

Country update Sweden

IEA Bioenergy TCP Task 39 Business Meeting
15 May 2019, at JRC Ispra, Italy

In summary:

*Two steps forward,
one step back!*



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Swedish Bioenergy Association



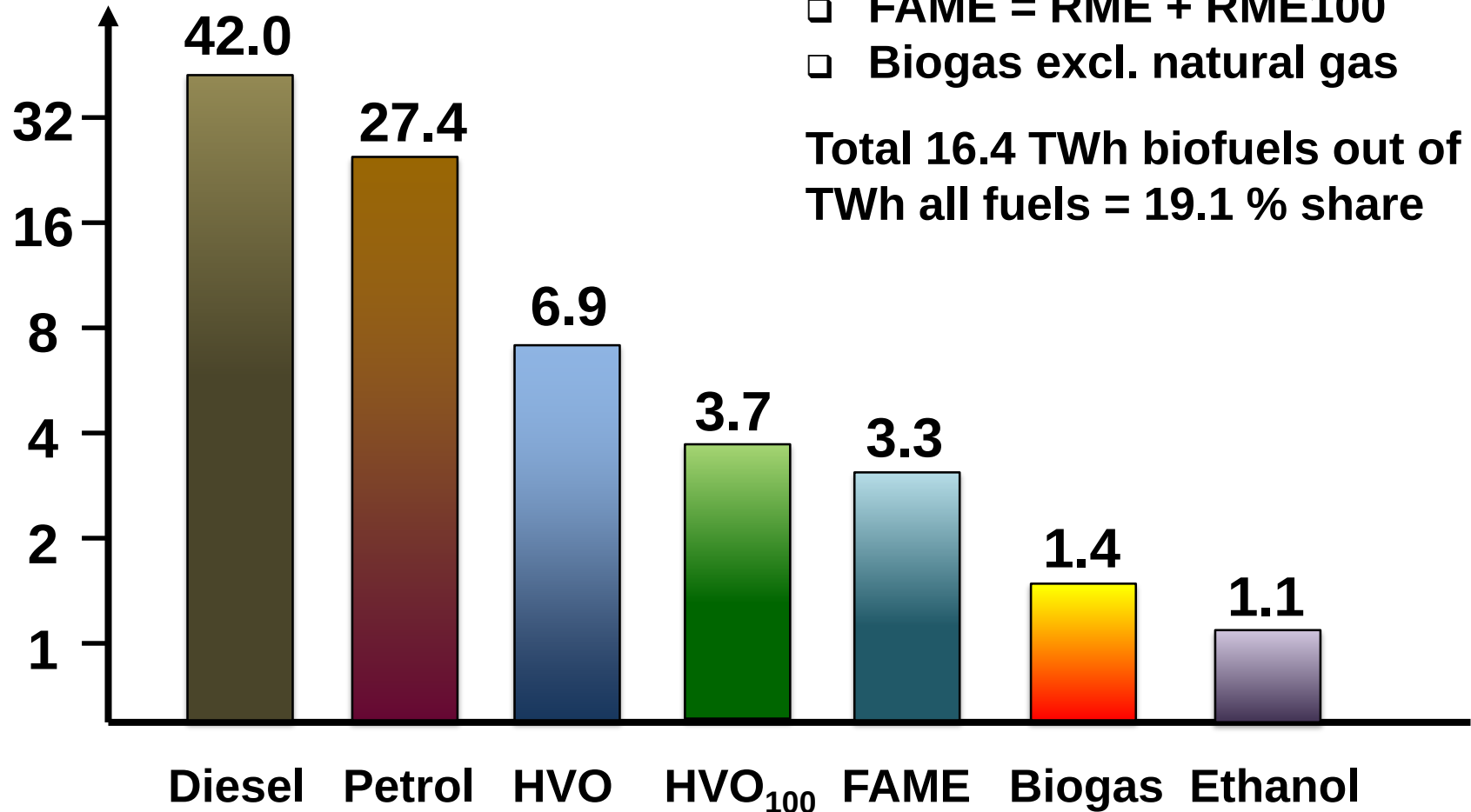
Historic very strong biofuels development, but only in HVO and last year backwards due to new policy

- Biofuel share in 2018 was lower than in 2017 because of new reduction quota mandate. Still high import!
- Quotas were 19.3 and 2.6 share in diesel and petrol. In 2019 the levels are 20.0 and 2.6, thus a low increase. Becomes both roof and floor...
- HVO100 large increase over the years, little development in others. Some “new” fuels like biojet, green petrol, methanol, hydrogen and LBG.
- New regulation on PFAD making HVO100 volumes in 2019 much lower, chance for RME100 and ED95 and bio-CNG.
- Ethanol still blended E5 and no sight of E10, and E85 quite uncertain while ED95 stronger.

