Climate and resource efficiency

Neste Oil's operations are regulated by strict environmental permits. By operating in accordance with these permits and making efficient use of our resources, we are able to manage our environmental impact effectively, protect natural resources, and improve productivity.

We are the global leader in refining waste and residues into premium-quality traffic fuels

80% of the target set for energy efficiency agreement achieved

Read more

We recovered 156,500 tons of carbon dioxide (CO_2) generated during production

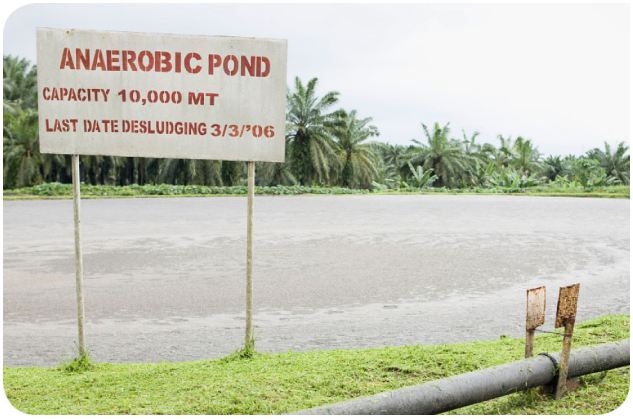
Read more

Over half of our renewable raw material use was waste and residues

Read more

What were our targets?	Actions and achievements in 2013	What next?
Significantly increase the amount of waste and residues-based inputs we use.	• Waste and residues accounted for 52.6% (35.1%) of our renewable inputs in 2013. • We added technical corn oil, tall oil pitch, and spent bleaching earth oil to our feedstock base.	• Continue increasing the proportion of waste and residues used in producing renewable fuels.
Continue progressing towards our energy saving target (660 GWh by 2016).	• We achieved 80% (60%) of the target set for 2016.	• Continue operations that will help us to achieve our energy saving target.
Improve energy efficiency through investments and enhanced refinery operations.	• Measures executed in 2013 result in an annual energy saving of 160 GWh.	• Continue implementing measures (investments and optimizing refinery operations) to achieve our energy saving target.
Reduce greenhouse gas emissions in our operations cost-effectively.	• We recovered 156,500 (156,000) tons of CO_2 at the Porvoo refinery. • We optimized the fired heaters used at the Naantali refinery. • The diesel unit hot oil furnace at the Rotterdam refinery was converted to using process gas in addition to natural gas.	• We continue identifying opportunities to reduce greenhouse gas emissions in our own operations.
Monitor changes in environmental legislation and permitting practices and assess their potential impact on Neste Oil.	• We took part in drafting work on new Best Available Technology (BAT) requirements.	• When the requirements are completed we will review the condition of our refineries and prepare possible actions.
Comply with stricter environmental permit requirements.	• A new limit on SO_2 emissions was introduced at Porvoo.	• Continue operating within the terms of our environmental permits and modify operations where needed to comply with new regulations.

Reducing methane emissions results in a better greenhouse gas balance for renewable diesel



The majority of the CO_2 emissions generated by fossil fuels are released during end-use, while most emissions from renewable fuels are linked to producing the feedstocks used for refining them. In the case of waste-based inputs, farming and processing account for the most emissions. To further enhance the greenhouse gas emission reduction (40–90% compared to fossil diesel) offered by renewable diesel, Neste Oil is investigating a variety of opportunities for reducing CO_2 emissions during the production of the renewable inputs it uses.

When producing palm oil, one of the inputs used in refining renewable diesel, greenhouse gases are generated in the open basins used when treating wastewater from pressing plants. Wastewater contains high levels of organic matter, which breaks down into methane and CO_2 over time. Recovering these gases and using the recovered methane to generate electricity can reduce emissions. Recovery facilities call for major investments, however.

Separating out organic matter from wastewater as it leaves pressing plants would be one alternative solution, as it would prevent methane and CO_2 from being formed. Organic matter can be recovered in a number of ways, by filtration for example. By removing organic matter, the remaining water and sludge can be treated more cost-effectively and the decomposition process that generates methane can be minimized. Organic residue can also be refined into fertilizer for plantation use and reduce the need for chemical fertilizers.

Methane is 20 times more potent in terms of promoting climate change than CO_2, according to Neste Oil's Sustainability Manager in Singapore, Adrian Suharto.

"Because of the major climate impact that it has, recovering methane or preventing it from being formed in the first place are highly effective ways to reduce the overall level of greenhouse gases generated by renewable fuel."

Benefits for village communities as well as the environment

Reducing greenhouse gas emissions is far from being the only benefit to result from methane recovery, as methane can also be used to generate electricity, benefiting not only pressing plants but local communities as well.

"When pressing plants are able to generate their own electricity, they can make major savings in their fuel costs," explains Adrian. "And if a plant is grid-connected, it can earn extra income by selling its surplus electricity to the grid."

Given the high level of investments involved, only a fraction of palm oil pressing plants in Malaysia and Indonesia currently have methane recovery units in operation. Although Neste Oil does not own any palm oil pressing plants or oil palm plantations, its aim is to help palm oil producers acquire methane recovery systems or equipment to help prevent it being generated in the first place, and it is working on a number of research, funding, and collaborative-based alternatives.