

Neste Renewable Jet Fuel

The only way is forward


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NESTE



The world is constantly on the move

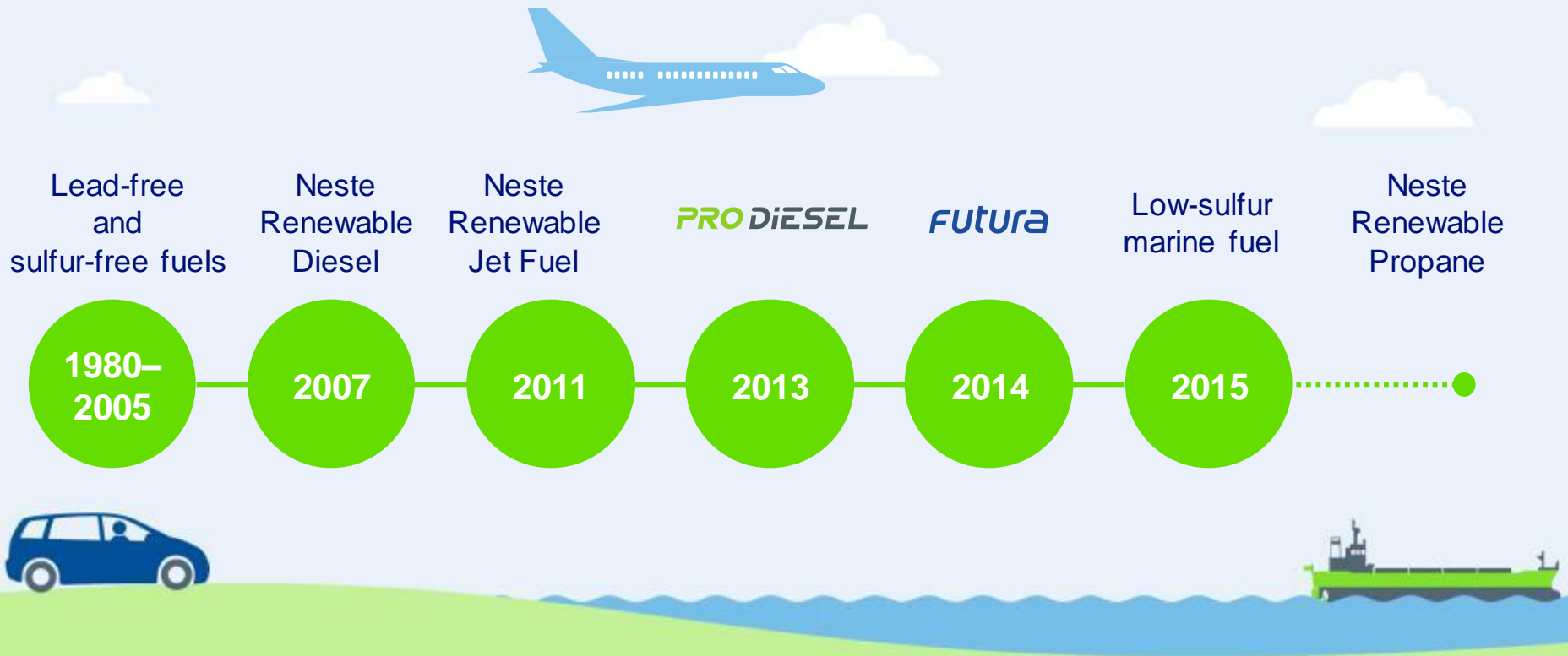


People and goods need to stay on the move

How much more can the nature take?

We need cleaner traffic and transport solutions

Cleaner solutions through the years



The world's largest company to produce renewable fuels from waste and residues



5

Empire State Buildings'

