



Country update

Sweden

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Stockholm, 8 Nov 2021

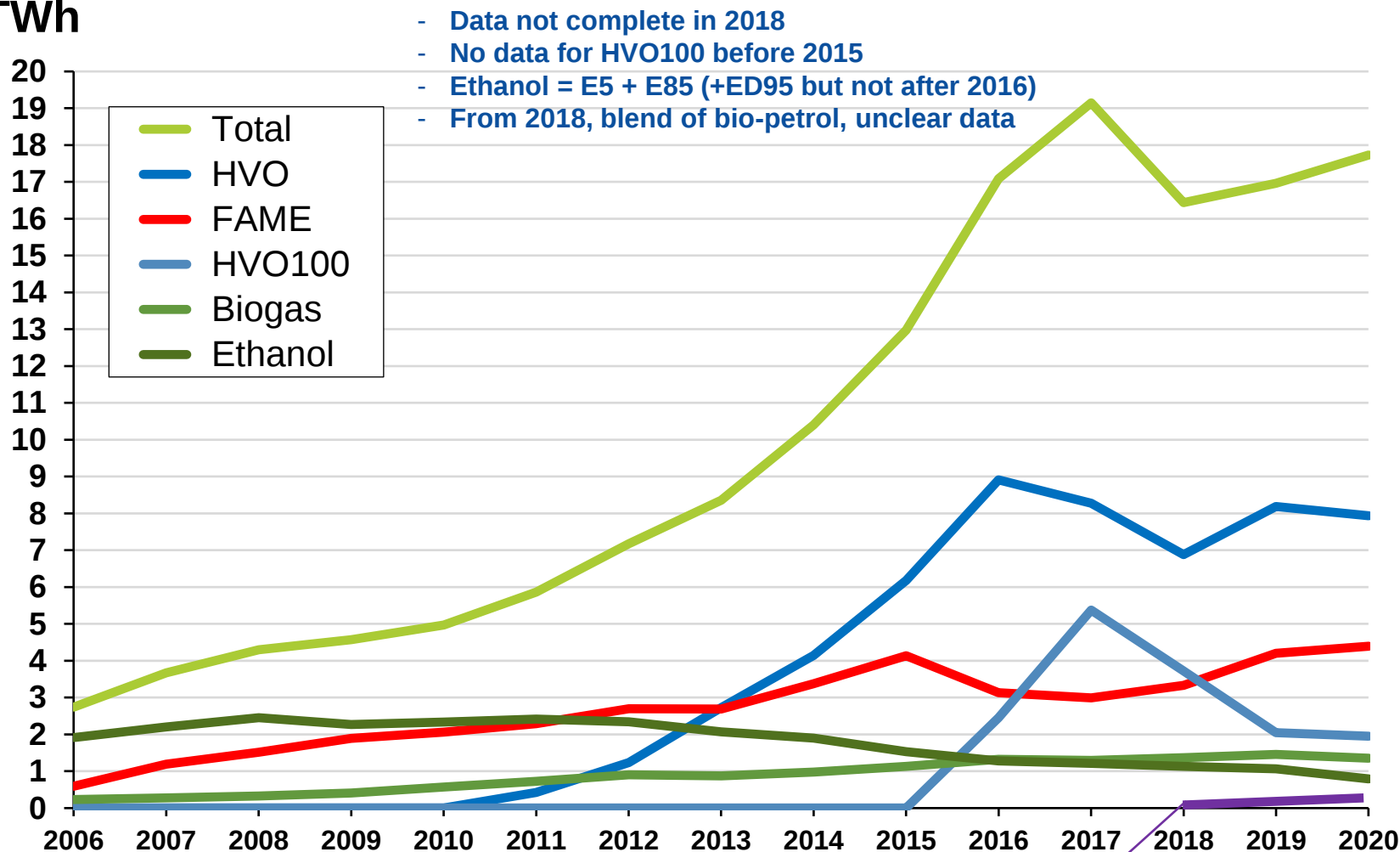
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Sweden has very high ambitions in biofuels

