



# NEXBTL

# Renewable Diesel

Low-carbon solution for all diesel engines


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Neville Fernandes

**NESTE OIL**



# Safe Harbor Statement

The following information contains, or may be deemed to contain, “forward-looking statements”. These statements relate to future events or our future financial performance, including, but not limited to, strategic plans, potential growth, planned operational changes, expected capital expenditures, future cash sources and requirements, liquidity and cost savings that involve known and unknown risks, uncertainties and other factors that may cause Neste Oil Corporation’s or its businesses’ actual results, levels of activity, performance or achievements to be materially different from those expressed or implied by any forward-looking statements. In some cases, such forward-looking statements can be identified by terminology such as “may,” “will,” “could,” “would,” “should,” “expect,” “plan,” “anticipate,” “intend,” “believe,” “estimate,” “predict,” “potential,” or “continue,” or the negative of those terms or other comparable terminology. By their nature, forward-looking statements involve risks and uncertainties because they relate to events and depend on circumstances that may or may not occur in the future. Future results may vary from the results expressed in, or implied by, the following forward-looking statements, possibly to a material degree. All forward-looking statements made in this presentation based on information presently available to management and Neste Oil Corporation assumes no obligation to update any forward-looking statements. Nothing in this presentation constitutes investment advice and this presentation shall not constitute an offer to sell or the solicitation of an offer to buy any securities or otherwise to engage in any investment activity.

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1. Neste Oil in Brief
  2. NEXBTL renewable diesel
  3. NEXBTL renewable propane, renewable jet fuel, renewable aviation diesel
  4. Carbon footprint, raw materials and sustainability

# Neste Oil in brief

A refining and marketing company focused on **low-emission, high-quality traffic fuels**

Refining capacity:

- 260,000 bpd of **petroleum products**
- 44,000 bpd of **renewable diesel**

**World leader and pioneer in renewable diesel;** Neste has invested billions of dollars in renewable fuels

World headquarters in Helsinki, Finland

**US office in Houston, Texas**

Net sales:  
\$15 billion (2014)

