Sustainable Renewable Fuels Demand in Key Markets

Presentation at POTS KL 2018

Adrian Suharto
Director of Sustainability (interim)

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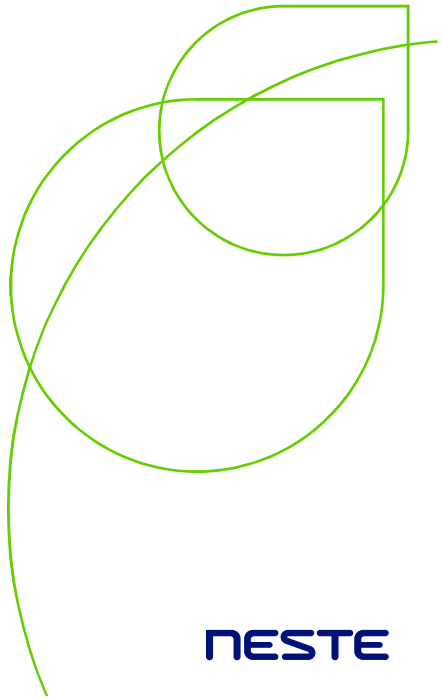


Global 100:
Neste – the world's
2nd
most
sustainable
company

*Figures at year end of 2017.

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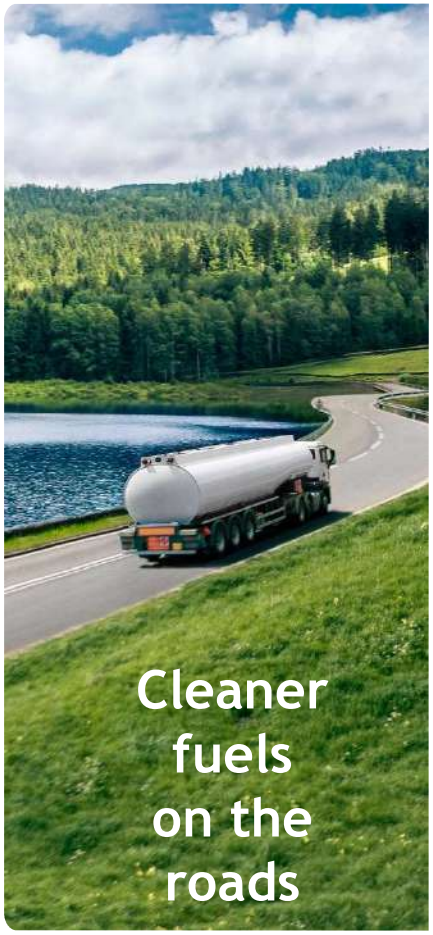
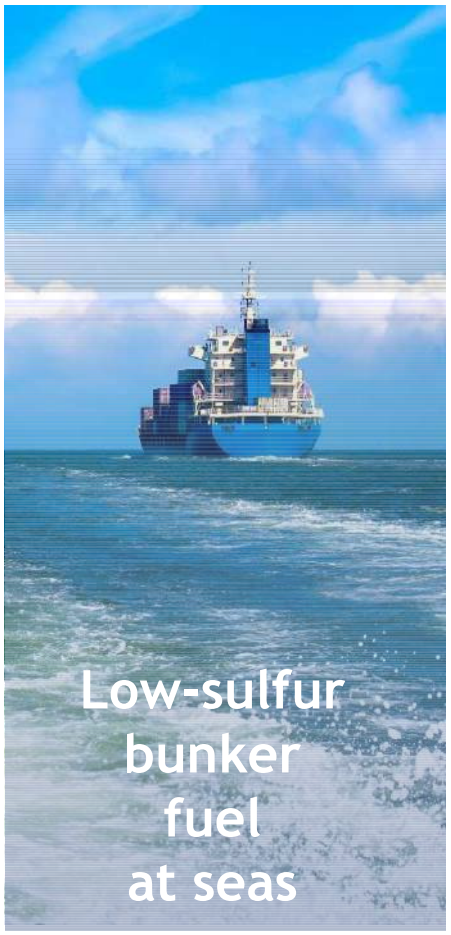

