Develop high performance catalysts to reduce environmental impacts of products.
8. Environmental conservation projects Continuous efforts to support projects, particularly those related to prevention of climate change	• Environmental technology development	<ul style="list-style-type: none"> <li>• Develop technologies to reduce excess sludge in order to minimize waste.</li> <li>• Develop technologies to reduce and reuse catalysts in order to minimize waste.</li> <li>• Develop technologies to analyze oil content in soil and to remedy oil contaminated soil.</li> <li>• Conduct technological support related to vapor absorption/recovery such as VOC.</li> <li>• Develop technologies for the conversion of natural gas to liquid fuel (GTL: gas to liquid).</li> </ul>
	• New energy development	• Develop fuel cell systems.
	• Technical cooperation in environmental protection	• Transfer environmental technologies to other countries.
	• Cosmos the Card Eco projects	<ul style="list-style-type: none"> <li>• Continuously implement projects for preventing climate change as part of the “Living with Our Planet.” campaign: (1) Restoration and conservation of the environment in developing countries</li> <li>(2) Environmental protection in Japan</li> <li>(3) Environmental education</li> </ul>
9. Measurements for environmental management Continuous efforts in environmental management and communication with multiple stakeholders	• Social contributions	• Continuously implement community programs
	• Environmental management	• Promote sharing of environmental awareness to develop human resources.
	• Communication	• Effectively communicate environmental information with each type of stakeholder.

▲: Minus ●: Achieved ×: Not achieved ◇: Set again or Reset in Fiscal 2004

Progress from Fiscal 2002 - 2004	Evaluation	Page
<ul style="list-style-type: none"> <li>Reduced unit energy consumption at refineries by ▲10.9% (Fiscal 2004) from 1990 level.</li> </ul>	●	27
<ul style="list-style-type: none"> <li>Fuel consumption by tanker trucks were reduced by ▲20% (Fiscal 2004) as compared to the Fiscal 1990 level.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Fuel consumption by coastal tankers decreased by ▲8% (Fiscal 2004)</li> <li>In Fiscal 2002, this decreased by ▲15%, but due to the number of trips increasing, the reductions were ▲11% for Fiscal 2003, and ▲8% for Fiscal 2004.</li> </ul>	×	
<ul style="list-style-type: none"> <li>Office electricity was reduced by ▲4% as compared to the Fiscal 2003 level.</li> </ul>	×	
<ul style="list-style-type: none"> <li>Fuel consumption by company cars was reduced by ▲13% as compared to the Fiscal 2003 level.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Offset the Australian emission credits against the CO<sub>2</sub> emissions from fuel used by the "Eco" card members (the "CO<sub>2</sub> free gasoline" plan). Participated in trial projects, training, etc. to accumulate know-how on emission credits and CDM.</li> </ul>	●	48
<ul style="list-style-type: none"> <li>Wind-generated power: Built a power station in Sakata City, Yamagata Prefecture, and began operations in December 2004.</li> </ul>	●	34
<ul style="list-style-type: none"> <li>Installation of solar panels: At 11 service stations in Fiscal 2002, 4 service stations in Fiscal 2003, and 12 service stations in Fiscal 2004.</li> </ul>	●	31
<ul style="list-style-type: none"> <li>Maintained (complied with relevant regulations).</li> </ul>	●	28, 81-88
<ul style="list-style-type: none"> <li>Maintained (complied with relevant regulations).</li> </ul>	●	29, 81-88
<ul style="list-style-type: none"> <li>Reduced by an average of ▲88% in Fiscal 2002-2004 compared to the Fiscal 1990 level.</li> </ul>	●	20
<ul style="list-style-type: none"> <li>Achieved landfill volume/generated volume = 1.2%.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Ascertained the amount of released and transferred, and reported them to the relevant authorities in accordance with PRTR Law.</li> </ul>	●	74, 81-88
<ul style="list-style-type: none"> <li>Upon publication of the Air Pollution Prevention Law, reviewed voluntary VOC reduction measures, and continue to formulate an implementation plan. Confirmed that the storage facility subject to the regulation has already been dealt with.</li> </ul>	●	29
<ul style="list-style-type: none"> <li>Implemented approximately 200 soil investigations and cleaning operations before Fiscal 2004.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Implemented EM Point (service station management tool) twice/year and the Environmental Forum (educational program on environmental management) for service station staff 10 times in Fiscal 2004.</li> <li>The EM Point and Environmental Forum are becoming established events. Conducted self-inspections of underground facilities (tanks, pipes, etc.) at all service stations owned by Cosmo Oil, and when an abnormality was discovered, repairs and other necessary measures were taken.</li> </ul>	●	20