Operations in 14 countries

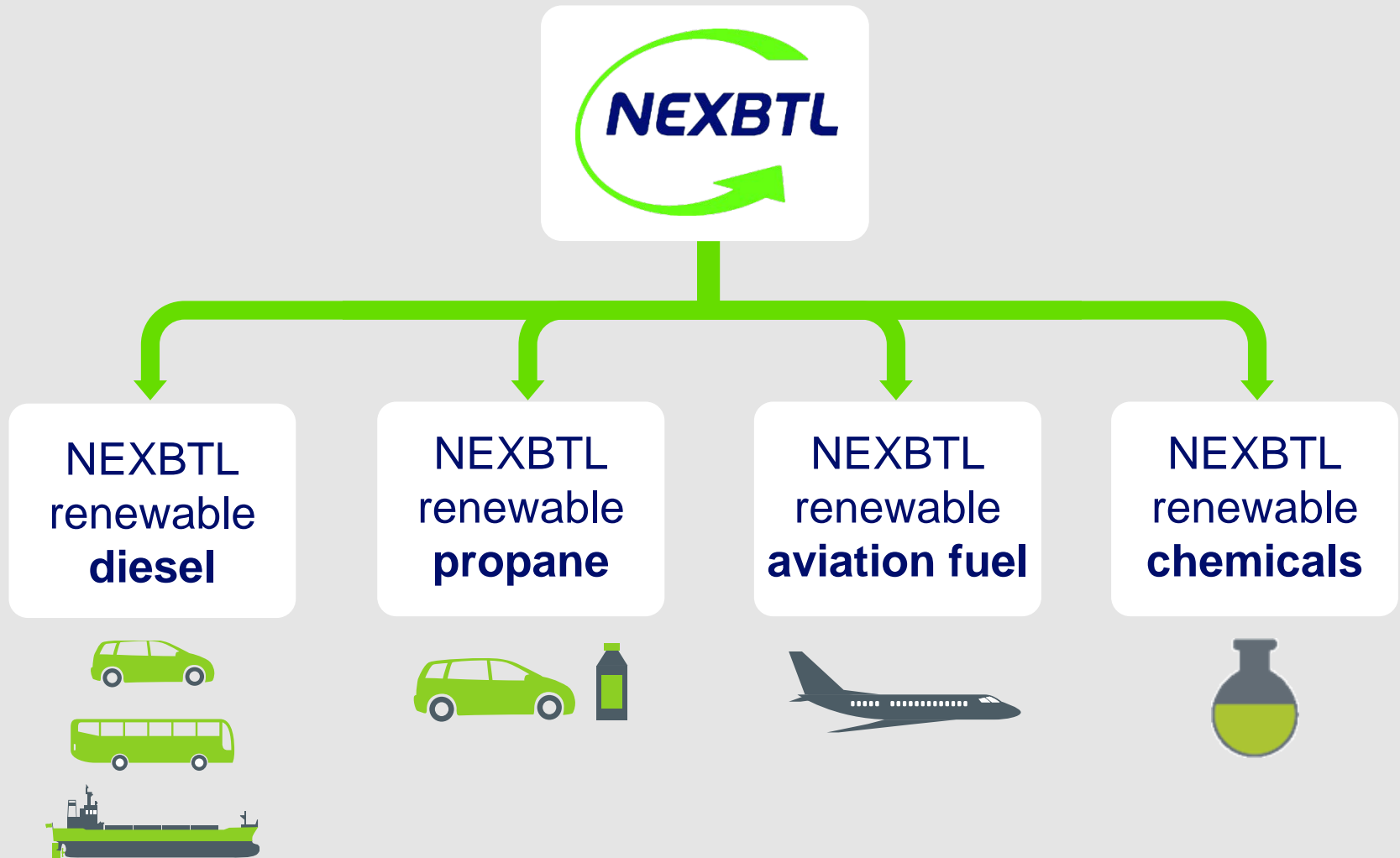
employs approx. 5,000 people

# Official name change 1st June 2015



**NESTE**  
The only way is forward

# Neste is a global leader in renewable fuels



# Global leader in renewable diesel

<u>Location</u>	<u>Capacity</u>	<u>Investment</u>	<u>Completed</u>
1. Finland #1	190 000 tons	€100 million	2007
2. Finland #2	190 000 tons	€100 million	2009
3. Singapore	800 000 tons	€550 million	2010
4. Rotterdam	800 000 tons	€670 million	2011



# NEXBTL renewable hydrocarbon diesel is fully compatible with petroleum diesel

	Biodiesel	Petroleum diesel	NEXBTL Renewable diesel	BTL
<b>Raw material</b>	Vegetable oils & waste animal fats	Crude oil (mineral oil)	Vegetable oils & waste animal fats (including high free fatty acids)	Biomass
<b>Technology</b>	Esterification	Traditional refining	Hydrotreating	Gasification & Fischer-Tropsch
<b>End product</b>	Ester	Hydrocarbon (gasoline, jet fuel, diesel)	Bio-based hydrocarbon (renewable diesel, jet fuel, bionaphta, biopropane)	Bio-based hydrocarbon (renewable gasoline, jet fuel, diesel)
<b>Chemical composition</b>	$\begin{array}{c} \text{O} \\    \\ \text{H}_3\text{C-O-C-R} \end{array}$	$\text{C}_n\text{H}_{2n+2}$ + aromatics	$\text{C}_n\text{H}_{2n+2}$	$\text{C}_n\text{H}_{2n+2}$

FAME = Fatty Acid Methyl Ester, conventional biodiesel

RME = Rapeseed Methyl Ester, conventional biodiesel

HVO = Hydrotreated Vegetable Oil, advanced biofuel i.e. renewable fuel

BTL = Biomass to Liquid



# Fuel property comparison

	Biodiesel	NEXBTL Renewable Diesel
Viscosity at +40° C (mm <sup>2</sup> /s)	≈ 4.5	2.9 ... 3.5
Cetane number	≈ 51	≈ 84 ... 99 *1
Cloud point (° C)	≈ - 5	≈ - 5 ... - 25*3
Heating value (lower) (MJ/kg)	≈ 38	≈ 44
Heating value (MJ/l)	≈ 33	≈ 34
Polyaromatic content (wt-%)	0	0
Oxygen content (wt-%)	≈ 11	0
Sulfur content (mg/kg)	< 10	< 10
Carbon / hydrogen		≈ 5.6

Note \*1: Blending cetane number

Note \*2: ASTM specification > 40

Note \*3: Product can be engineered to specific cloud point within this range by adjusting process conditions

# Diverse demand for NEXBTL, as blending component and 100% use



**Municipal and private bus fleets**



**Truck fleets**



**Construction; Mining**



**Agricultural machinery**



**Aviation**



**Marine**



**Emergency generators**

# Low-carbon NEXBTL renewable diesel is ideal for fleet operations



## High performance

Free of sulfur, oxygen, and aromatics. Together with a high cetane number of 75-95 the fuel ensures an efficient and clean combustion.