- Bioenergy is Sweden's largest energy source with 139 TWh and constitutes about 37% of consumption.
- Total growth of biomass (round wood) is 436 TWh per year. In addition, agriculture produces 74 TWh.
- Government report states potential as 170-180 TWh short-term and 200-220 TWh per year long-term.
- Road transport shall reduce emissions by 70% until 2030 and Sweden shall get zero net emissions until 2045. Sweden has a climate law and develops a circular bioeconomy.
- Sweden has virtually zero carbon emissions in the power and heat market. Industry, transport and society (consumption) are large sectors to change.
- Electrification is underway in transport and industry with eg bioCCU and CCS. Large projects include Northvolt battery plant and Hybrit carbon-zero steel with hydrogen, also iron-making.
- Electricity consumption may increase from 142 to 234 TWh by 2050 and production 160 to ca 280 TWh, where wind power is 156 TWh.

Biofuels consumption development

TWh

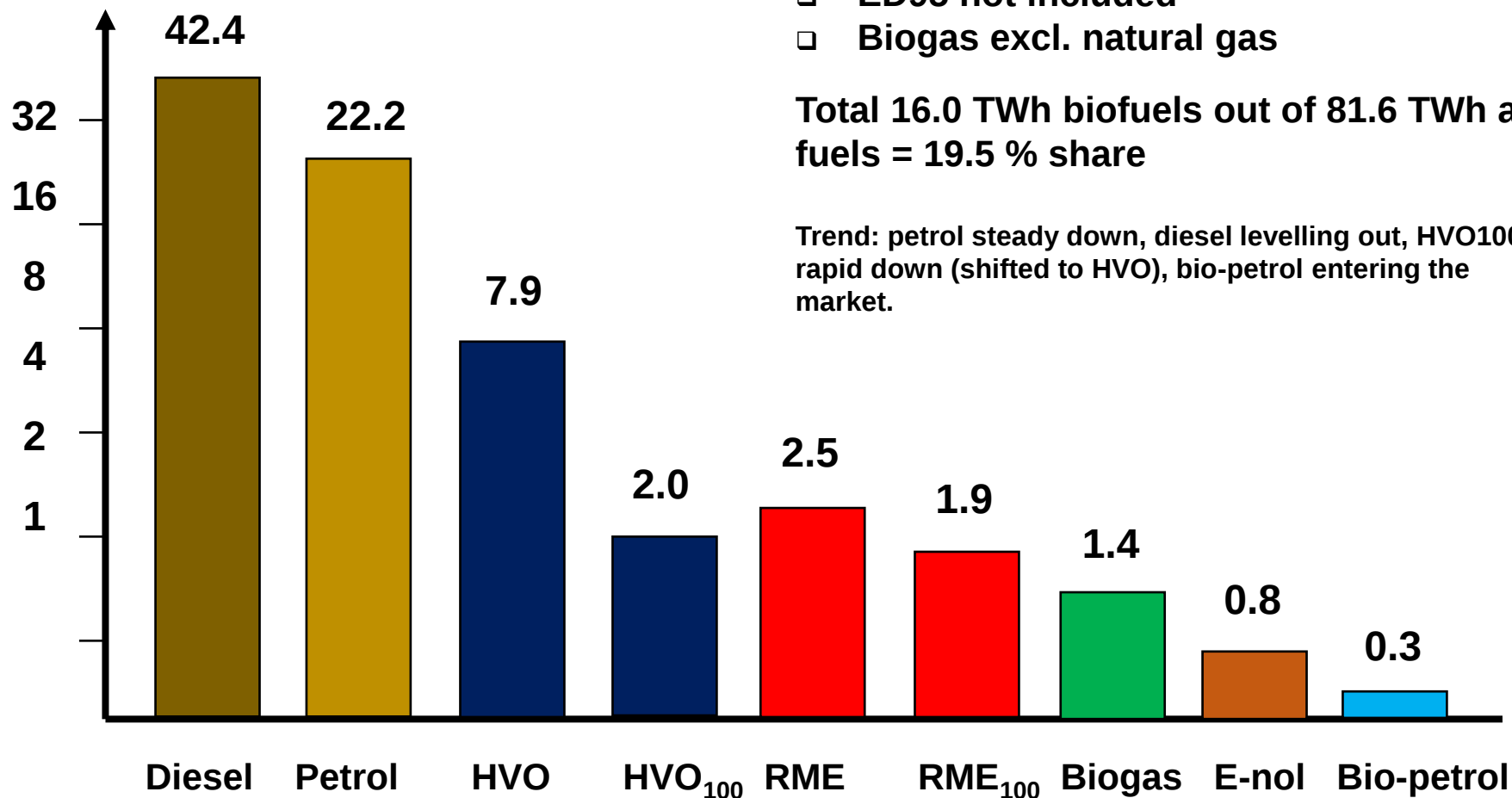


Bio-petrol 0.3 MW

Swedish road transport fuels 2020

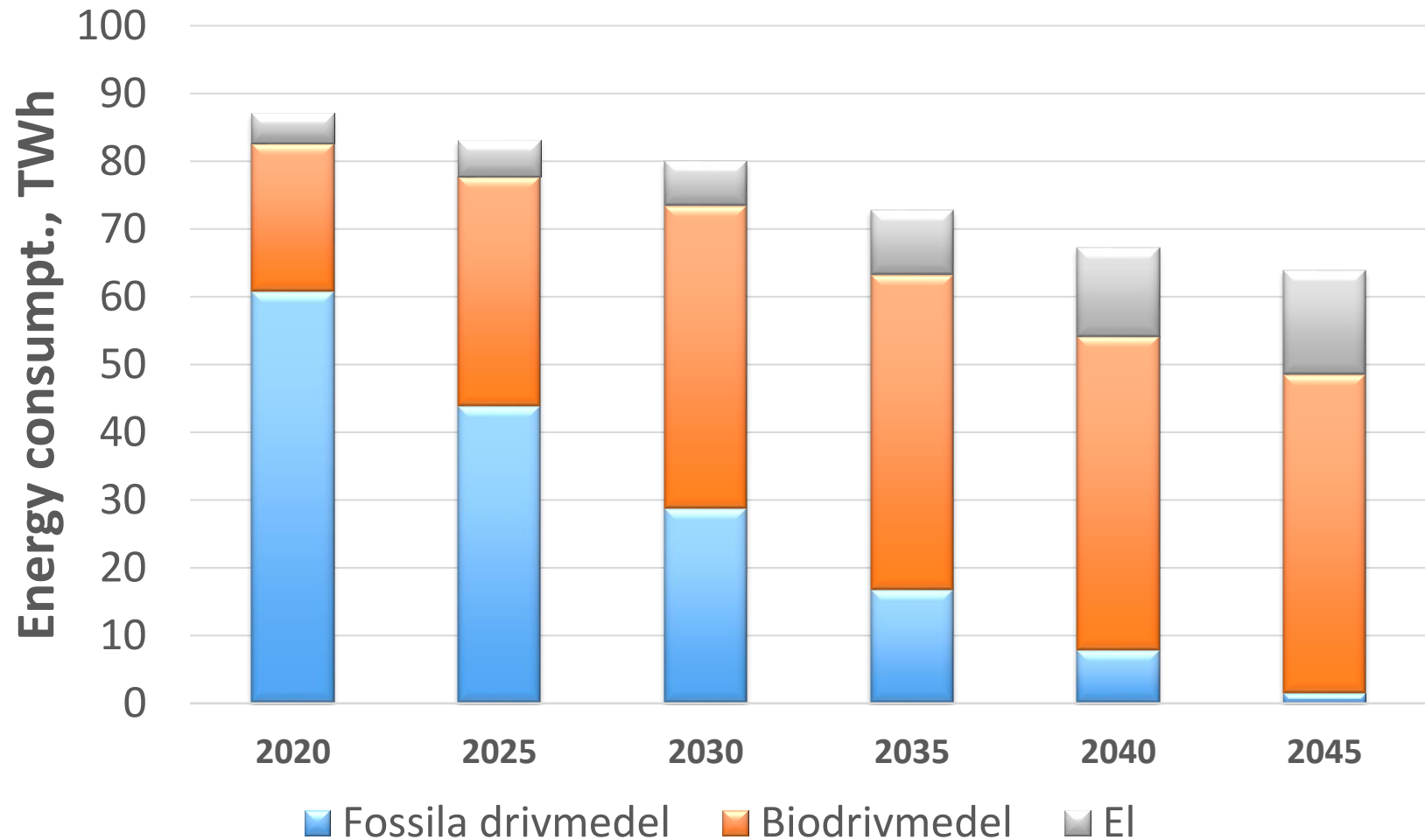
TWh/yr
Log. scale

*Prel. statistics, large
uncertainty e.g. in ethanol*



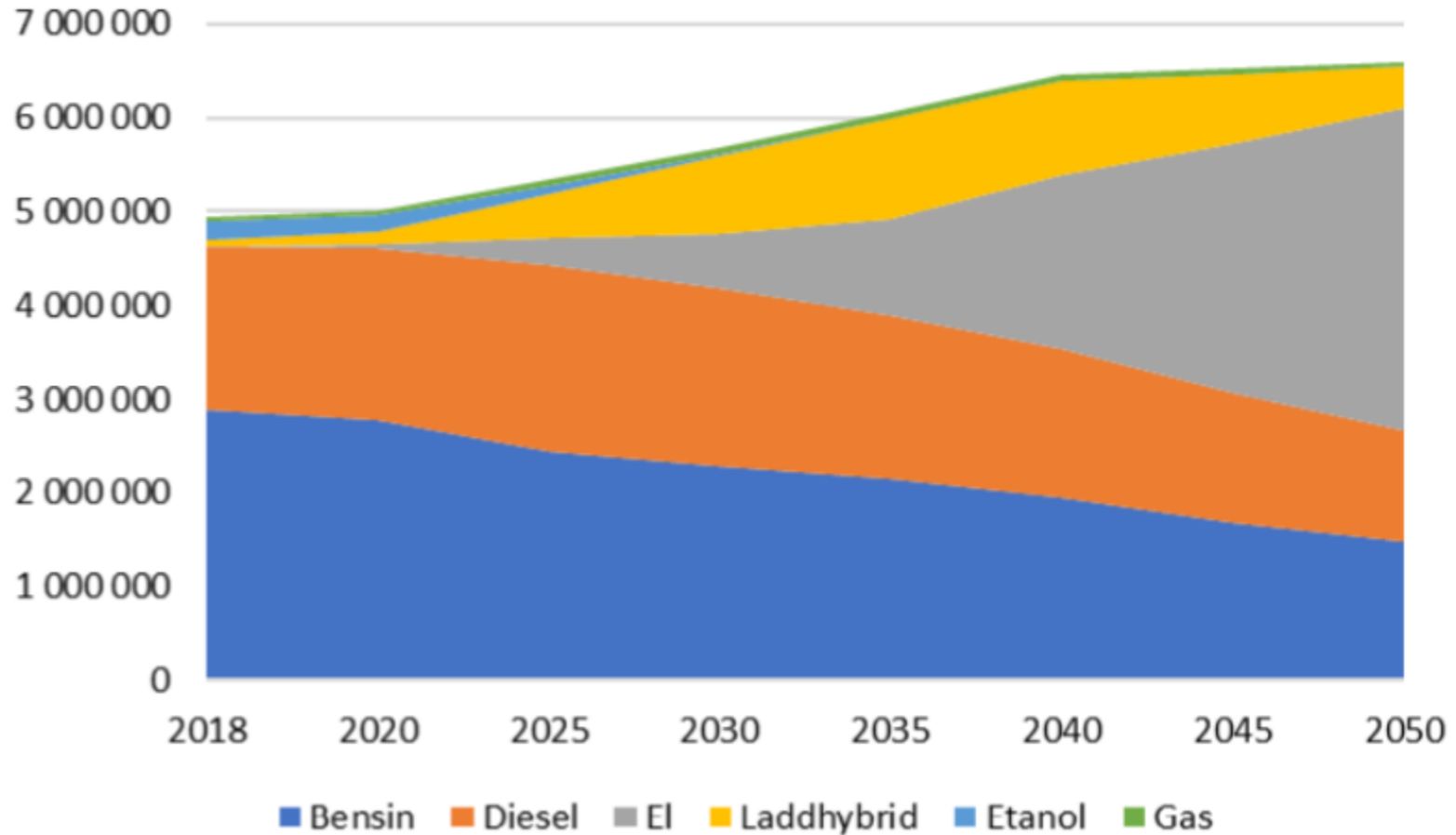
Ref. Statistics Sweden, Deliveries of transport fuels for vehicles, 2021.

