



Concawe - Refining into Energy Transition

NextGen fuel conference - HTL, 28 Jan 2021

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Concawe - Environmental Science for European Refining

Concawe Membership

Concawe represents 41 Member Companies ≈
100% of EU Refining

Open to companies owning refining capacity in the EU



Concawe mission

To conduct research to provide impartial scientific information, in order to:

- scientific understanding
- Assist the development of technically feasible and cost effective policies and legislation
- Allow informed decision making and cost effective legislative compliance by Association members.

Our Topics

Please scroll over the symbols for more information



The key question



How to satisfy the future need for products and fuels...
... in a low GHG intensive manner?

Multiple pathways integrated in a holistic view
(Well-To-Wheels)

The triple dimension challenge for the refinery of the future

Low CO₂ intensive sites



Low Carbon fuels

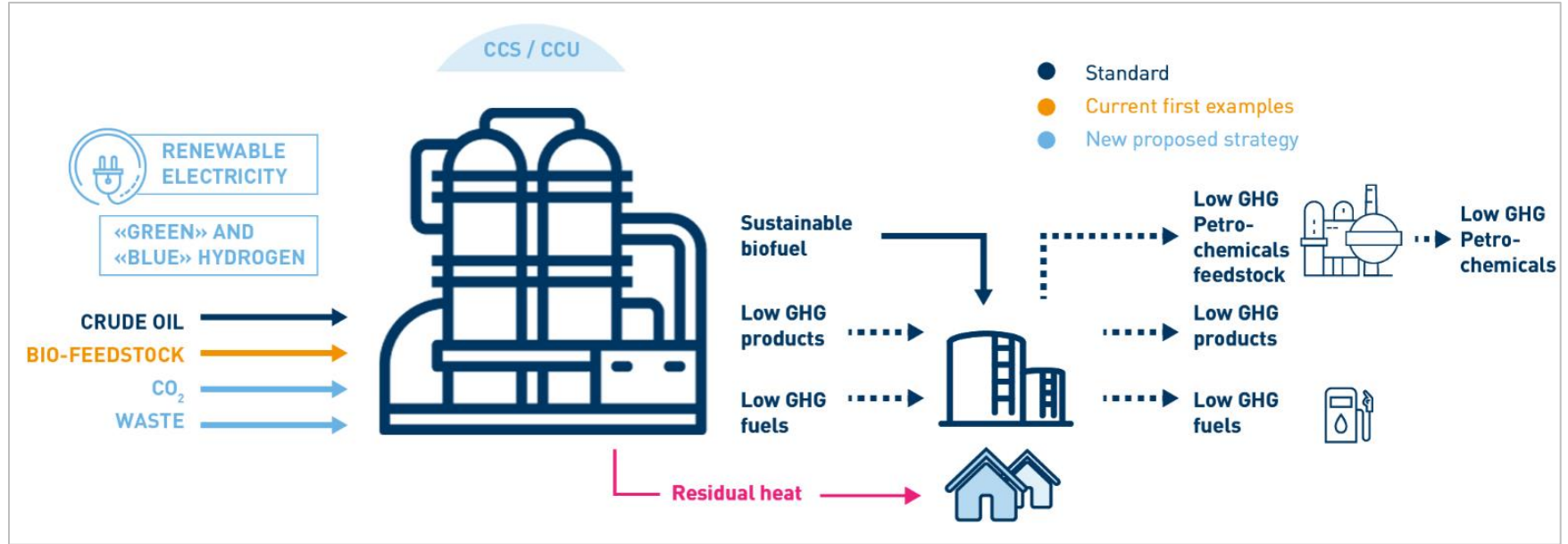


Low Carbon feedstocks to chemicals



Vision 2050: The refinery as an ENERGY HUB...