Biofuel share	Energy %
2011	5.1%
2012	7.9%
2013	10.5%
2014	12.3%
2015	14.8%
2016	18.8%
2017	20.4%
2018	19.1%

Swedish road transport fuels 2018

TWh/yr
Log. scale



Ref. Statistics Sweden, Deliveries of transport fuels for vehicles, 2019.

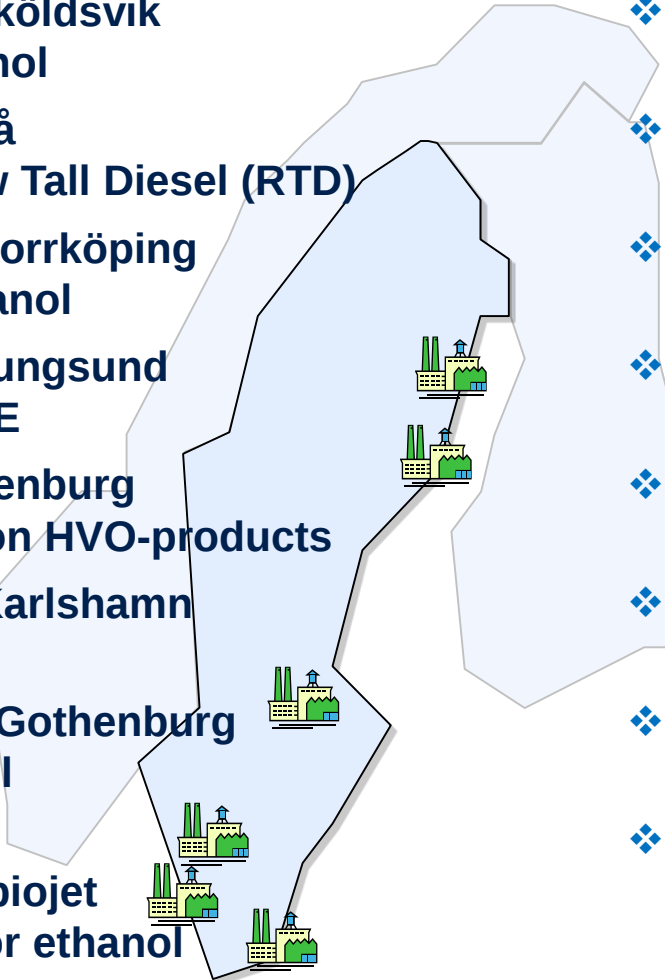
New regulations and tax legislation have impacted the diesel market, possibly transformed

- New reduction quota mandate for petrol and diesel since 1 July 2018. All fuels now taxed which meant the tax level changed.
- High conc biofuels fully tax exempted until 2020. However, EU state aid rule prolongation to 2022 excludes tax exemption for agro. ILUC cap 7% and multipliers hinders biofuels.
- New regulation on waste feedstocks, PFAD and CTO are now bi-products and must be traceable. PFAD comes back later 2019.
- State investigation 4 June will propose neat biofuels in fossils on reduction quota for 2021-2030 with 70% reduction goal.
- Biojet used on airlines, still tax on flying imposed. Reduction quota system proposed with 1% 2021 and 100% 2045 for all.
- Several policy changes on vehicles, favouring eletricification and disfavouring E85 and HVO.

Promising development for new biofuel plants

Plants in operation

- ❖ SEKAB in Örnsköldsvik
19 500 m³ ethanol
- ❖ SunPine in Piteå
100 000 m³ Raw Tall Diesel (RTD)
- ❖ Agroetanol in Norrköping
230 000 m³ ethanol
- ❖ Adesso in Stenungsund
148 000 ton RME
- ❖ Preemraff Gothenburg
Circa 230 000 ton HVO-products
- ❖ Ecobräsle in Karlshamn
55 000 ton RME
- ❖ NEOT @ St1 in Gothenburg
5000 m³ ethanol
- ❖ Pilot plants at:
Piteå for DME+biojet
Örnsköldsvik for ethanol



Plants in development

- ❖ Södra in Mörrum
5000 t biomethanol in 2019
- ❖ SunPine in Piteå
50 000 m³ Raw Tall Diesel (RTD) 2020
- ❖ St1 Refinery in Gothenburg
200 000 ton HVO biofuels 2020
- ❖ Pyrocell in Gävle
26 400 t pyrocruide 2021
- ❖ Preem Gothenburg w Diamond Green
1 300 000 ton biofuels 2022-24
- ❖ SCA in Östrand?
100 000 ton RTD 2021
- ❖ RenFuel in Vallvik
30 000 t crude bioliquids 2021
- ❖ SCA in Östrand
300 000 ton biofuels 2021