<ul style="list-style-type: none"> <li>Implemented measures in accordance with the soil investigations and the results. Made efforts to prevent soil contamination by thoroughly implementing maintenance and daily inspections of facilities.</li> </ul>	●	20
<ul style="list-style-type: none"> <li>Introduced SAP, reviewed what vouchers and slips were no longer necessary, and preserved electronic ledgers, thereby reducing electronically generated paperwork by ▲33.3%.</li> <li>In Fiscal 2004, introduced a new personnel system, thereby reducing paperwork by approximately 2.5 million sheets.</li> </ul>	●	20
<ul style="list-style-type: none"> <li>Reduced the amount of paper purchased for copying use by ▲8% as compared to the Fiscal 2003 level.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Established an office clean-up team to maintain the system, and implemented sorting, collection, and recycling at every business site.</li> </ul>	●	
<ul style="list-style-type: none"> <li>As a result of trial introduction, the effect that was initially anticipated could not be achieved, and therefore, introduction of the wastewater recycling system was suspended.</li> </ul>	×	
<ul style="list-style-type: none"> <li>Established a supply system, and began delivery of sulfur free diesel fuel in January 2005.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Established a supply system including the building of new facilities, and began delivery of sulfur free gasoline in January 2005.</li> </ul>	●	21, 65
<ul style="list-style-type: none"> <li>Investigated standards for green purchasing, and commenced green purchasing in Fiscal 2004.</li> </ul>	●	20
<ul style="list-style-type: none"> <li>Based on the standards formulated in Fiscal 2003, promoted green purchasing.</li> </ul>	●	20
<ul style="list-style-type: none"> <li>Based on the standards formulated in Fiscal 2003, expanded the scope of green suppliers.</li> </ul>	●	20
<ul style="list-style-type: none"> <li>Developed and commercialized high performance desulfurization catalysts for producing sulfur free diesel fuel.</li> </ul>	●	33
<ul style="list-style-type: none"> <li>Developed excess sludge reduction system, and introduced it at the Sakaide Refinery in Fiscal 2002. Currently implementing verification testing to confirm 100% reduction of sludge generation at the Chiba Refinery.</li> </ul>	●	
<ul style="list-style-type: none"> <li>In order to reduce the amount of FCC catalyst (fluid catalytic cracking catalyst) use, developed a metal scavenger, and implemented verification testing at refineries, but the anticipated effect could not be confirmed, and therefore, new tests are currently being planned.</li> </ul>	×	
<ul style="list-style-type: none"> <li>Developed technology to analyze oil content in soil, which is currently being used at refineries and service stations.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Developed and selected the absorbing agent for VOC recovery systems.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Verified the developed catalyst at a GTL pilot plant: the conversion rate of the raw material and the selectivity rate cleared target values.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Implemented commercialization research for product diesel fuel fractions.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Implemented verification testing for LPG fuel cell systems, and developed hydrogen producing catalyst which uses kerosene as its raw material.</li> </ul>	●	22, 34
<ul style="list-style-type: none"> <li>Implemented various cooperative efforts overseas (such as zero-flarization, energy conservation, etc.)</li> </ul>	●	39-40
<ul style="list-style-type: none"> <li>Continuously implemented projects for preventing climate change as part of the "Living with Our Planet." campaign.</li> <li>Tropical rain forest protection (Papua New Guinea, Solomon Islands)</li> <li>Recycling-oriented farming (Philippines)</li> <li>South Pacific support (Kiribas Islands)</li> <li>Silk Road afforestation (China)</li> <li>Support for environmental education in schools (5 locations across the country)</li> <li>Environmental schools support (Mt. Fuji, Ogasawara, Shirakami mountain range)</li> </ul>	●	47-48
<ul style="list-style-type: none"> <li>Implemented programs and events such as the "Cosmo Children's Earth School" for providing environmental education to the children who will carry us into the next generation, use of the internet in operating "Econets", a website that offers environmental education, environmental education workshops for educators, and implemented the "Cosmo Earth Conscious Act" that calls to society for environmental conservation.</li> </ul>	●	49-50
<ul style="list-style-type: none"> <li>Incorporated environmental education into in-house training.</li> </ul>	●	
<ul style="list-style-type: none"> <li>Continuously issued environmental information through environmental publications, advertisements, and the internet to each type of stakeholder.</li> </ul>	●	52