... within an INDUSTRIAL CLUSTER,



Reducing emissions within the site + the final use of our products

1 Early-stage
High efficiency operation

2 Evolution
Progressive introduction of low-emission components and low-carbon feedstocks

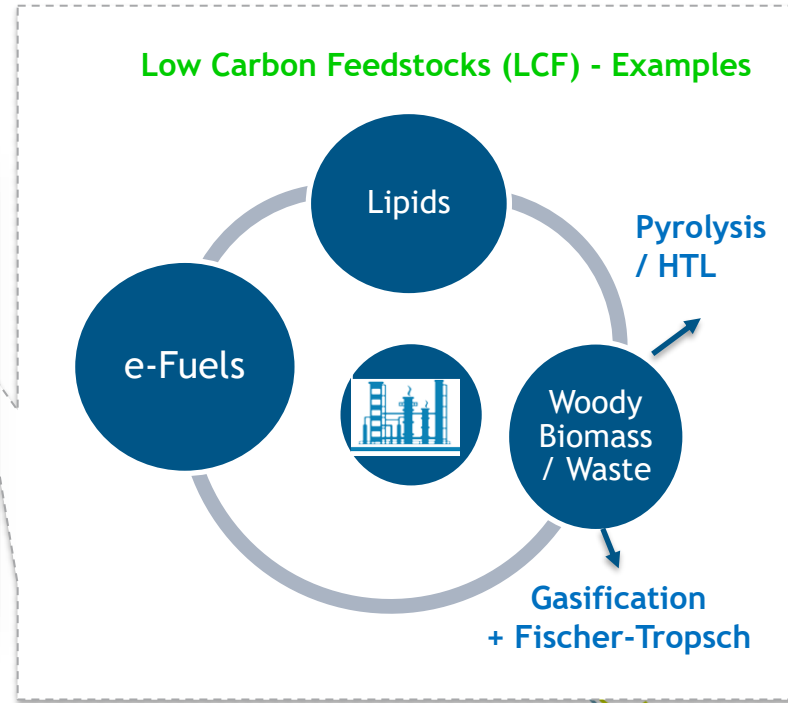
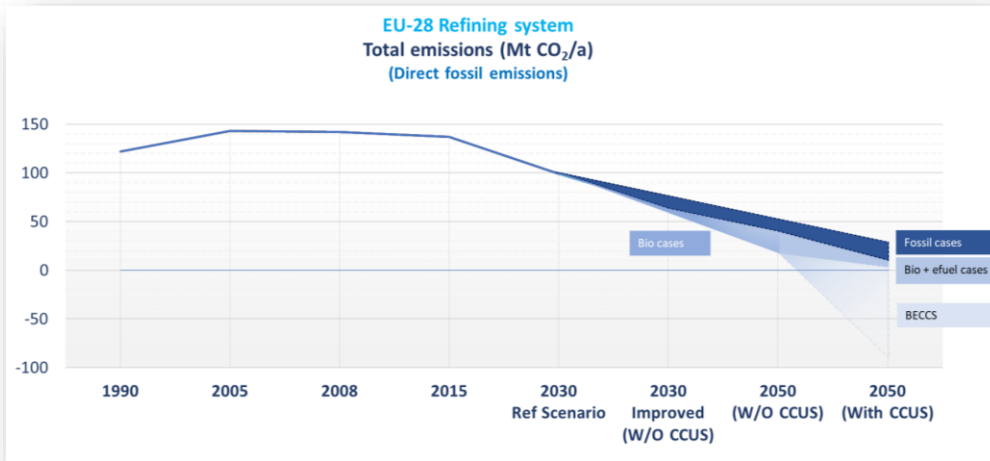


Refinery 2050: Conceptual Assessment.