## Smaller environmental footprint

Reduces greenhouse gas emissions by up to 90% in addition to sizable reductions in tailpipe emissions.



## Lower operating costs

Longer service and maintenance intervals than for other alternative fuels.



## Superior cold weather performance

Suitable for very cold weather conditions. No matter the feedstock, Neste guarantees its fuel will exceed cold temperature requirements.



## Long shelf life

Can be stored over long periods of time with no deterioration in quality or water accumulation.




## Easy switch; no additional investments

Fleets can switch to NEXBTL renewable diesel overnight without any conversion of vehicles or to logistics systems.

# Satisfied fleet customers

- NEXBTL renewable diesel has been used in USA since 2012
- Over 40 million gallons used by many fleets including long haul operators, bus companies, delivery operators, cities and municipalities, school districts, mines, super market chains and corporations with extensive sustainability programs
- Key customer satisfaction points:
  1. Low-carbon
  2. Fully fungible
  3. High performance



*“Our experience has been extremely positive in our own fleet. We have experienced zero customer complaints or issues.”*

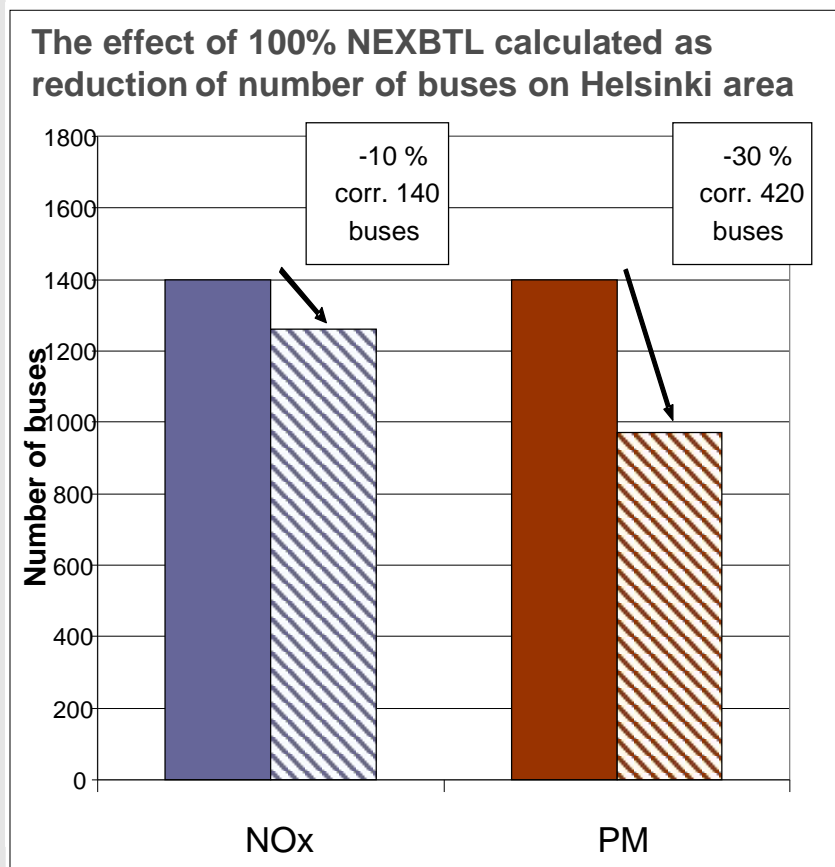
**Pat O’Keefe,  
Vice President,  
Golden Gate Petroleum**

# Urban transit assessment in Helsinki Finland with good results

- NEXBTL renewable diesel run in buses in Helsinki Finland to assess its performance and benefits in terms of emissions (2007 – 2010)
- Over 5 million gallons of fuel in 300 buses – over 30 million miles
- 100% and 30% NEXBTL tested and commercial use continues