Cleaner
fuels
on the
roads


Low-sulfur
bunker
fuel
at seas


Renewable
solutions
for
chemicals
industry


Renewable
jet fuel in
the air

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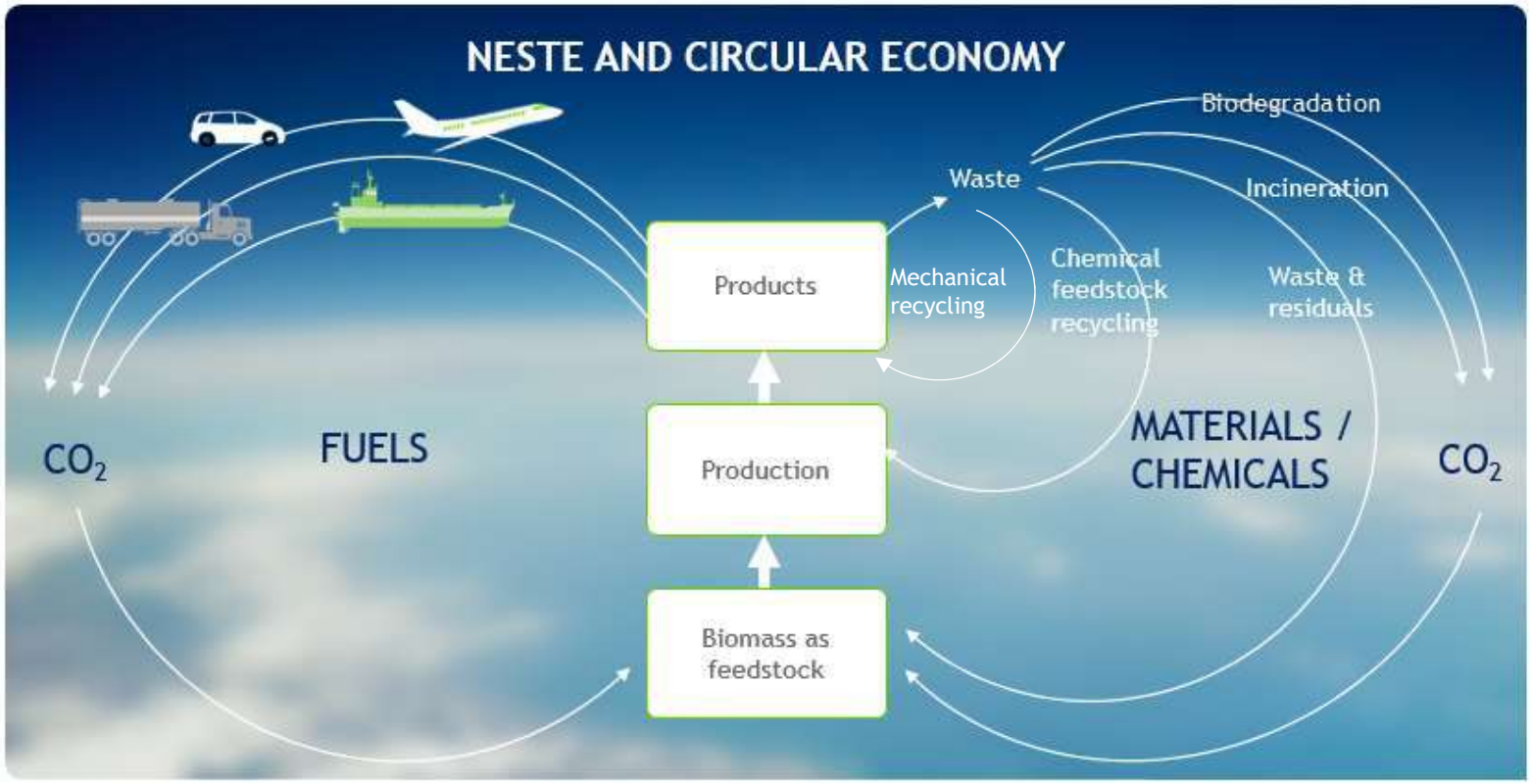
Neste has a unique position to develop and offer solutions increasing circularity