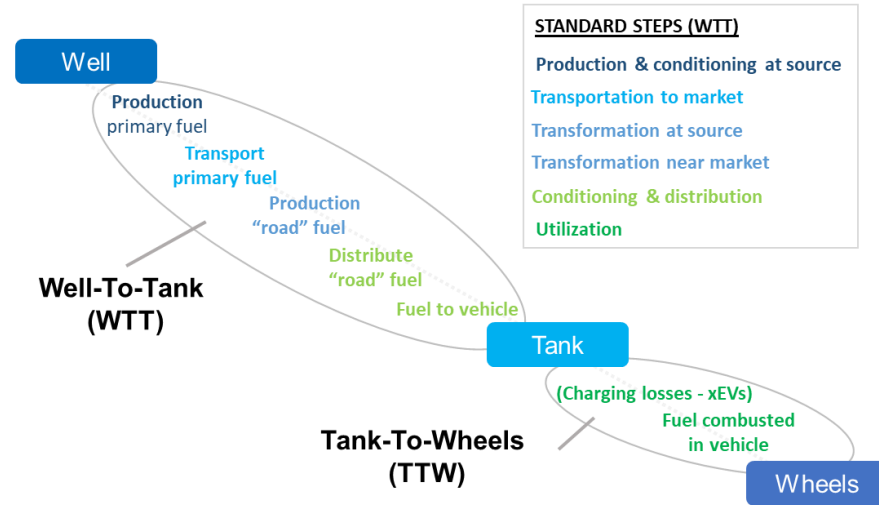
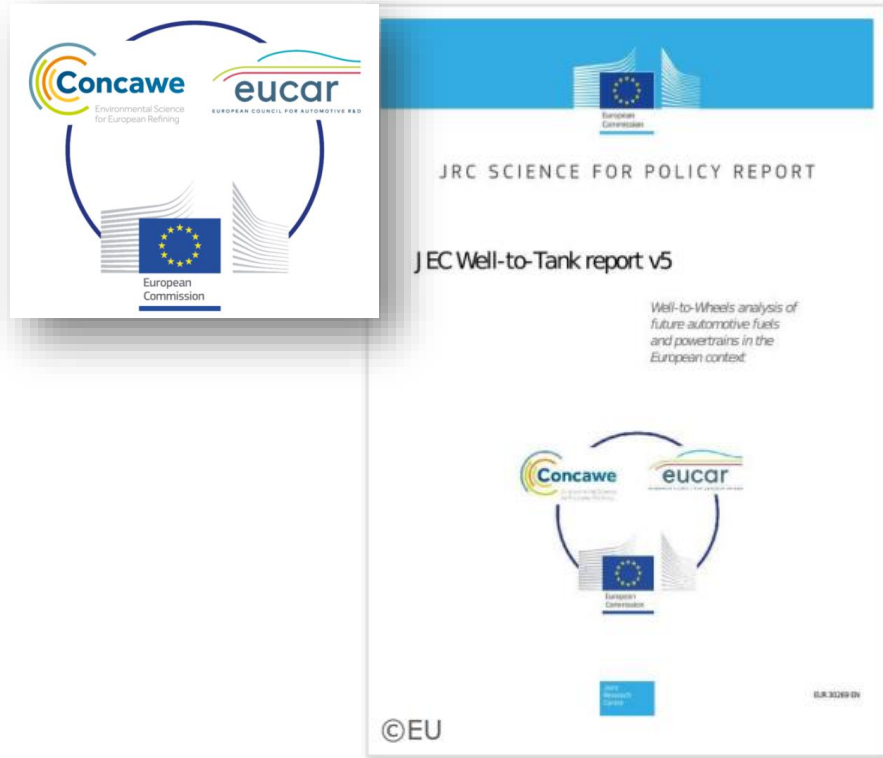
Exploring opportunities and challenges for the EU refining industry to transition towards a low-CO₂ intensive economy



