Traffic fuels and legislation – future prospects

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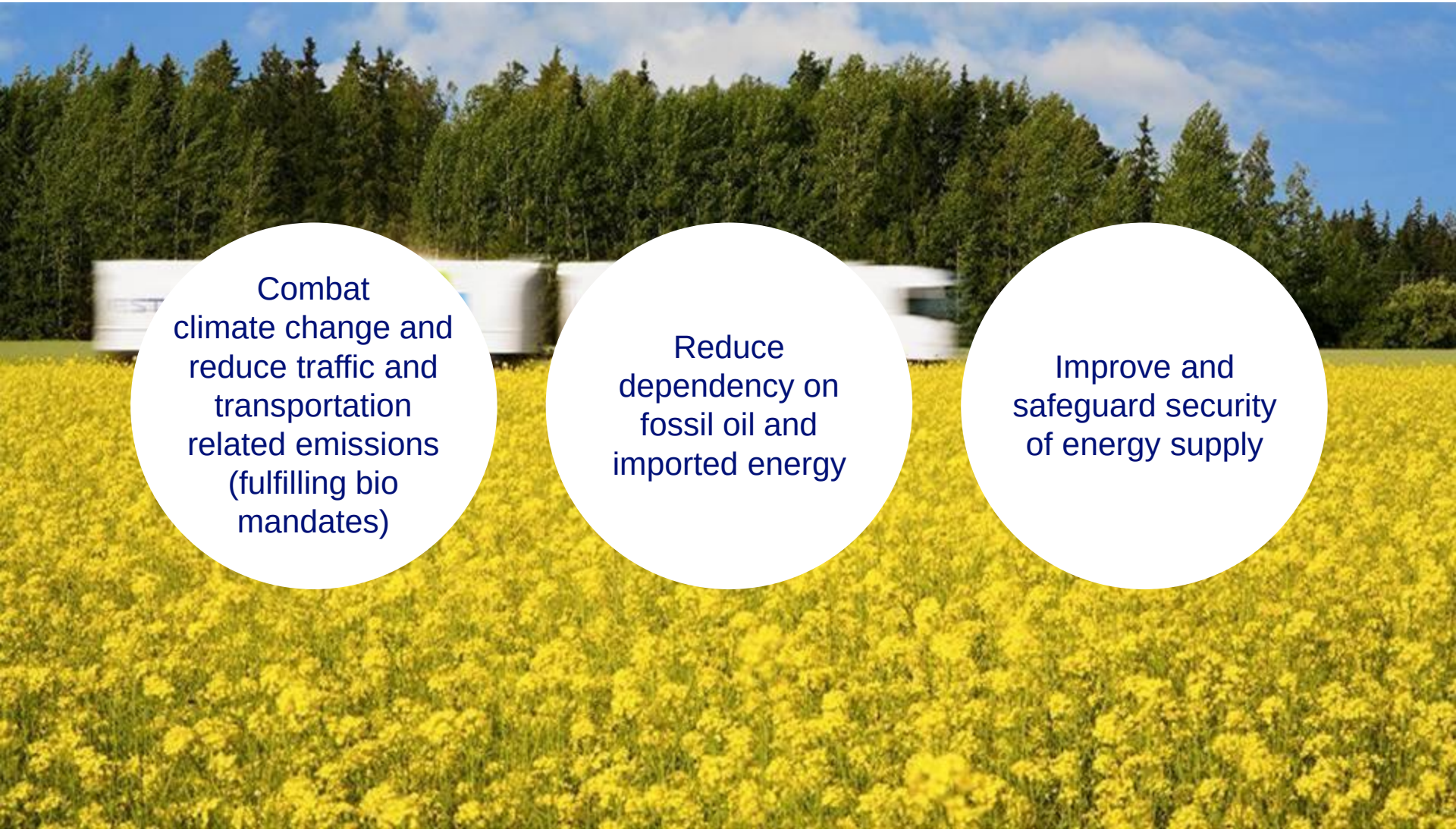
Table of contents

