

# JEC Well-to-Wheels

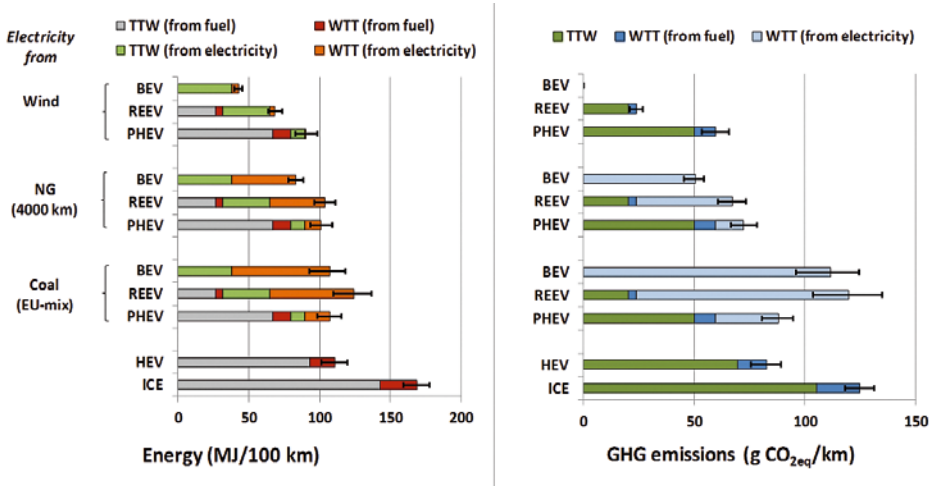
## Well-to-Wheels (WTW) analysis of future automotive fuels and powertrains in the European context

### Motivation and Objectives

EUCAR, CONCAWE and JRC continue to perform joint evaluations of the WTW energy use and greenhouse gas (GHG) emissions for a wide range of potential future fuel and powertrain options. The objectives of the study are to:

- Establish, in a transparent and objective manner, a consensual WTW total / fossil energy and GHG emissions assessment of automotive energy carriers and powertrains relevant to Europe in 2010 and in the 2020+ timeframe.
- Consider the viability of each fuel pathway.
- Endeavour to have the methodology and results accepted as a reference by all relevant stakeholders.

### Project Plan, Milestones and Deliverables



Effect of electricity source on energy use and GHG emissions in Plug-in Hybrid (PHEV), Range-Extended (REEV) and Battery Electric Vehicles (BEV), compared to 2020+ Gasoline (ICE) and Hybrid Vehicles (HEV)

### Technical Approach

The Well to Tank (WTT) evaluation accounts for the energy expended and the associated GHG emitted in the steps required to deliver the final fuel to a vehicle. The Tank to Wheels (TTW) evaluation considers the energy expended and the associated GHG emitted by the vehicle/fuel applications.

Energy use and GHG emissions are associated with both fuel production and vehicle use; hence the WTW integration enables an overall assessment of the combined fuel and vehicle pathways.

The WTW study takes into account induced changes generated by fuel and/or powertrain substitution in Europe. This is particularly important for fuels where careful consideration of co-products is essential to a good understanding.

### Achievements

The program has successfully completed several phases:

2001 - 2003: Version 1, initial report

2004 - 2006: Version 2, revision of fuels & vehicle data

2008 - 2011: Version 3, new fuel pathways & inclusion of electrified vehicles

2012 - 2014: Version 4, projection towards 2020+ & full integration of electrified vehicles

Results of this work are used by the European Commission (EU Renewable Energy Directive default value methodology; EU Fuel Quality Directive calculation of Fossil Fuel Comparator) and provides input to new initiatives, like the Clean Power for Transport program.

Furthermore, it is considered by Technology Platforms like the European Biofuels technology Platform as well as ERTRAC and recognized by EU member states.

Budget	Self-funded by JEC consortium partners	Start	2001
Duration	Continuing	Priority Area	Renewable energies
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Partners	EUCAR members, CONCAWE members & JRC		
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