worth of waste and residues

2

billion litres

of renewable diesel

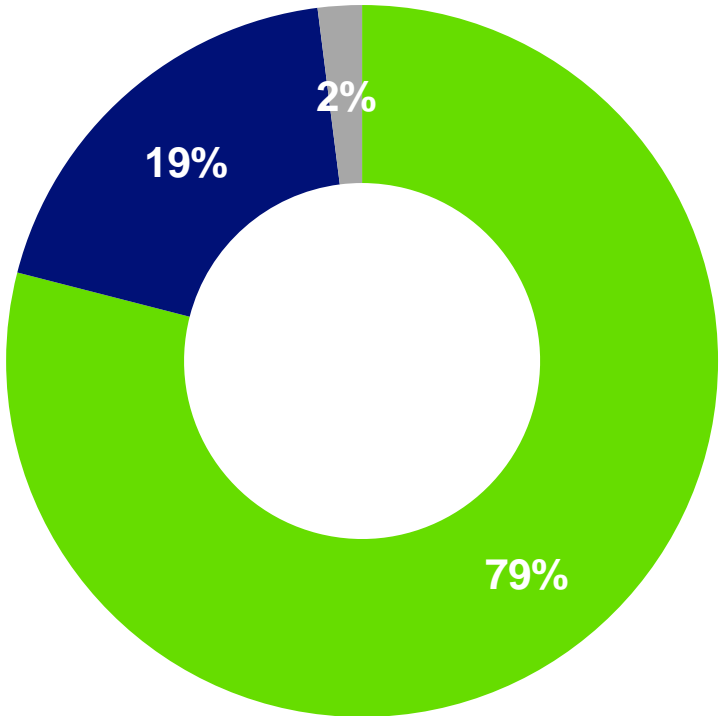
2

million cars

powered for a year

Waste and residues form nearly 80% of our renewable raw material inputs

Renewable raw material mix



In 2015, we achieved capability to use solely waste and residues as raw materials in our processing.

- Waste and residues (e.g. waste and residue fats from food processing, technical corn oil)
- Palm oil, 100% certified
- Other vegetable oils (e.g. rapeseed oil)

Neste's estimate for 2016.

Annual production capacity of renewable products is 2.4 Mt

Unit	Capacity	Year	Investment
Finland #1	200 000 t/a	2007	EUR 100 million
Finland #2	200 000 t/a	2009	EUR > 100 million
Singapore	1 000 000 t/a	2010	EUR 550 million
Rotterdam	1 000 000 t/a	2011	EUR 670 million

All Neste's renewable product plants are ISCC-EU and EPA-approved. Neste aims to increase production capacity to 2.6 million t/a by 2017.

ISCC-EU = International Sustainability & Carbon Certification; production volumes eligible for the EU biofuel market

EPA = Environmental Protection Agency; production volumes eligible for the US biofuel market

Our renewable products

Neste
Renewable
Fuels

Neste
Renewable
Chemicals



Neste
Renewable
Diesel

Neste
Renewable
Gasoline

Neste
Renewable
Propane

Neste
Renewable
Jet Fuel

Neste
Renewable
Isoalkane

Neste
Renewable
Naphta

Neste
Renewable
Propane

Neste Renewable Jet Fuel

- Offers airlines an easy way to cut their emissions
- Compatible with existing jet engines
- High energy content (MJ/kg), no aromatics, reduces CO₂ and sulphur emissions
- Complies with ASTM D7566 specification
- Already available at industrial scale

Proven high-level performance already in 2011

“ Our burnFAIR project went off smoothly and to our fullest satisfaction. As expected, the biofuel proved its worth in daily flight operations.” Joachim Buse, Vice President Aviation Biofuel at Lufthansa

1,187

Commercial
Lufthansa flights

1,600 tons

of Neste Renewable Jet
Fuel
blend consumed
(50% blend)

1,500 tons

reduction in CO₂
emissions

Oslo Airport the first in the world to offer Neste Renewable Jet Fuel since January 2016



- Neste has produced renewable jet fuel to be used by airlines Lufthansa, KLM and SAS at Oslo airport
- The fuel is transferred to Oslo as a 50% blend with conventional jet fuel
- For the first time, the distribution takes place via the airport's existing distribution system (hydrant)
- The fuel was produced in Porvoo, Finland, as part of the EU-funded ITAKA* project
- The feedstock is 100% certified camelina oil

* <http://www.itaka-project.eu/default.aspx>

Fuel standard specification development

"The airplane performed as designed with the green diesel blend, just as it does with conventional jet fuel. This is exactly what we want to see in flight tests with a new type of fuel." Captain Mike Carriker, Chief Pilot Boeing Product Development and 777X

- Boeing is leading the effort and Neste collaborates with Boeing
- Target is to amend the existing ASTM D7566 fuel standard specification (Annex A2)
- In Dec 2014, Boeing successfully tested Neste Renewable Jet Fuel in 15% blend in Boeing's 787 ecoDemonstrator

Why new fuel, HEFA vs. HEFA+?

- Targeted benefits:
 - Fuel supply should increase
 - Lower blends should encourage airlines to use the fuel
- What remains the same: High quality fuel that is safe to use by all aircrafts
- Main difference:
 - Blend ratios: HEFA* max. 50%, HEFA+ max. 15% (estimate)

*HEFA=Hydroprocessed Esters and Fatty Acids



Thank you!
Kiitos!



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