Challenges

The world is constantly on the move

Biofuels are part of the solution



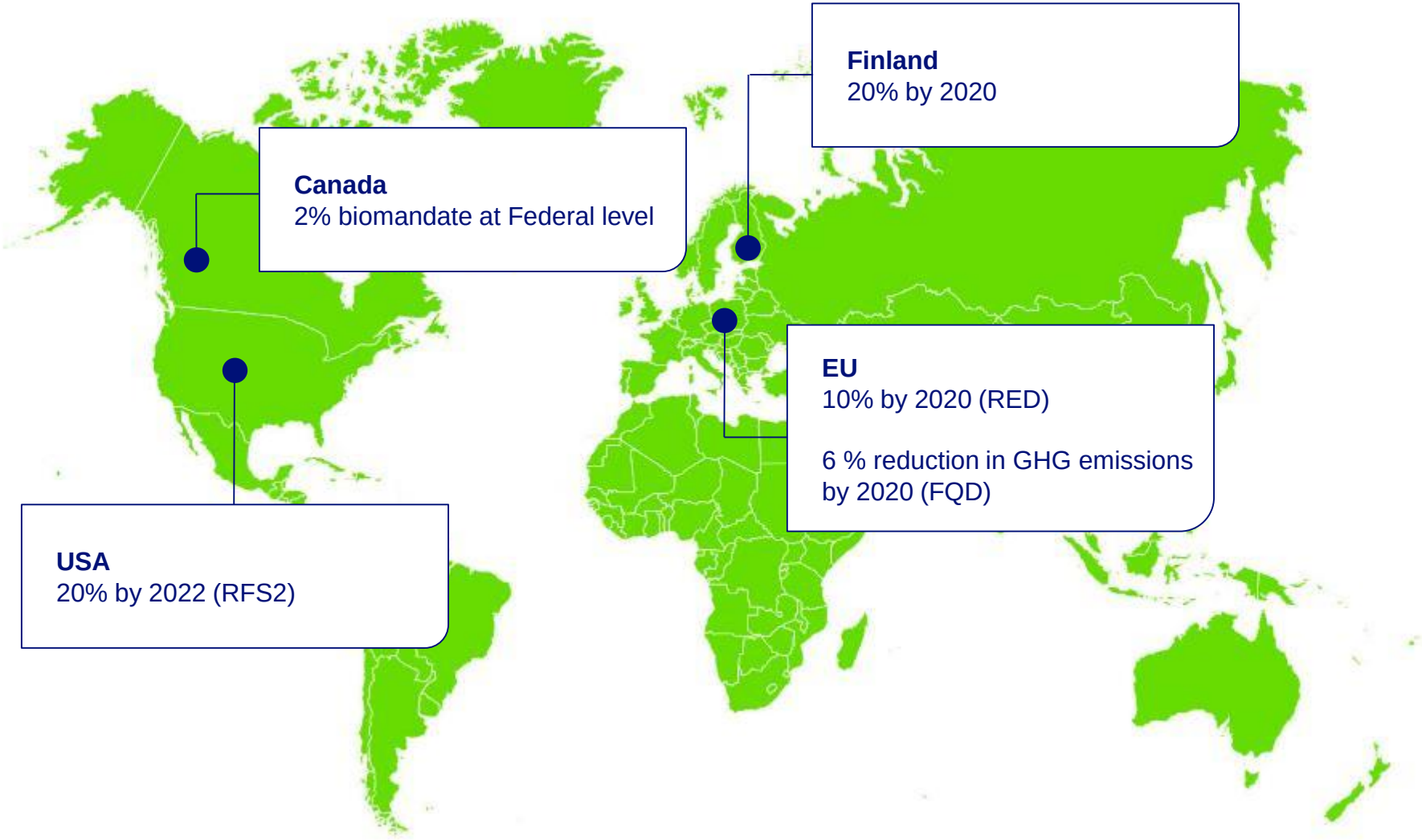
Combat climate change and reduce traffic and transportation related emissions (fulfilling bio mandates)