# Results of the bus trial in Finland



- Average emission reductions with 100% NEXBTL diesel
  - NOx-emissions: -10 %
  - PM-emissions: -30 %
  - CO-emissions: -35 %
  - THC-emissions: -40 %
  - PAH compounds: reduced significantly
- Standard service interval
- No changes in fuel logistics
- No operability issues with blend or 100 % NEXBTL
- Average daily low temp in 2009 was app. negative (-) 20 °C
- Winter grade NEXBTL had cloud point of negative (-) 25 °C
- There are approximately 1400 urban buses in the Helsinki area

# Propel Fuels selling NEXBTL at its stations in Northern California



- California based Propel Fuels has launched California's most advanced low carbon diesel fuel called Diesel HPR (High Performance Renewable) at its retail stations
- Diesel HPR contains 98.5% Neste's NEXBTL and is available at 18 locations across Northern California
- The sales of Diesel HPR started in March 2015 and has been very well received by customers

*"HPR has exceeded our expectations- customer traction has been immediate and significant, feedback has been overwhelmingly positive, and we see phenomenal growth potential."*

**Rob Elam**  
CEO, Propel Fuels



# What do manufacturers say?

**DELPHI**



**BOSCH**  
Invented for life

**STANADYNE**

**DENSO**

**Continental**

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Fuel Requirements for Diesel Fuel Injection Systems  
Diesel Fuel Injection Equipment Manufacturers  
Common Position Statement 2009

The FIE manufacturers support the use of bio-paraffins obtained by hydro-treatment of plant oil.



# OEM Testing

**VOLVO**

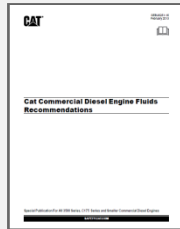
Ongoing tests for trucks with positive result



Marine and construction equipment: ASTM D975 compliance approved

**VOLVO PENTA**

**CATERPILLAR**



ASTM D975 compliant fuels approved



**JOHN DEERE**



NEXBTL approved through fluids specification A001061/35E 04/2012

Approved diesel fuels for MTU engines  
Commercially available diesel fuels meeting the following specifications are approved for use:

Distillate fuels

DIN EN 590 and ASTM D975

Fuel specifications	DIN EN 590:2010-05	ASTM D975-11	ASTM D975-11
Summer and winter quality	S 15, S 500, S 5000	Grade 1-D S 15, S 500, S 5000	Grade 2-D S 15, S 500, S 5000
Restrictions	- SOLAS: Flashpoint min. 60 °C - Particle distribution for fuel in tank: max. ISO classes 18/17/14	- SOLAS: Flashpoint min. 60 °C - Proportion of water: Max. 200 mg/kg - Total contamination: Max. 24 mg/kg - Particle distribution for fuel in tank: max. ISO classes 18/17/14 - With exhaust aftertreatment: Sulfur content max. 15 mg/kg	

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# Bio Propane production to start in 2016

- Neste is investing 60 million euro to produce bio-propane at its refinery in Rotterdam
- Production is expected to total 30,000-40,000 tones/year and will start in 2016
- New unit will purify and separate bio-propane from the side stream gases produced by the refinery
- Replacing existing fossil fuels with bio-propane will result in significant carbon savings

- Neste's bio-propane is comparable to fossil propane and is suitable for use in existing liquefied petroleum gas (LPG) applications
- SHV Energy will market and sell 160,000 tons of bio-propane over a four-year period

"LPG already provides our customers with a cleaner rural energy choice to the high-carbon fuel alternatives many are dependent on in off-grid areas. Bio-propane means this option will become even cleaner.."

**Fulco van Lede,**  
**Management Board Member of SHV**

# Sky high standards with NEXBTL renewable aviation fuel

## Renewable jet fuel (HEFA)

- Offers airlines an easy way to lower their carbon footprint
- High energy content (MJ/kg), no aromatics, or sulphur
- Complies with ASTM D7566
- Available at commercial scale
- Lufthansa has tested the fuel (50% blend) on 1187 flights with excellent results

## Renewable aviation diesel

(aka high freeze point HEFA)

- Boeing successfully tested a 15% blend of NEXBTL renewable diesel in jet fuel
- ASTM is discussing specification for “high freeze point HEFA
- Lower blend ratio, but also lower cost than HEFA