A look into 2050 demand scenarios and GHG potential reduction



JEC WTW v5

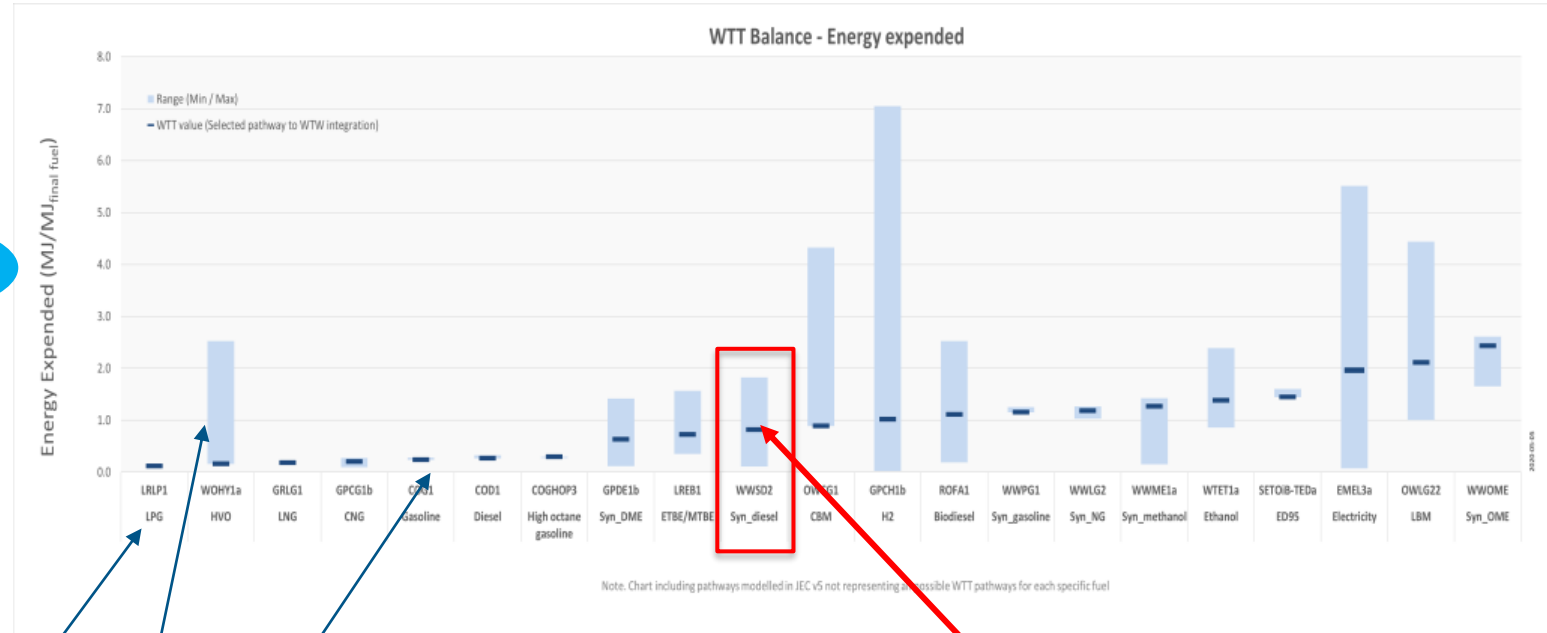


Production pathways (JEC WTT v5)

Comparative

Fuel comparison

(Range presented around a selected representative pathway)



Fuel

RANGE (WTT)
Min/Max from pathways
modelled in JEC v5

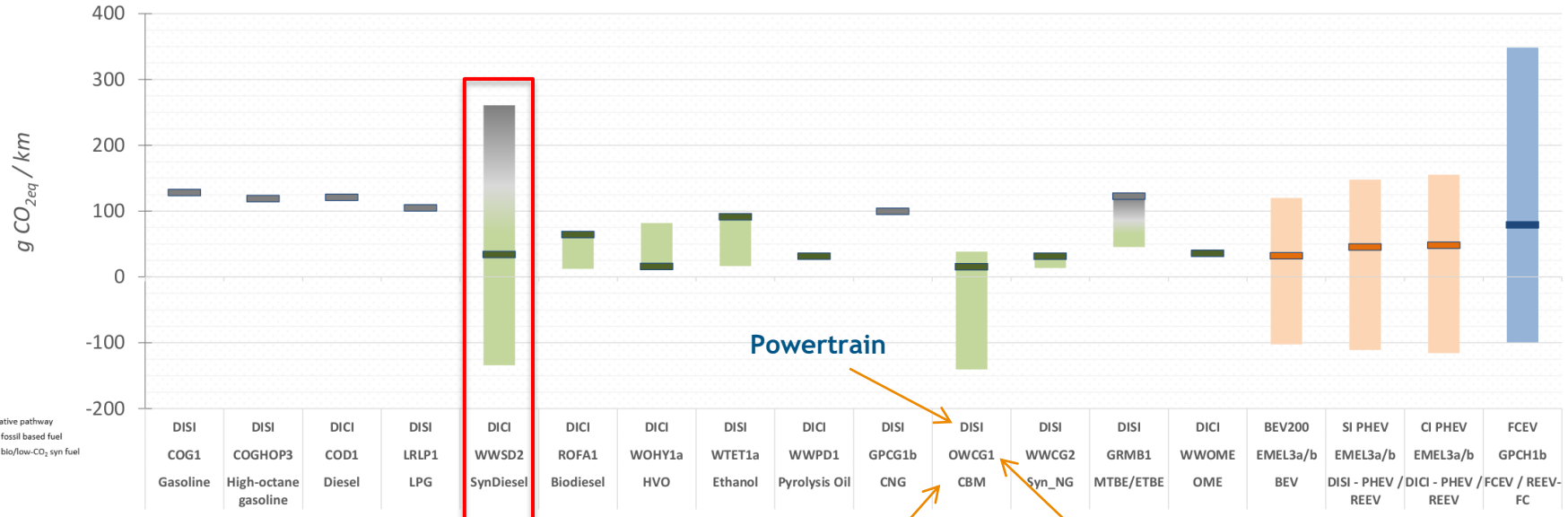
Representative
WTW pathway
(Code + Volume)