Scenario for transport fuels shows big need for biofuels replacing fossil fuels



Development of the car fleet

Cars



Several, significant policy changes develops the Swedish market

- Reduction mandate quotas to 2030, from 1 Aug E10 introduction

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Petrol	4,20%	6%	7.8%	10.1%	12.5%	15.5%	19%	22%	24%	26%	28%
Diesel	21%	26%	30.5%	35%	40%	45%	50%	54%	58%	62%	66%

- Prolongation of tax exemption of neat liquid biofuels until 31 Dec 2022 but no information on thereafter. ILUC cap 7% and multipliers hinders biofuels.
- Prolongation of tax exemption of bio-CNG until 31 Dec 2029, current share of bio is above 95% in all CNG
- From 1 July, changed sustainability criteria with increased GHG emissions demand, biofuels not allowed from land of high biodiversity
- From 1 Oct environmental declaration of fuels on pump stations, making a world's first, showing consumer information for the fuels sold
- From 1 July reduction quota mandate on all aviation is imposed, starting with 1% and ending with 27 % by 2030, with target of 100% by 2045
- State investigation 2021 proposes possible ban on sales of fossil fuels and sales of fossil-combustion vehicles, favouring battery vehicles.

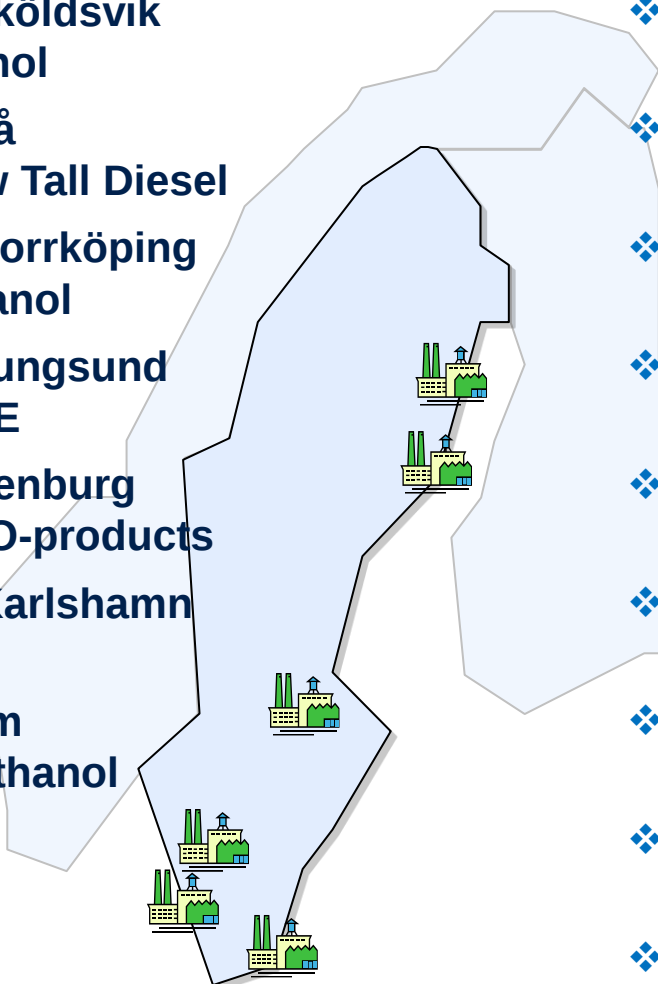
Policy with taxes, uncertain after 2023

Fuel	Comment	Taxes and policy
Petrol	E10, 10% ethanol	Reduction quota mandate 6.0% until 1 Jan 2022
Diesel	B7, 7% FAME + 20-30% HVO	Reduction quota mandate 26.0% until 1 Jan 2022
E85	Summer: 85% ethanol Winter: 75% ethanol	Full tax exemption for biofuel share to 31 Dec 2022
B100	RME100	Full tax exemption to 31 Dec 2022