This material is confidential and intended for Neste internal use only

Broad range of renewable raw materials procured globally

75-80%
waste and residues

20-25%
vegetable oils

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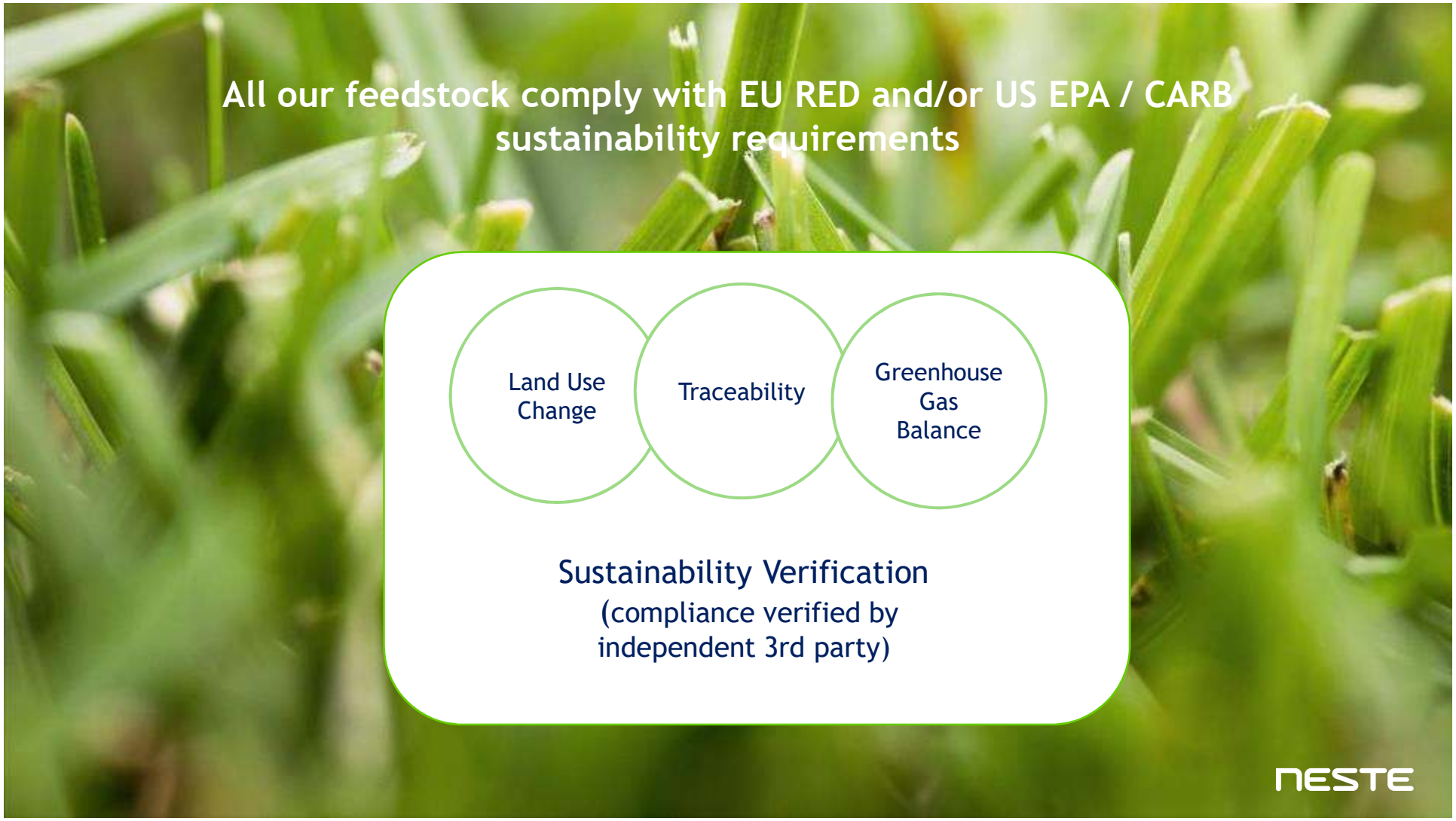
All our feedstock comply with EU RED and/or US EPA / CARB sustainability requirements
Land Use Change
Traceability
Greenhouse Gas Balance
Sustainability Verification
(compliance verified by independent 3rd party)
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The United States Renewable Fuels Standard 2 (US RFS2)