Reduce dependency on fossil oil and imported energy

Improve and safeguard security of energy supply

Renewable fuels

Targets set for renewable fuel use



Biofuels in traffic

Blended with gasoline	Blended with diesel	
Ethanol	FAME = Biodiesel	HVO = Renewable diesel
Can be added to fossil fuel up to 0–10 %	Can be added to fossil diesel up to 0–7%	Can be added to fossil diesel up to 0–100%

Raw materials

Corn, cereal, sugars

Vegetable oils, animal fats

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HVO - Fully compatible with fossil diesel

	Biodiesel (FAME / RME)	Fossil diesel	Renewable diesel (HVO) e.g. NEXBTL
Raw material	Vegetable oils and animal fats (mainly rapeseed oil)	Crude oil (mineral oil)	Flexible mix of raw materials (vegetable oils and waste fats)
Technology	Esterification	Traditional refining	Hydrotreating
End product	Ester-based, conventional biodiesel	Hydrocarbon (gasoline, jet fuel, diesel)	Bio-based hydrocarbon (renewable diesel, jet fuel, bionaphta, biopropane)
Chemical composition	O II H_3C-O-C-R	C_nH_{2n+2} **+ aromatics**	C_nH_{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

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EU directives

Alternative fuels infra directive “AFI” 2014/94/EU

Targets

- reduction in dependence on crude oil
- -60 % GHG by 2050
- union-wide mobility with alternative fuels
- cost efficiency
- actions 2020-> to meet 2050 targets

Fuels & energies mentioned

- synthetic, paraffinic, biofuels, LPG, CNG, LNG, CBG, LBG, H2, electricity, etc.
- in principle technically neutral, open for all new solutions

Support mechanisms

- national policies for market development
- achieve enough alternative fuel vehicles
- incentives, tax incentives

Current situation of alternative fuels

HVO (in any proportion): Suitable for all diesel vehicles FAME (100%): Suitable to some specific models	Electric vehicles: ~0.05% of all passenger cars in EU	E85 (FFV vehicles): <0.5% of all passenger cars in EU ED95 vehicles: Some thousand	Hydrogen vehicles: < 1000 globally	Natural gas vehicles: <0.5% of all vehicles in EU	LPG vehicles: ~2.5% of all vehicles in EU

