

Tour d'Europe

Final Report

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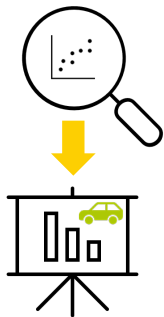


Tour d'Europe – Introduction

Tour d'Europe is a technology demonstration which aims to show:

- the availability and feasibility of renewable fuels for vehicle fleets across Europe
- the potential of digital monitoring for verified CO₂ well-to-wheel emissions
- the potential for legislative action regarding CO₂ emission performance standards

Our task:



Analysis of the available data

Evaluation of used fuels and CO₂ emissions of the tour based on digital monitoring data and manual documentation of refueling events

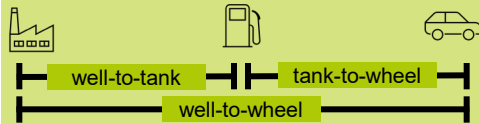
Renewable Fuels & Tour d'Europe



What are renewable fuels?

Fuels with significant CO₂ reduction potential compared to fossil fuels (well-to-wheel)

Immediate CO₂ reduction in existing vehicle fleet



Today's availability

Biofuels begin to establish during the 90s

Today, biofuels are widely available in Europe

Continuously increasing availability of renewable fuels (RFNBO & bio-based)



Legal framework

Fit for 55

RED



Certified CO₂ reduction

CO₂ emission performance standards



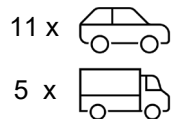
Tailpipe emission tests

Actions required to close this gap

Tour d'Europe successfully demonstrates today's renewable fuels availability, the CO₂ reduction potential and its monitoring possibility

General Overview of the Tour Data

16 vehicles



8 x Diesel
7 x Gasoline¹
1 x BioLNG²

17 countries³



AT | CH | CZ | DE | DK | EE | ES | F | FR
IT | LT | LV | MC | NL | PL | PT | SE
Representation of the availability of
renewable fuels in Europe