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

The world's fastest street-legal prod. car is Swedish

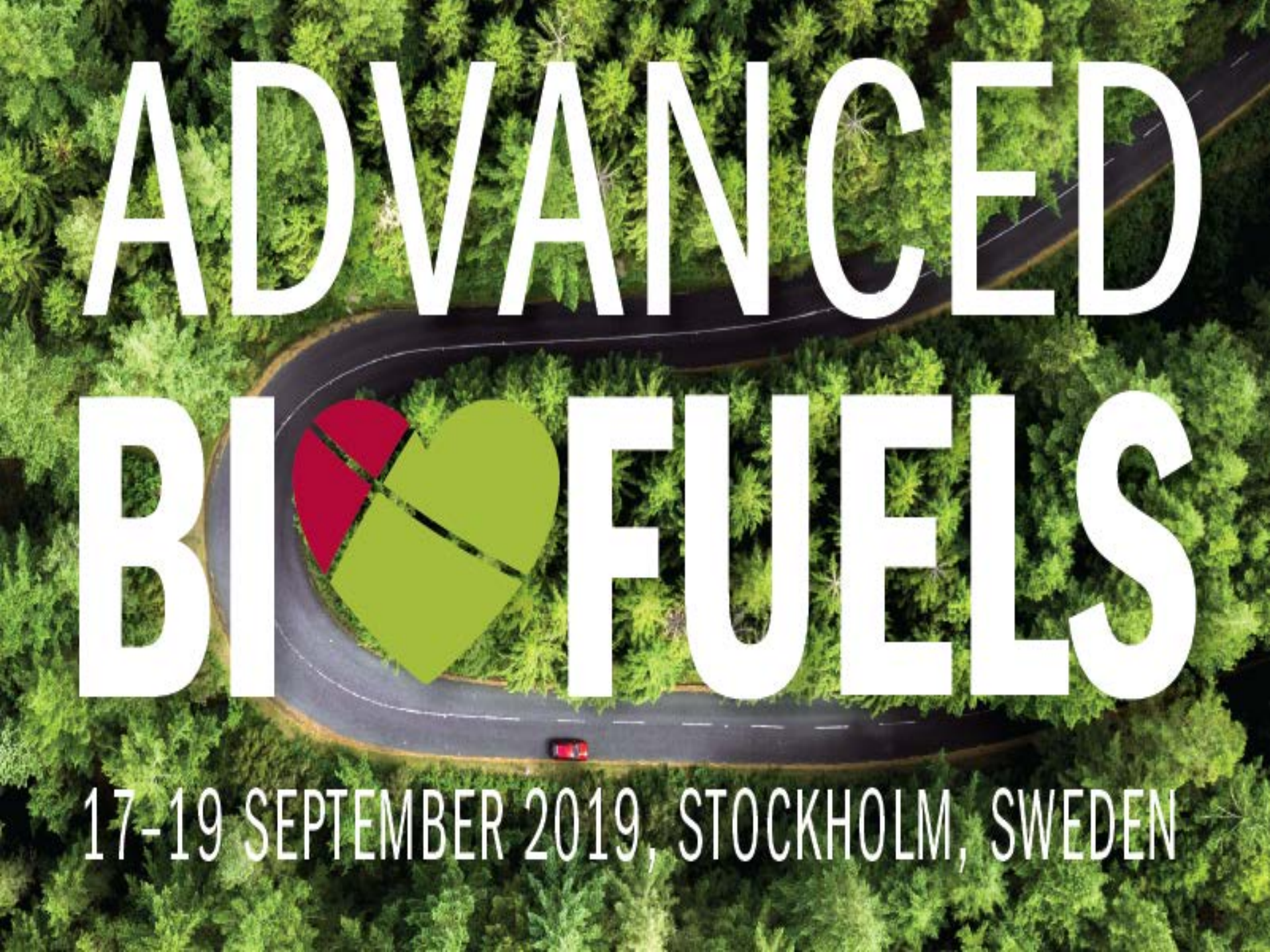
The Koenigsegg Agera RS set a Guinness world record with 447 km/h (278 mph). And can run on 100% ethanol.

"Dreams can be reality", Christian von Koenigsegg



"You can do it, no matter how impossible the goal is. Probably the most vital aspect and consequence of what we do at Koenigsegg."

ADVANCED BIOFUELS

An aerial photograph of a winding asphalt road through a dense, lush green forest. A small red car is visible on the road. Overlaid on the word 'BIO' in the title is a stylized heart logo divided into four quadrants: the top-left is red, the top-right is light green, the bottom-left is dark green, and the bottom-right is light green.

17-19 SEPTEMBER 2019, STOCKHOLM, SWEDEN