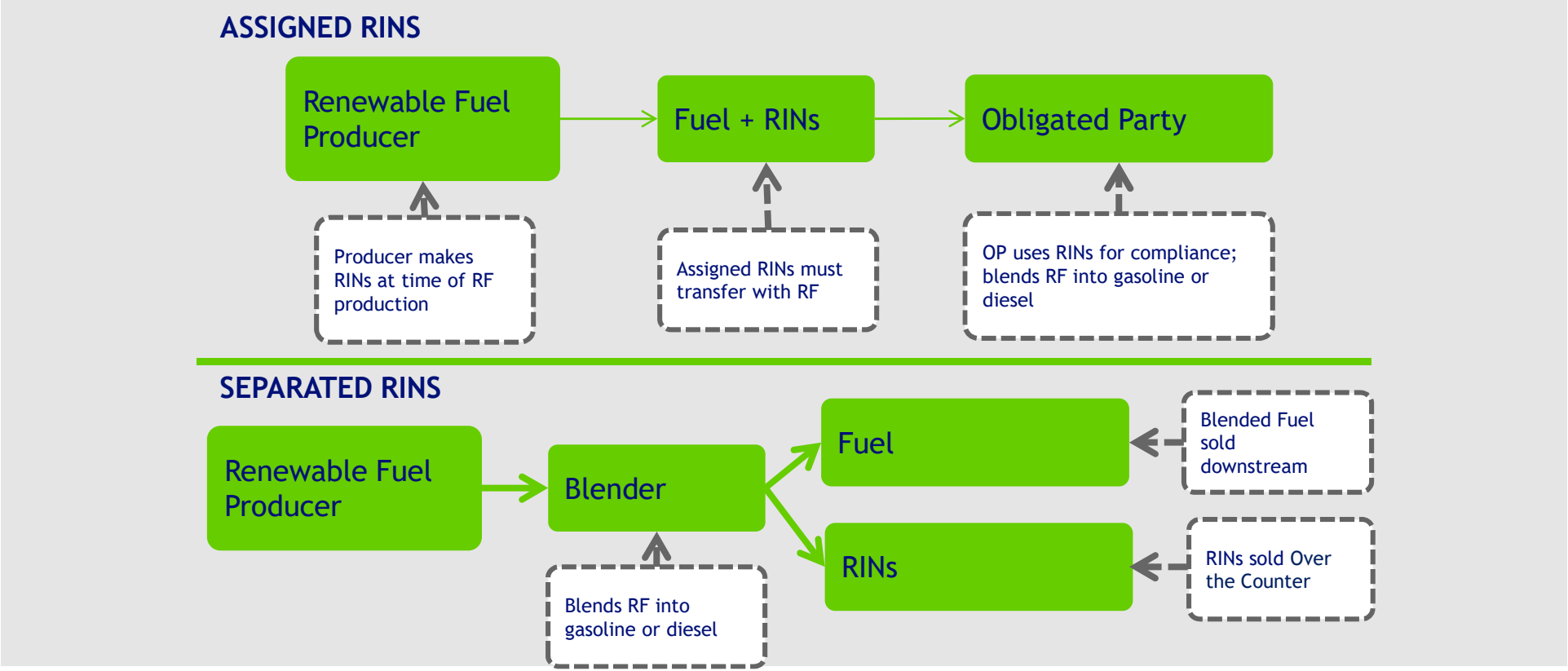
Brief on the RFS

- **United States Congress** created the Renewable Fuel Standard (RFS) as part of the Energy Policy Act of 2005 (H.R. 6 in the 109th Congress).
- RFS established a **tradable permit program** which sets the amount of biofuels to be consumed in the U.S. each year.
- Administered by **US Environmental Protection Agency** (EPA); sets required volumes on an annual basis
- Volumetric Standard, **Renewable Volume Obligation** (RVO); with fuels' energy content taken into consideration
- Measured by **Renewable Identification Numbers (RINs)** required by Obligated Parties (OP)

What about RINs?

