Quel avenir pour l’approvisionnement énergétique en Belgique ?
La vision vue du secteur pétrolier

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28 octobre 2018
Belgian Petroleum Federation (BPF)

BPF represents in Belgium:
- 100% of the refining capacity
- ±80% of the fuels put into consumption

**Industrial activity:**
- **Refineries:** four
- **Tank Storage:** four

**Marketing and Distribution:**
seven companies under the brands

(EG Group) (jet fuel; no retail network)
EU average oil refining production (600Mt in 2017) by final usage

65% Mobility

Belgium
Consumption inland:
23Mt (2017)

• Fuels for transport:
  9 Mt and stable

• Feedstock for chemical industry:
  8.5 Mt and increasing

• Fuels for heating:
  <4Mt and decreasing

25% Other Products

Sources:

Source: Fuels Europe and BPF
Belgium/Benelux at the heart of the refining and petrochemical industry Europe

Refining in Belgium: 35Mt (EU = 600mt) (2017)

Source: CIEP study

Source: GHA
Program agreement (between sector and government):

Daily sets the maximum prices of petroleum products

Since 1974

Aims at security of supply and consumer protection.
Refinery economic context: a gross margin squeezed between two market prices (case of diesel)

Source: Fuels Europe Yearbook 2018
Energy sources and consumption by region (2017)
Forecast CO₂ emission per capita (2016-2040)

Source: Fuels Europe from BP Statistics 2018, and from EEA
FIG. 38 GHG EMISSIONS BY SECTOR IN THE EU IN 2015

Source: European Environmental Agency

Source: FuelsEurope / European Environment Agency (EEA)
EUROPE CO₂ EMISSIONS BY SECTOR: HISTORY

Source: FuelsEurope / European Environment Agency (EEA)
2040 Forecast Changes in World Oil Demand by Sector, (IEA New Policies Scenario)

Main drivers:
- Environmental concerns
- Technical progress
- Economic growth
- Population growth
- Lifestyle

Source: FuelsEurope / International Energy Agency (IEA)
Transportation fuels/ fuels for passenger vehicles: projections in the sector foresee a slowing down (world)

(source Exxon Mobil Energy Outlook 2018)
Case for liquid fuels as electrification will play a role but with limitations

Weight of required equivalent battery

- 1.2 tonnes (motorcycle)
- 3.5 tonnes (bus)
- 13 tonnes (truck)
- 375,400 tonnes (ship)
- 9,700 tonnes (airplane)

Source: Fuels Europe
In Europe the use of liquid fuels will be challenged and its future conditioned by its content of renewable hydrocarbons.

(Case: Germany 2016)

Liquid fuels with Renewable Hydrocarbons: in competition with other options

Liquid fuels with (Renewable) Hydrocarbons: necessary in the long term

Non-energy use/(eg chemical feedstock 22 %

Aviation

Marine

9 %

light duty vehicles 17 %

Heavy duty vehicles 38 %

approx. 40%

Source: Fuels Europe, Prognos AG, Berlin
An increasing number of vehicles and some vehicle types that need to reduce their NOx emissions

Source: VMM 2018
Passenger cars: NOx emissions from diesel cars will shortly start to reduce significantly also.

Figure 2: Estimated real-world NOx emissions from petrol/diesel cars (source: COPERT)
Truck manufacturers have managed the reduction of NOx, next step is to reduce the CO₂ emissions.

Figure A5: Estimated greenhouse gas (GHG) and nitrogen oxides (NOₓ) emissions for a 44 tonne HGV on a ‘long haul’ duty cycle (average speed 79 km/h).

**Tailpipe NOx emissions (g/km)**

- Electric and hydrogen trucks are not yet market ready, but would offer the most significant GHG and pollutant emission reductions.
- Latest government-funded test data shows poor efficiency of gas trucks. However, industry reports significant efficiency improvements in the latest generation of these vehicles.
- Regulations have already substantially reduced NOₓ emissions from new diesel heavy goods vehicles.

Lower consumption and Lower Carbon Fuels

**source: UK gov 2018, Road to zero & BPF**
Passenger cars are reducing the average unit energy consumption and CO2 emission (cars)

Figure 2b.4: International targets for fleet CO₂ emissions are driving down average emissions


Source: UK Gov Road to zero
Reducing the CO2 emissions with lower carbon fuels: technology readiness level (TRL)

Figure 7 A comparison of Technology Readiness Levels (TRL) of different pathways

Hydrogen

Source: Concawe.
The « refinery » will become an energy hub within an industrial cluster

Source: Fuels Europe Vision 2050
→ Vehicles with diesel engines will have lower emissions
→ Lower carbon fuels will develop further, with more renewables and chemical transformation / synthesis, leading to diesel XTL fuels

• Actual status:
  – It is already normed and available since before the norm
  – Engines/powertrains can be optimised to its properties

• Feedstock
  – Variety of sources (GTL, BTL and in future PTL = e-fuels)

• Process:
  – Variety of chemical processes depending on the sources
  – Use of green hydrogen and CO₂ to lower CO₂ footprint
In Europe lower carbon liquid fuels will challenge the alternatives

(Case: Germany 2016)

Liquid fuels with Renewable Hydrocarbons: in competition with other options

Liquid fuels with (Renewable) Hydrocarbons: necessary in the long term

Source: Fuels Europe, Prognos AG, Berlin
SUMMARY

- THERMAL ENGINES IMPROVE THEIR PERFORMANCE AND LOWER THEIR EMISSIONS

- LOWER CARBON LIQUID FUELS WILL DEVELOP

- LIQUID FUELS WILL CONTINUE TO HAVE A PLACE IN TRANSPORT

- AS A LOGISTIC AND INDUSTRIAL HUB BELGIUM IS WELL PLACED TO PLAY A ROLE IN LOWER CARBON FUELS
The “fuelstation” will have lower carbon liquid fuels, will integrate other fuels and energies.

Source: Fuels Europe
Merci pour votre écoute