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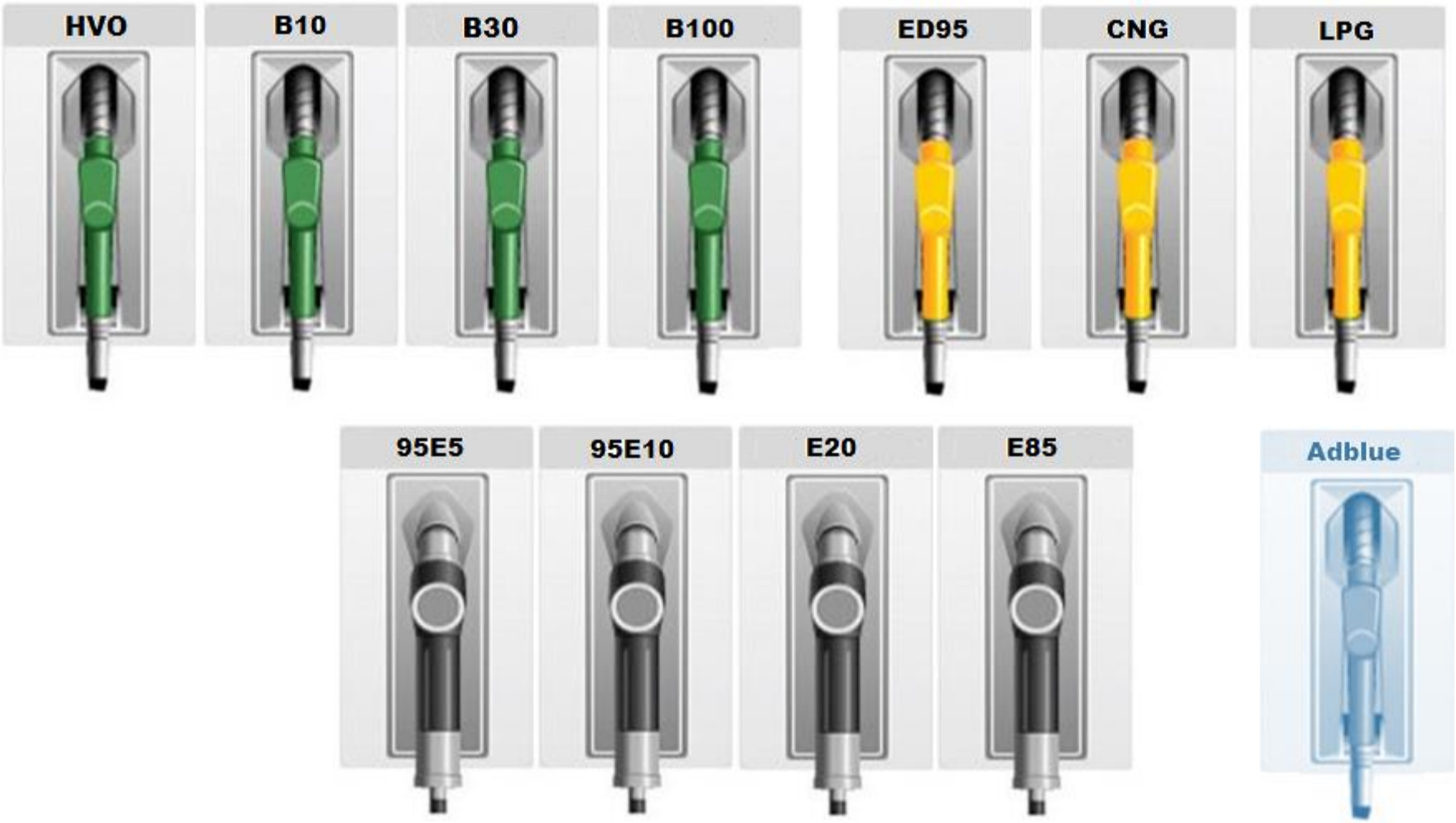
Fuel labelling, “AFI” directive article 7

- The main purpose is to avoid misfueling
- Existing fuels need to be labelled (eg. Gasoline, E85, LPG)
- Scheme shall be open to add new fuels later
- Labeling covers all vehicle types (cars, trucks, 2-wheelers, vessels)

- Labeling has to be based on graphical symbols meaning that alphabets are not allowed
- There will be one graphical symbol for each fuel type (eg. E85 vehicle: E5, E10, (E20/25) and E85)

Which pistol do you choose?