“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

# Bioport for Jet Fuels in the Netherlands

- A Dutch initiative aimed at the deployment of sustainable biofuel in the aviation sector
- The target is to set up a supply chain and scale up the production of renewable jet in the Netherlands
- Workstreams: Feedstock, Production and End use



NESTE



Ministry of Infrastructure and the Environment



Ministry of Economic Affairs

# Initiative Towards sustainable Kerosene for Aviation (ITAKA)

- Project funded by the European Commission
- Target is to:
  - develop a full value-chain for sustainable, renewable jet production
  - test the fuel in existing logistic systems and normal flight operations in the EU
- Partners: SENASA (coordinator), Airbus, BIOTEHGEN, CLH, EADS, EPFL, Embraer, MMU, Neste Oil, SkyNRG, CCE, RE-CORD
- Total financing from the EC: 10 MEUR
- Duration: Nov 2012 – Oct 2015

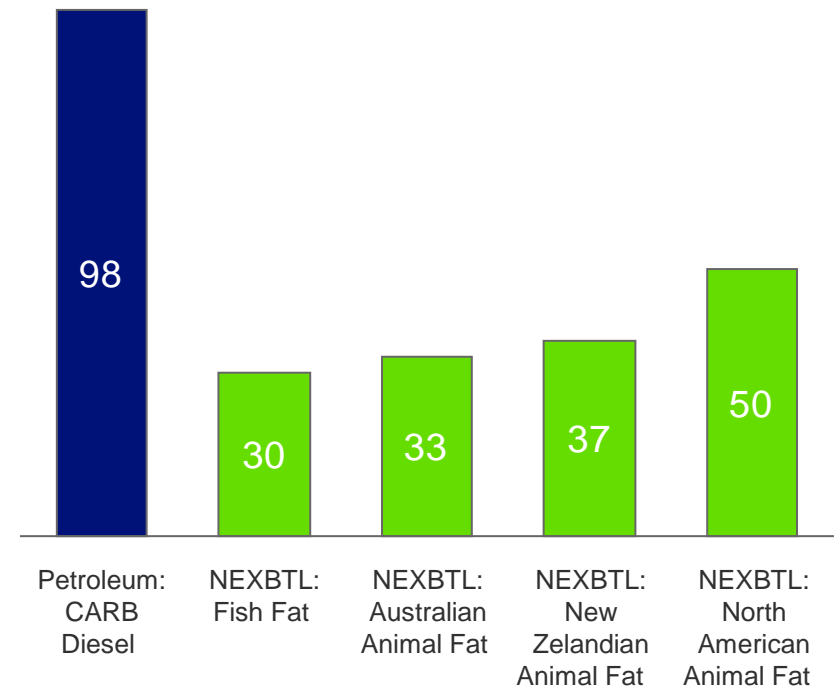
# Renewable diesel has lower carbon footprint compared to petroleum diesel

## Currently Used Raw Materials in California

- Neste Oil is currently the world's only biofuel producer capable of refining high-quality renewable hydrocarbon diesel from more than ten different raw materials on an industrial scale.
- In California NEXBTL renewable diesel is produced from:
  - Australian Animal Fat
  - New Zealandian Animal Fat
  - North American Animal Fat
  - South American Animal Fat
  - Fish Fat
- Produced in Neste Oil's Singapore plant and delivered with ocean going vessels

## GHG Emission Reduction

Carbon Intensities of different raw materials under CARB LCFS:



# Range of renewable raw materials

18.4.2013



Waste animal fat from the food processing industry



Waste fat from the fish processing industry



Palm fatty acid distillate (PFAD) and stearin



Technical corn oil



Tall oil pitch



Crude palm oil



Camelina oil



Jatropha oil



Soy oil



Rapeseed oil

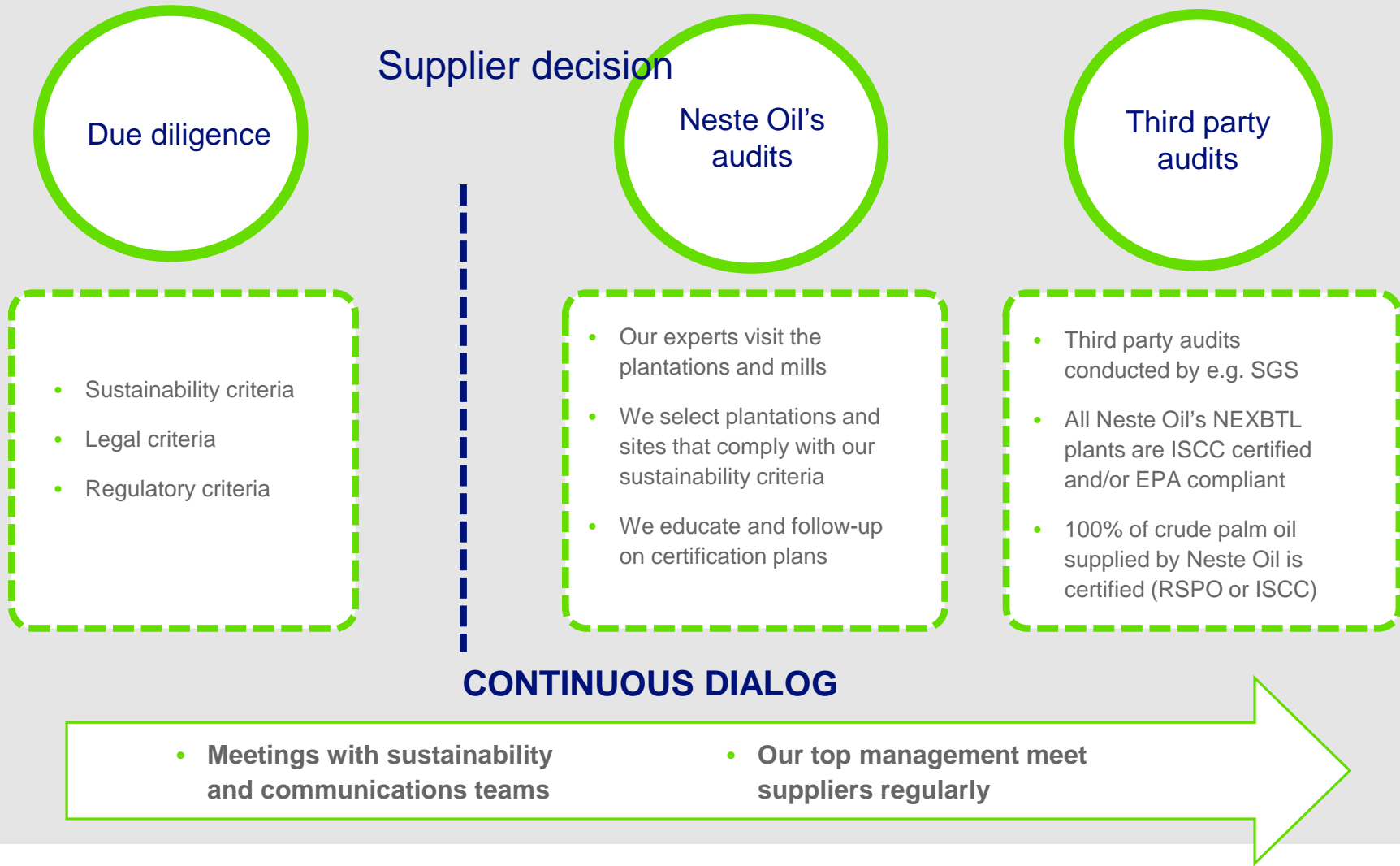
Neste Oil also procures bio-based ethanol from the global market to be used as a bio-component in 95 E10 and 98 E5 gasoline.

# Sustainable supply chain is a corner stone with our renewable raw materials





# Ensuring sustainable sourcing



# International recognition for our sustainability



**Dow Jones  
Sustainability Indexes**

Member since 2007/08



**OMXSUSTAIN**  
**NASDAQ OMX** INDEX  
OMX GES SUSTAINABILITY NORDIC



**GLOBAL 100**

# “Across USA with one tank of NEXBTL renewable diesel”



Follow us online  
June 20-26, 2015



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# Thank you

**Neste Oil US Inc.**

1800 West Loop S # 1700  
Houston, Texas 77027  
Tel. 1 (713) 407-4400  
[www.nesteoil.us](http://www.nesteoil.us)  
[usa@nesteoil.com](mailto:usa@nesteoil.com)