HVO100	For some cars and most buses and trucks	Full tax exemption to 31 Dec 2022
ED95	95% ethanol for buses and trucks	Full tax exemption to 31 Dec 2022
Bio-CNG	>90% of all bio-CNG is biogas, other is CNG	Full tax exemption to 31 Dec 2030

Promising development for new biofuel plants

Larger plants in operation

- ❖ SEKAB in Örnsköldsvik
23 000 m3 ethanol
- ❖ SunPine in Piteå
150 000 m3 Raw Tall Diesel
- ❖ Agroetanol in Norrköping
230 000 m3 ethanol
- ❖ Adesso in Stenungsund
148 000 ton RME
- ❖ Preemraff Gothenburg
320 000 ton HVO-products
- ❖ Ecobränsle in Karlshamn
55 000 ton RME
- ❖ Södra in Mörrum
5000 ton biomethanol



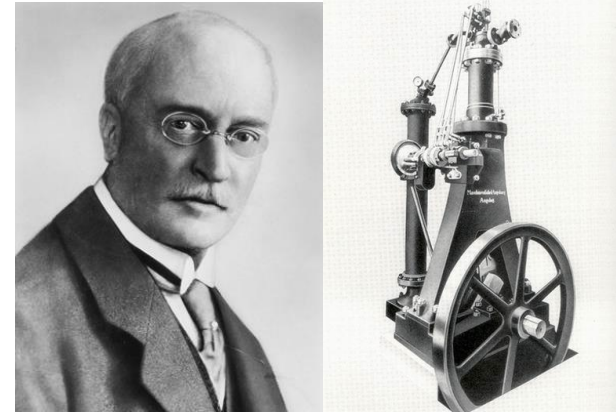
Plants in development

- ❖ Pyrocell in Gävle
26 400 ton pyrocruide 7 Dec 2021
- ❖ St1 Refinery in Gothenburg
200 000 ton HVO biofuels Q2 2023
- ❖ RenFuel Lignolproduktion
>200 000 ton crude bioliquids 2023?
- ❖ SCA in Östrand w St1
300 000 ton HVO biofuels 2024
- ❖ Preem Gothenburg
650-950 000 m3 HVO biofuels 2024
- ❖ Liquid Wind w Övik Energi
50 000 m3 biomethanol 2024
- ❖ Project AIR Perstorp at Stenungsund
200 000 m3 biomethanol 2025
- ❖ St1 Refinery in Gothenburg
200 000 ton HVO biofuels 2026
- ❖ Preem Gothenburg w Diamond Green
Tot capacity 5M m3 HVO fuels 2030

Selected plants, e.g. biogas plants not shown.

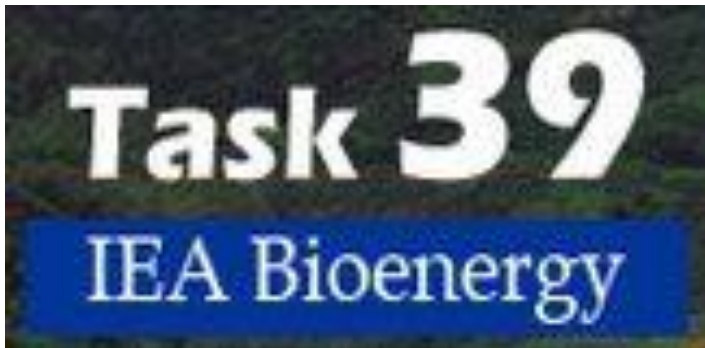
Thanks! Questions?

"The use of vegetable oils for engine fuels may seem insignificant today, but such oils may become, in the course of time, as important as petroleum products of the present time" ----->



Dr. Rudolf Diesel, 1912

Tomas Ekblom, SVEBIO



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