Air

The major airborne emissions generated by Neste Oil's refining operations comprise carbon dioxide, nitrogen oxides, sulfur dioxide, volatile organic hydrocarbons, and particulates.

Emissions to air in 2013 (t/a)

	2013	2012*	2011*
Direct carbon dioxide (CO_2) emissions/ scope 1			
Porvoo	2,882,500	2,826,800	2,954,700
Naantali	340,500	307,000	405,500
Rotterdam	55,600	57,300	7,700
Singapore	7,600	8,100	5,800
Marine transportation	267,700	267,800	317,700
Others	2,300	2,700	2,700
Total	**3,556,200**	**3,469,700**	**3,694,100**
Indirect carbon dioxide (CO_2) emissions/ scope 2			
Porvoo	218,700	214,500	207,200
Naantali	65,500	65,600	59,000
Rotterdam	63,200	104,900	27,700
Singapore	71,300	76,000	114,600
Others	25,800	28,200	25,700
Total	**444,500**	**489,200**	**434,200**
Volatile organic compounds (VOC)	5,600	5,200	4,700
Nitrogen oxides (NO_x)	8,100	8,600	10,100
Sulfur dioxides (SO_2)	8,100	8,200	9,300
Particulates	410	544	505

* Figures from 2011 and 2012 have been updated after the reporting period.

Scope 3 emissions (t/a)

In 2012, Neste Oil inventoried scope 3 emissions in all categories. As a result of this inventory only categories 'Purchased goods and services', 'Use of sold products', and 'End-of-life treatment of sold products' were identified as relevant. In 2013 scope 3 emissions are calculated for the relevant categories.

	2012	2012	2013
	CO_2,tons	%	CO_2, tons
Purchased goods and services*	4,600,000	10.1	4,600,000
Capital goods	20,000	0.0	Not material
Fuel- and energy-related activities	-	0.0	-
Upstream transportation and distibution	85,000	0.2	Not material
Waste generated in operations	10,000	0.0	Not material
Business travel	4,600	0.0	Not material
Employee commuting	4,000	0.0	Not material
Upstream leased assets	-	0.0	-
Downstream transportation and distribution	20,300	0.0	Not material
Processing of sold products	-	0.0	-
Use of sold products**	40,500,000	88.7	40,700,000
End-of-life treatment of sold products***	308,000	0.7	600,000
Downstream leased assets	480	0.0	Not material
Franchsises	-	0.0	-
Investments	87,000	0.2	-
Total	**45,639,380**	100	**45,900,000**

* Purchased goods and services: The calculation includes fossil and renewable raw materials used in Neste Oil's production. The largest single source of feedstock-related greenhouse gas emissions comes from the production of the crude oil that Neste Oil buys. Secondary data was used to determine emission coefficients for crude oil and hydrogen. Other emission figures are based on actual emission coefficients, in accordance with the requirements of the Renewable Energy Directive (2009/28/EC). Emissions related to bought-in services and chemicals are not included in the figure. The emissions from services is considered low. The calculations of chemical-related emissions will be developed in the future.

** Use of sold of products: The calculation includes emissions generated during the use of products Neste Oil has sold from its own production. The calculation does not cover emissions generated during the use of products Neste Oil has bought and retailed. The majority of traffic fuel-related greenhouse gas emissions are generated when fuels are used in traffic.

*** End of life treatment of sold products: The calculation includes emissions generated during the end of life treatment of solvents, lubricants, and naphtha produced by Neste Oil. Toxic waste disposal has been used as an end of life treatment.

CO_2 emissions

The majority of Neste Oil's direct emissions (scope 1) of CO_2 are refining-related and generated at the Porvoo refinery. Refining-related CO_2 emissions are largely produced when burning fuel in fired heaters and in energy generation. Indirect CO_2 emissions (scope 2) are mainly produced when generating the electricity that Neste Oil buys to power its operations. The majority of the company's scope 3 emissions, not included in direct or in-direct CO_2 emissions, are related to end-of-life treatment of products sold by Neste Oil and the goods and services the company purchases.

Read more about Neste Oil's net climate impact.

The Porvoo refinery recovers CO_2 produced during its refining processes and sells the gas to a company located locally. A total of 156,500 (156,000) tons of CO_2 was recovered in 2013. Optimization work on furnaces and fired heaters at the Naantali refinery during 2013 has reduced the site's consumption of fuel gas and its CO_2 emissions. Fired heaters at the renewable diesel refinery in Rotterdam were modified to run on in-house process gas rather than natural gas in 2013 to reduce the site's CO_2 emissions; this cuts the refinery's use of fossil fuels and its NO_x emissions.

Volatile organic compounds

A system capable of recovering a large proportion of the volatile organic compounds (VOC) released into the atmosphere during loading light products was commissioned at the Porvoo refinery's harbor at the end of 2013. This is expected to result in a major reduction in VOC emissions at the site. Operational experience will be collected and reviewed during 2014 to further improve the system's performance. A number of measurement and remedial surveys related to VOC emissions at the Porvoo refinery were carried out in 2013 and resulted in reduced emissions in various areas. A study aimed at reducing VOC emissions in Rotterdam was started.

A study carried out at the Porvoo refinery in 2012 and 2013 showed that the benzene contained in the site's VOC emissions does not pose a danger to the health of people living close to the site and that continuous benzene measurements are unnecessary.

NO_x and SO_2 emissions

Nitrogen oxide (NO_x) emissions from refining operations during 2013 were virtually unchanged from those in 2012. Sulfur dioxide (SO_2) emission performance remained good, and air quality measurements did not identify any cases where threshold limits were exceeded.

The Porvoo and Naantali refineries, which concentrate on refining fossil fuels, are Neste Oil's only major sources of SO_2 emissions. Both refineries have sulfur recovery systems, which operated well during 2013. SO_2 emissions are also reduced by primarily using gas rather than oil in furnaces and fired heaters.

New analyzers were installed at the Naantali refinery in 2013 to measure the composition of the flue gases released through the site's main stacks and have helped further reduce SO_2 emissions.

Particulates

Particulate emissions remained at a low level in 2013 and no major change took place in emission levels. The threshold values for breathable particulate matter and nickel established as part of a study carried out at the Porvoo refinery by the University of Jyväskylä's Institute for Environmental Research were not exceeded, and no evidence was found for beginning continuous measurement of these materials.