HTL offers a compelling and pretty
efficient / low GHG route (WTT) -
WWSD2

Well-To-Wheels analysis - Multiple pathways (JEC WTW v5)

Comparative: fuel / powertrains

2025+ Fuels comparison WLTP



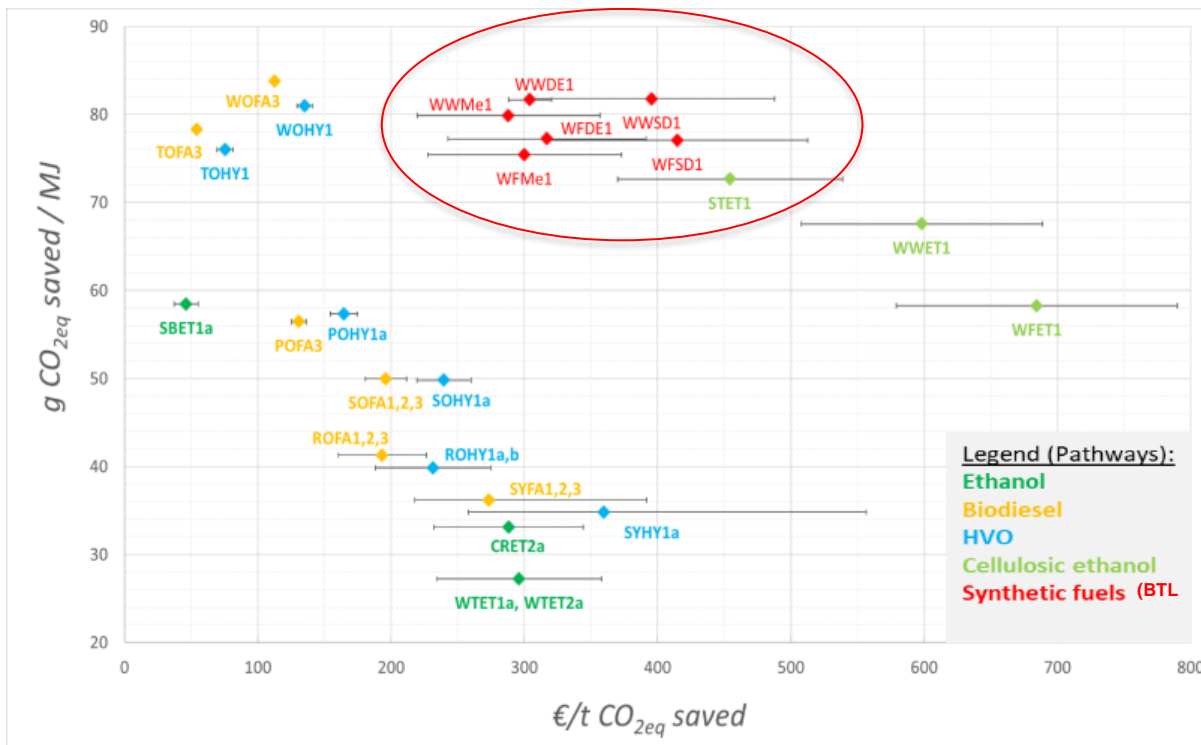
Powertrain

Alternative fuel type

Fuel reference production pathway (Line in bold)

JEC WTT v5 - Cost analysis

Cost of GHG savings for the investigated production pathways in 2014-2016



Note.

Total production costs
 = CAPEX
 (Investment)
 +
 OPEX
 (cost of feedstocks and operational costs).

12% capital charge rate <> ~ 8% return on investment w/o taxes.

20% uncertainty range on CAPEX