- RIN is a regulatory tool used to ensure a minimum level of biofuels is produced and used.
- Each gallon of ethanol generates 1 RIN that can be either sold with the ethanol or separated and sold on the exchange.
- Obligated parties are required to purchase RINs each year which depends upon the number gallons of fossil fuels they sell / import.
  - Obligated parties are US based refiners, blenders and importers required to comply with RFS
  - Once Ethanol or any other Renewable Fuels has been blended with gasoline /or/ biodiesel with diesel, a RIN is generated.
  - RINs are submitted to the EPA to demonstrate compliance to RFS

Flow chart examples of RIN assignments



Renewable Volume Obligation Categories

RVO Category	Usable D Codes	GHG Saving Minimum Requirement
Celulosic Biofuels * Cell Eth, Diesel, Naptha	3, 7	60%
Biomass-Based Diesel * Biodiesel, Renewable Diesel	4, 7	50%
Advanced Biofuels * Sugarcane Eth, RD (non-hydrocarbon), naphtha	3, 4, 5, 7	50%
Total Renewable Fuel * Corn Ethanol	3, 4, 5, 6, 7	20%

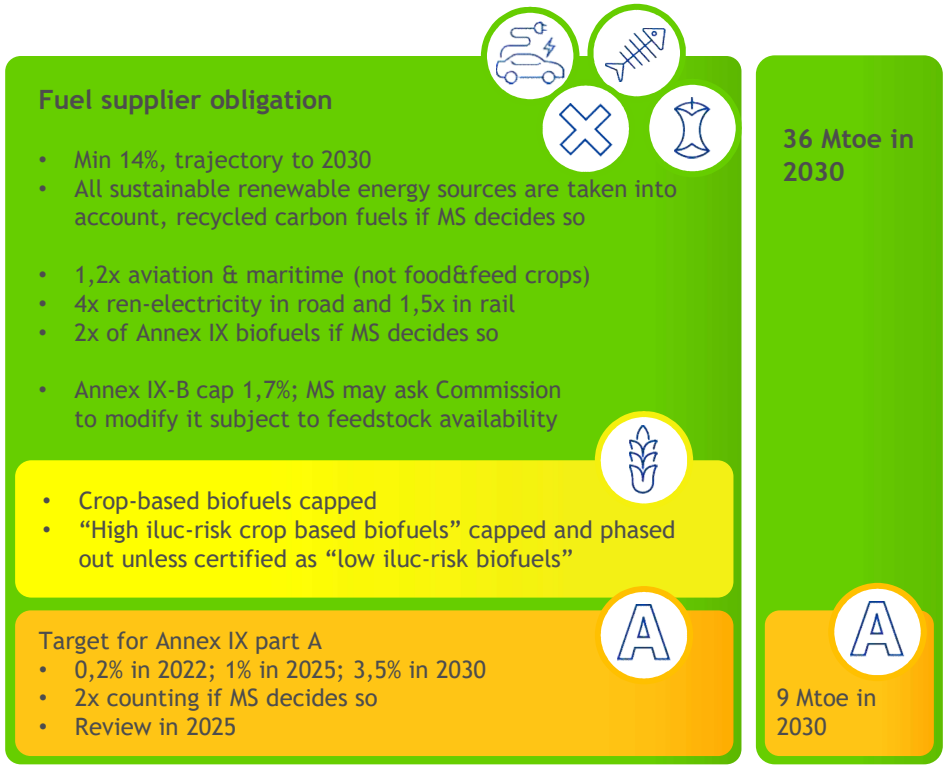
How about Palm Oil?

- Unlike regulation such as the EU RED, the RFS system adopts the pathway approach
  - This means feedstock have been analysed in a generalized approach
- Biodiesel and renewable diesel produced from palm oil have estimated lifecycle greenhouse gas (GHG) emission reductions of 17% and 11% respectively compared to petroleum-based diesel fuel
  - This means both palm oil-based biofuels would fail to qualify as meeting the minimum 20% GHG performance threshold for renewable fuel under the RFS program.
  - Details available at http://www.regulations.gov/#!docketBrowser;rpp=25;po=0;D=EPA-HQ-OAR-2011-0542

The European Union Renewable Energy Directive 2 (EU RED2)