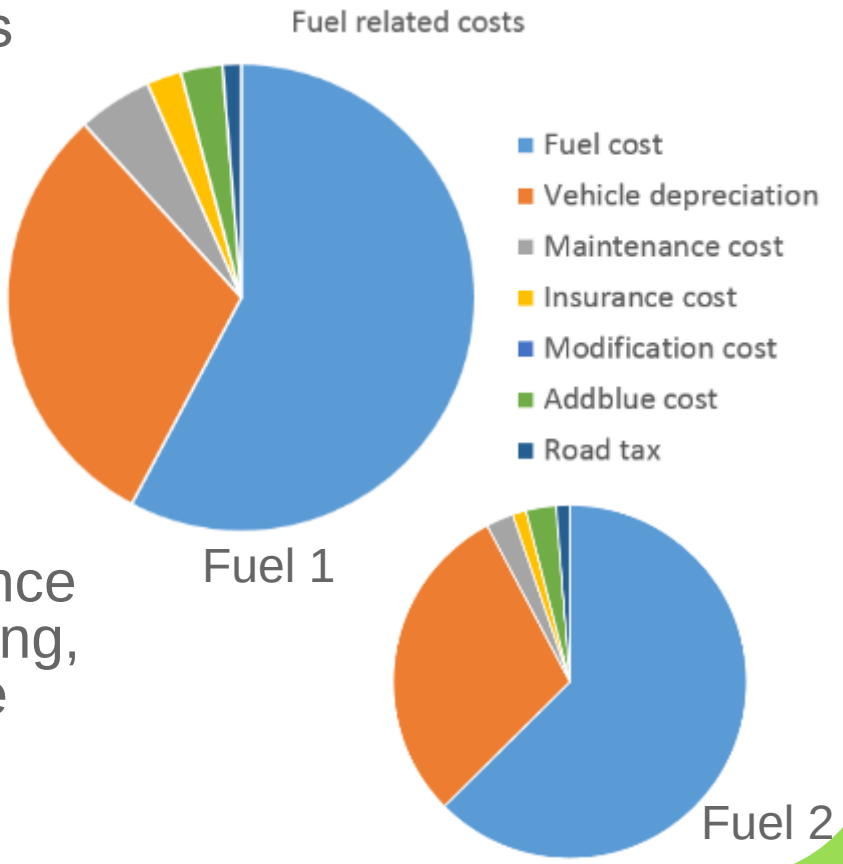


Example of innovative solution

- “tank ring”, card-free payment
  - Theft & misfueling prevention
  - Accurate consumption records

Comparing alternatives is not easy

- Fuel's price at the pump is only a part of the story
- Companies needs to evaluate the options by looking at the total cost of ownership (TCO)
  - Fuel's energy content, engine efficiency, influence on maintenance intervals, repairs, heating, cold properties, vehicle depreciation, Adblue cost…



Some “forerunners” in the industry

Volvo Trucks certifies synthetic diesel HVO fuel

Posted on, June 23, 2015

Volvo Trucks has approved the use of renewable synthetic diesel Hydrogen Vegetable Oils (HVO) in its Euro 5 engines and is preparing certifications for Euro-6 units.

After extensive field-testing, Volvo Trucks established that HVO performed similarly to regular diesel but reduced CO2 emissions by 30-50%.

Testing started in 2013 with Renova, DHL Freight and OKQ8 to see how the use of 100% HVO affected engine performance and components. Six trucks were equipped with Euro 5 engines and covered around one million kilometers in commercial service over a two year period. Tobias Bergman

"The field test showed HVO works very well in our engines and can be used under the same conditions as with diesel," says Tobias Bergman, Product Manager for Alternative Fuels and Hybrids at Volvo Trucks.

"It is possible to freely mix diesel and HVO."

Volvo Trucks now approved the use of HVO in all its Euro-5 engines with unchanged service intervals. In [illegible] there will be global Type Approval for HVO in FL and FE Euro 6 engines and work is also [illegible] FMX, FH and FH16 engine variants.

UPS relies on NEXBTL to reduce their environmental footprint

UPS, the global leader in [illegible]

Neste Oil's NExBTL renewable fuel used on intercontinental Lufthansa flight

[illegible] ating with Neste's NEXBTL renewable diesel in [illegible] operation globally.

Stockholm → 100% biofuels in city transport

- All buses on biofuels in Stockholm
- Ethanol (~800), Biogas (~250) and Biodiesel (~200)
- Also introduced for waste collect & trucks
- Big effect on both air quality and CO_2
- Focus: Cost efficient CO_2 reduction
- Long term policy & key actors co-op

Baltic Biogas Bus project

The Baltic Biogas Bus project will prepare for and increase the use of the eco-fuel Biogas in public transport in order to reduce environmental impact from the traffic and make the Baltic region a better place to live, work and invest in.

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Summary

- Fuels and vehicles are changing => high quality is very important
  - Bio-legislation, emission standards, fuel consumption standards
- Alternatives are growing, complexity increases
  - More options to choose from
- Price ≠ Cost ≠ Value
  - Value is what matters, but can be influenced by costs and price

Thank you.

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