289 refueling events during > 77500 km

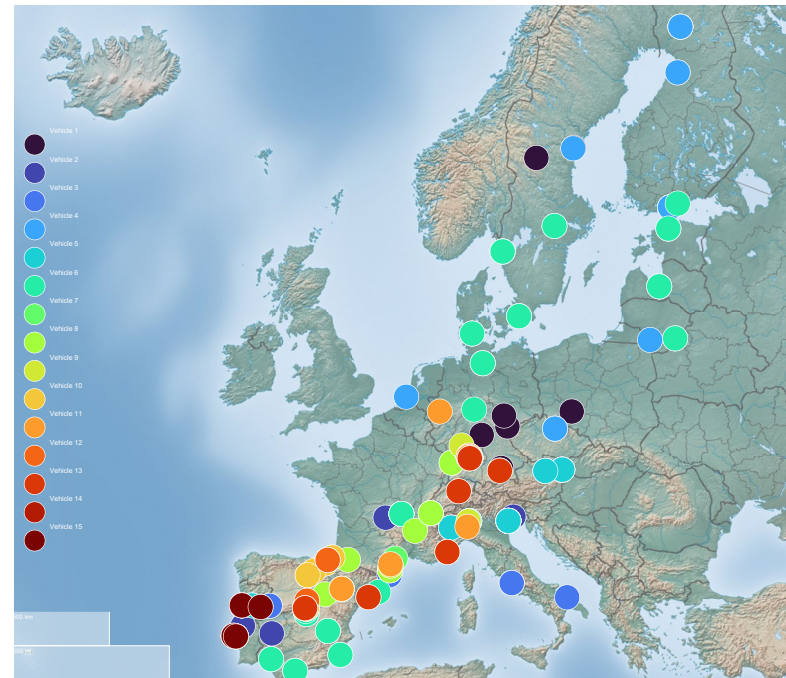


HVO100, B100, E85,
renewable gasoline,
blends, BioLNG²



5 different main
routes across
Europe

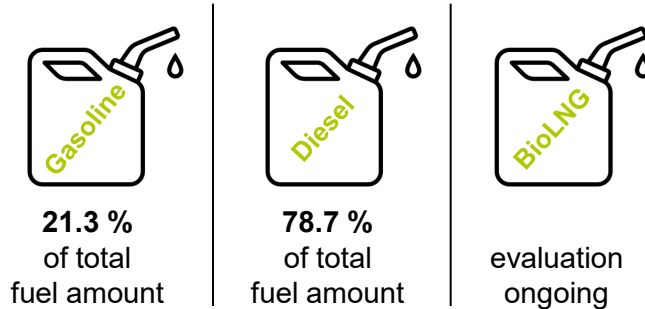
Refueling events



1 Including one FlexFuel car 2 BioLNG data collection ongoing 3 Number of countries with data collection

General Overview of the Tour

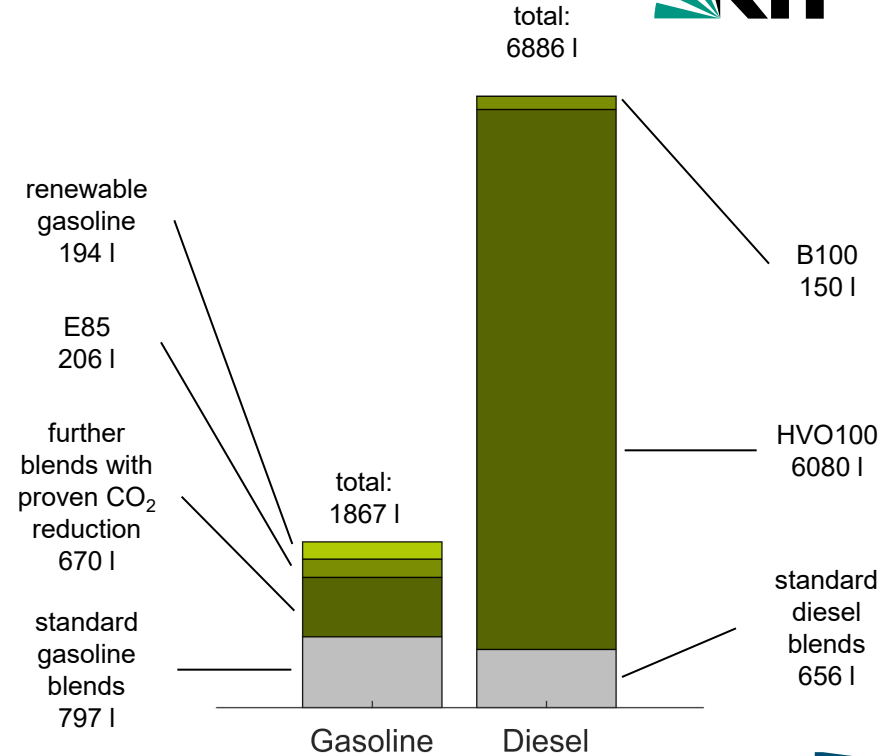
Fuels used during Tour d'Europe



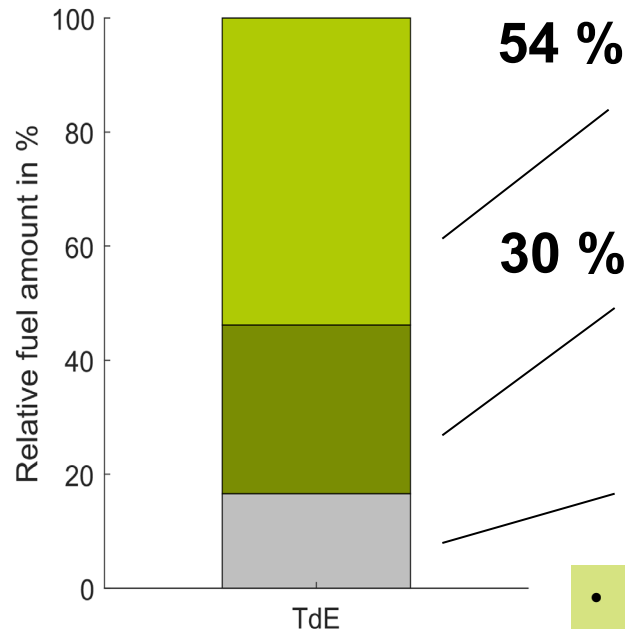
CO₂ reduction due to real tank content

Actual, proven and certified CO₂ reduction (well-to-wheel).

Today, almost all available renewable fuels are bio-based fuels. However, the demonstrated methods are applicable to all types of renewable fuels (e.g. RFNBOs).



Monitoring – Tour d'Europe Summary



54 %

Renewable fuels fully monitored

54 % of total fuel amount

- Emission factor (RED certified)
- Digitally tracked and confirmed refueling events

30 %

Renewable fuels partially monitored

30 % of total fuel amount

- Emission factor (RED) not yet provided on time
- Incomplete digital tracking in certain locations
- Manually documented fuel type and amount