RED II: a framework for biofuels in the EU - Key issues related to transport

- The Directive sets rules and targets for the years 2021-2030
- Minimum 14% renewables in the transport sector in each Member State in 2030
- All types of renewable energy sources are taken into account as long as they fulfil the sustainability criteria
- Caps for food and feed crop-based and UCO,AF1&2-based biofuels, and phase-out of palm oils unless certified as low iluc-risk crops
- A sub-target for biofuels and biogas produced from feedstocks listed in the Annex IX, part A
- Renewable fuels supplied to aviation and maritime will be 1,2 counted
- No large changes in waste hierarchy or sustainability criteria
- GHG limits -50%, -60% and -65% depending on the beginning of operation



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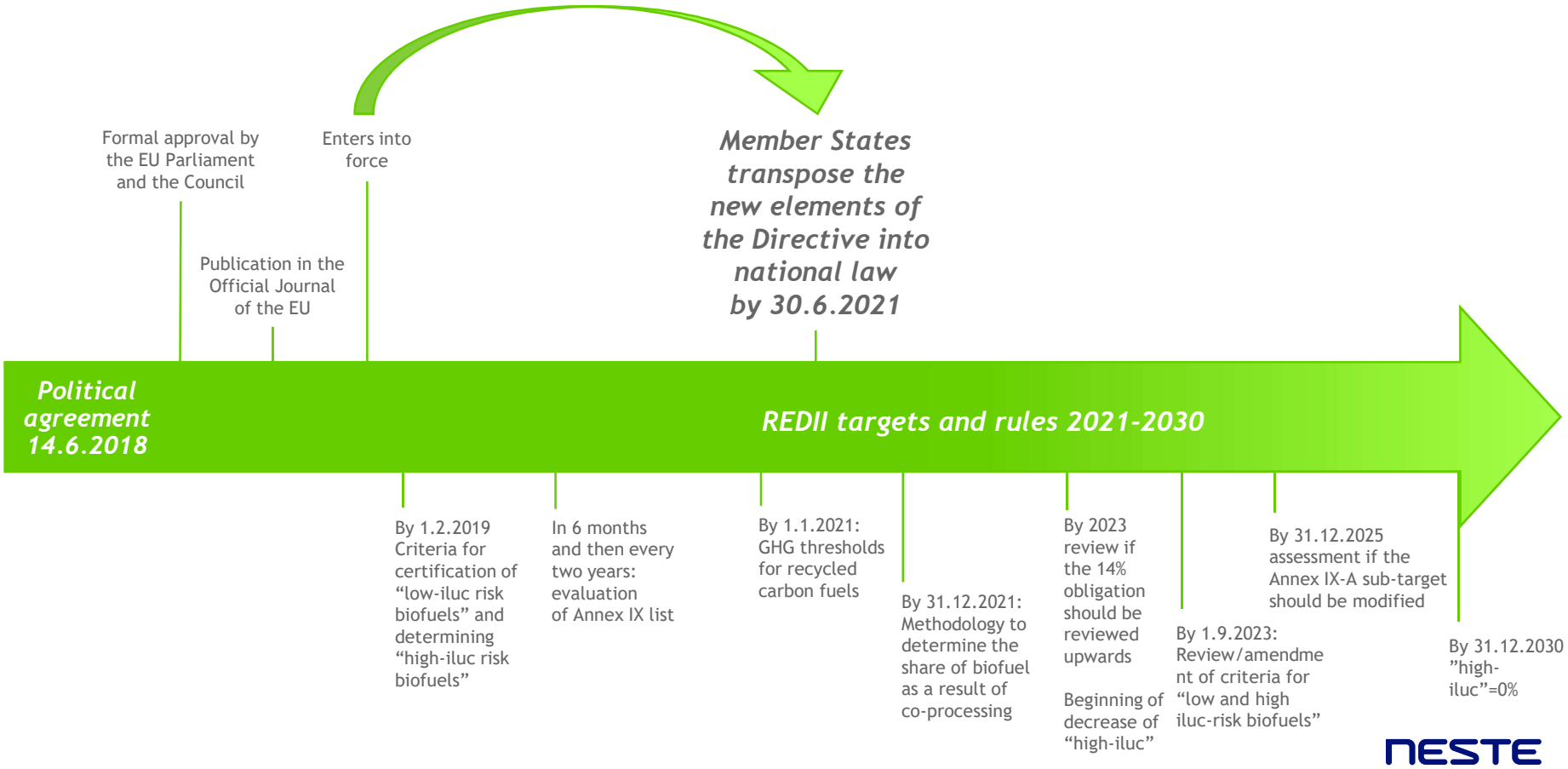
RED II Next steps