Only 16 % of standard fuel blends

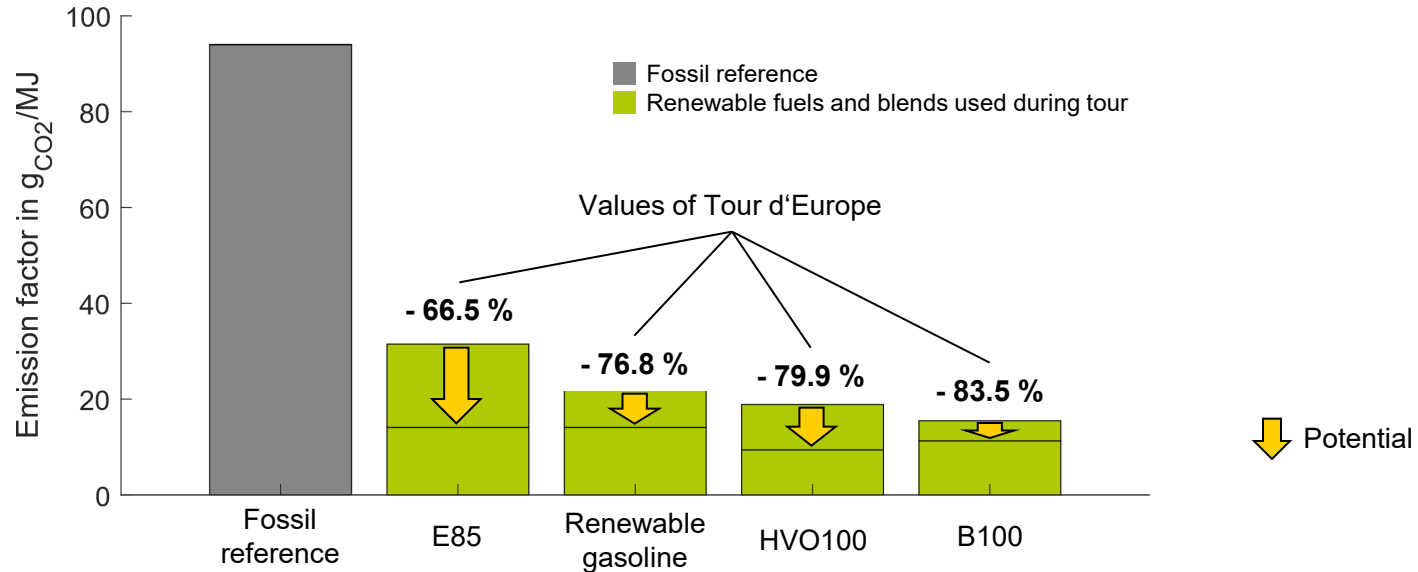
were required due to limited coverage

- **84 %** of the used fuel are renewable
- **54 %** of the fuel volume could be **directly digitally tracked**
- **100 % can be verified** with additional **manual documentation**



CO₂ Reduction Performance of Fuels: A Snapshot

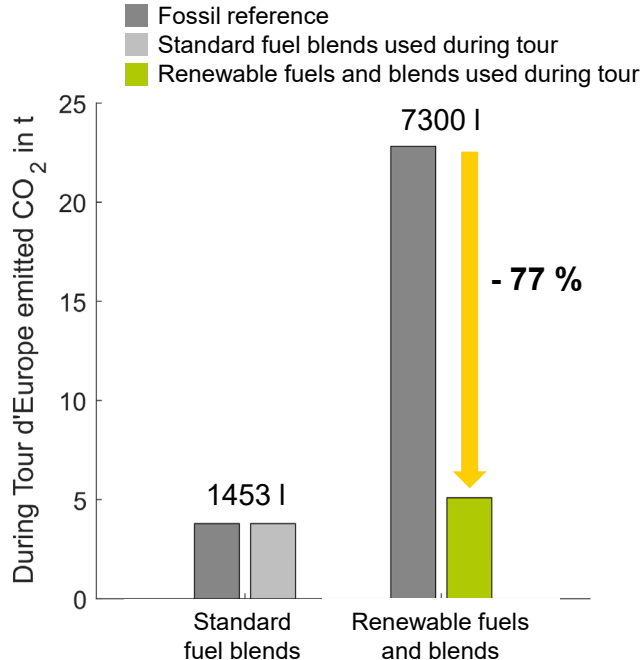
Detailed performance of fuels specifically used during Tour d'Europe



- Significant reduction of the CO₂ emission factor for the considered renewable fuels
- Further reduction potential by improving feedstocks and processing

CO₂-Reduction: A Snapshot of Tour d'Europe

Total tour result



CO₂ result of the tour

The tour demonstrated a **real-life experience** of users **across Europe!**

Already with the **status and availability today**, a **significantly lower well-to-wheel emission** could be achieved!

Reduction approx. 77 %*

(Reduction approx. 67 % for overall fuel mix of the tour)

Further CO₂ potential

Each improvement of fuel properties is immediately visible as further CO₂ reduction (e.g. higher blend rates with carbon neutral fuels)

Emission factor of fossil reference (according to RED): 94.0 g_{CO2}/MJ
Calculated emission factor of renewable fuels during TdE: 20.6 g_{CO2}/MJ

(*Renewable fuels only | Exact value subject to final review)

Conclusions and Outlook

CO₂ Savings Potential



Simple and genuinely feasible as of today. Actual, **verifiable and certifiable CO₂ reduction** by renewable fuels.

Monitoring Available & Necessary



Monitoring based on information about the refueling process is necessary and already in development.
→ **Huge benefit for authorities and users**

Adaptation of Legislation Required



Instead of only measuring tailpipe emissions, the **well-to-wheel CO₂ footprint has to be considered** for renewable fuels.

The CO₂ reduction potential of future renewable fuels is growing, leading to even lower CO₂ emission factors

Thank You!



DRIVING
DECARBONISATION
WITH RENEWABLE FUELS



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