Feedstocks in RED II

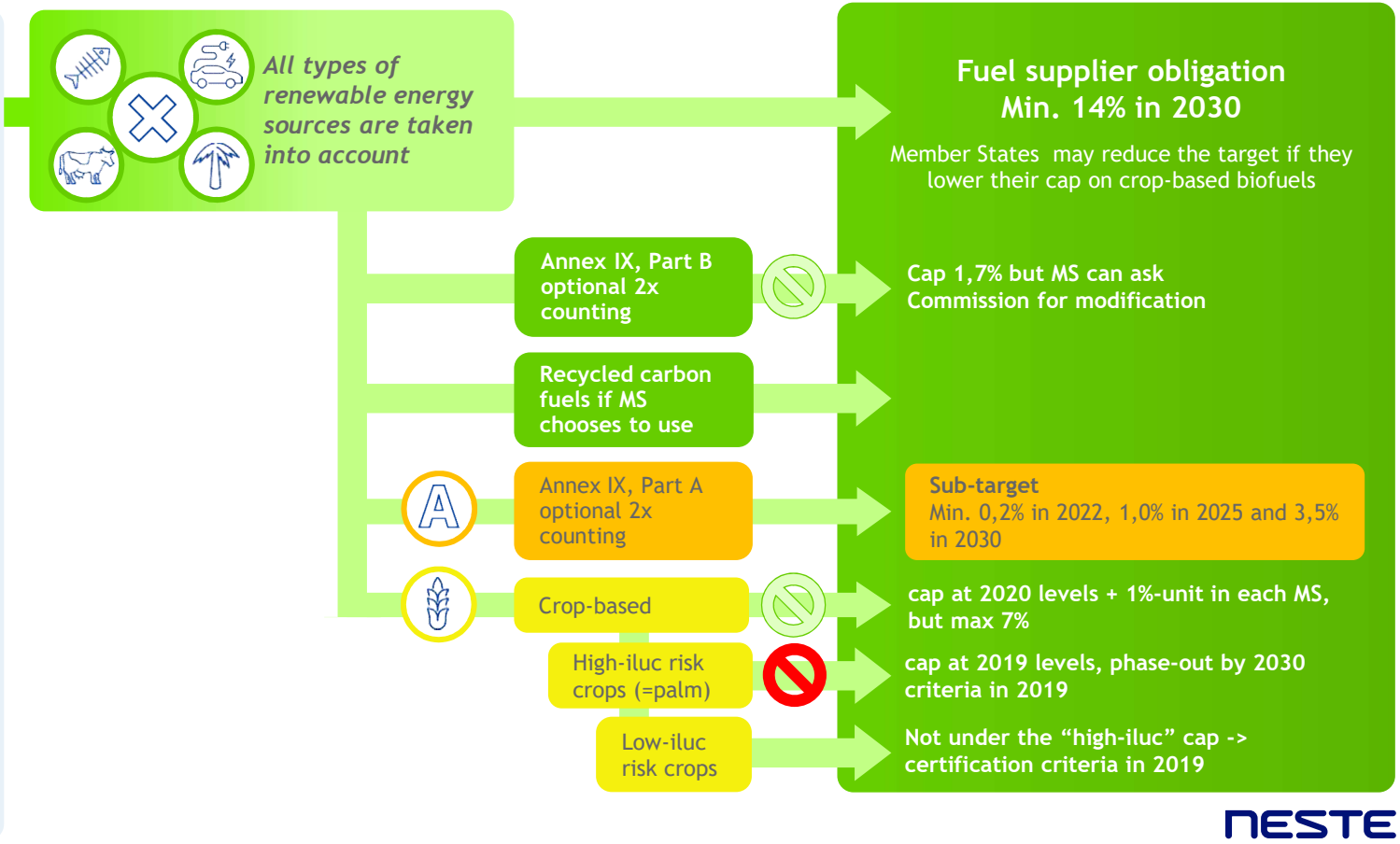
Sustainability criteria

No significant changes to sustainability criteria:

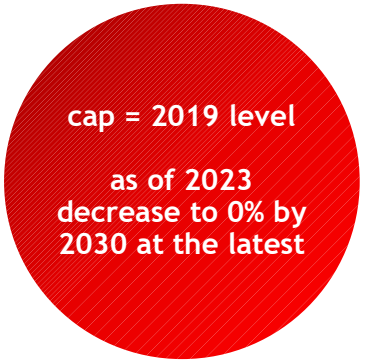
- Waste and residues will be traced and GHG calculated up to the point of collection as today
- Member States need to take waste hierarchy into account when designing their support schemes

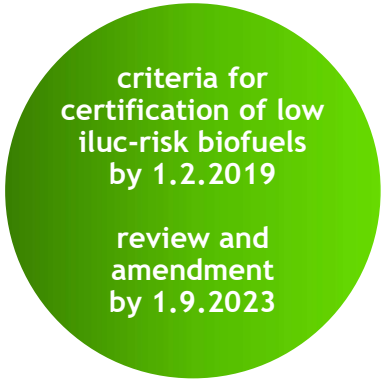
GHG saving limits:
Installation in operation:

- on or before 5.10.2015: at least 50%;
- from 5.10.2015: at least 60%;
- after 1.1.2021: at least 65%.



High iluc – low iluc risk crops





"high indirect land-use change risk food or feed crop-based biofuels, bioliquids and biomass fuels produced from food or feed crops for which a significant expansion of the production area into land with high carbon stock is observed"

Art 25(1): "shall not exceed the level of consumption in 2019 in the Member State, unless they are certified as low indirect land-use change-risk biofuels, bioliquids and biomass fuels"

Art 2 (v): 'low indirect land-use change-risk biofuels and bioliquids' means biofuels and bioliquids, the feedstocks of which were produced within schemes

- which avoid displacement effects of food and feed crop based biofuels, bioliquids and biomass fuels **through improved agricultural practices**,
- as well as the cultivation of crops on areas which were **previously not used for cultivation of crops**

and which were produced in accordance with the sustainability criteria for biofuels and bioliquids set out in Article 26;

**note that the directive does not have any references to the ILUC values presented in Annex VIII*

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Opportunities

The need for facts and data, less emotional campaigns

Effective joint campaign along all producing countries

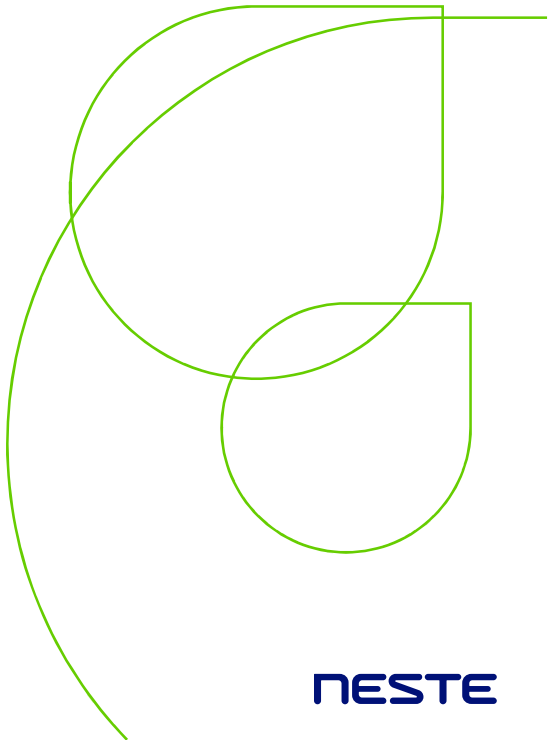
Stories about successes, improvements

Dialog with regulators and influencers

Effective regulations: Stronger ISPO and MSPO

Summary

- Palm Oil has a challenging regulatory environment in key developed markets
- However the world could not live without palm oil
- Set sustainability perception of palm oil needs to change
- Stakeholders have to come up with facts and data to support this argument and debunk wrong perceptions
- RED2 processes has a long way to go, and we have the opportunity to make influence

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The only way is forward