



Liquid fuels perspective on ultra low carbon vehicles

Jim Simnick – BP Global Fuels Technology

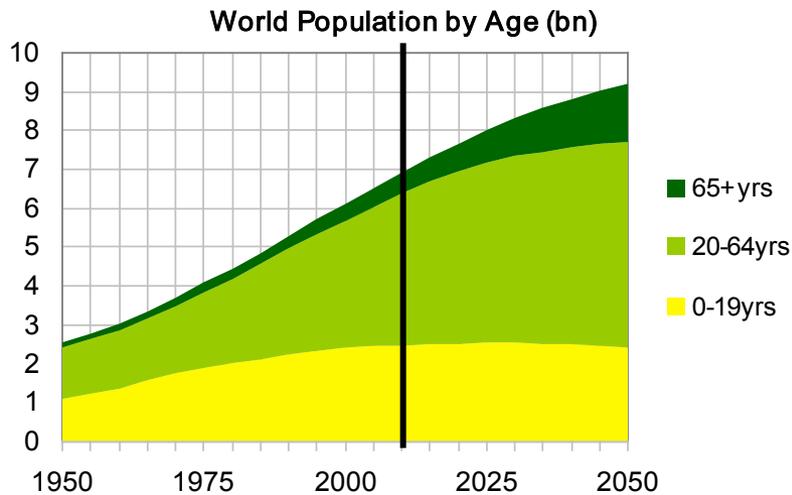
DEER Conference, October 2011

The evolving global energy market



Population forecast:

- 9 bn people by 2050
- 20-64 age group (5bn) – accounts for ~95% of motorisation
- **Income inequality** in the developing world limits vehicle ownership levels



The evolving global energy market



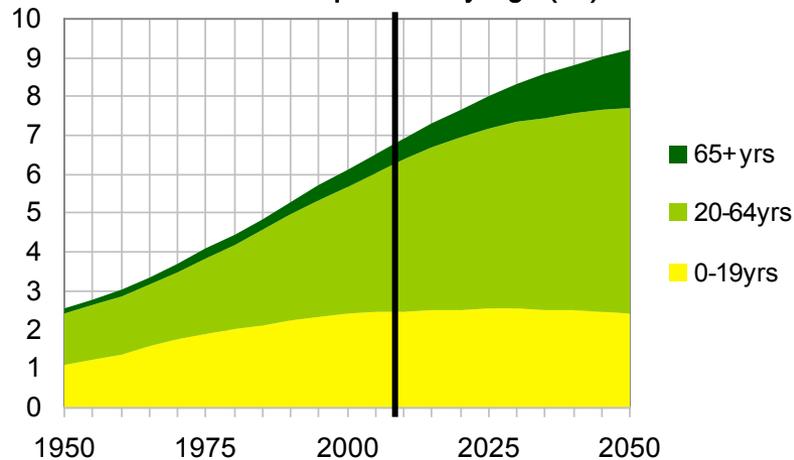
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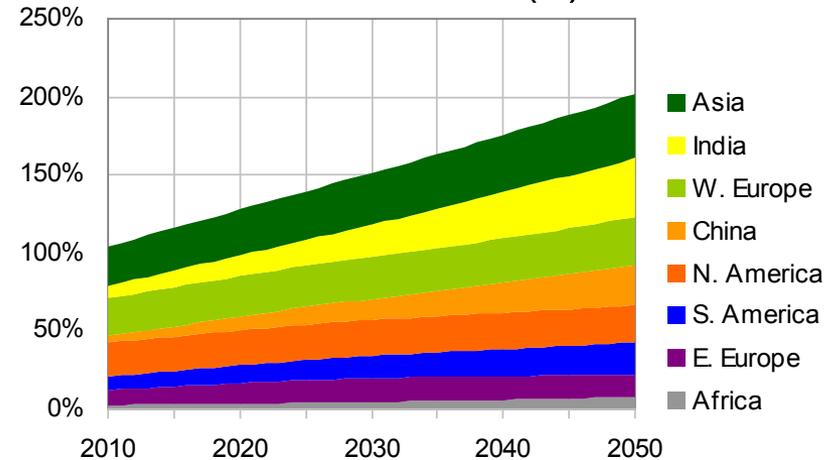
Vehicle parc forecast:

- By region, with India & China broken out
- Vehicle parc doubles by 2050
- China and India account for ~30% of global vehicle parc in 2050

World Population by Age (bn)



Total Vehicle Parc (bn)



What are the challenges for fuels?



Three key drivers of sustainable mobility solutions

- Air quality – particularly in developing markets
- Energy diversification and supply security
- Climate change

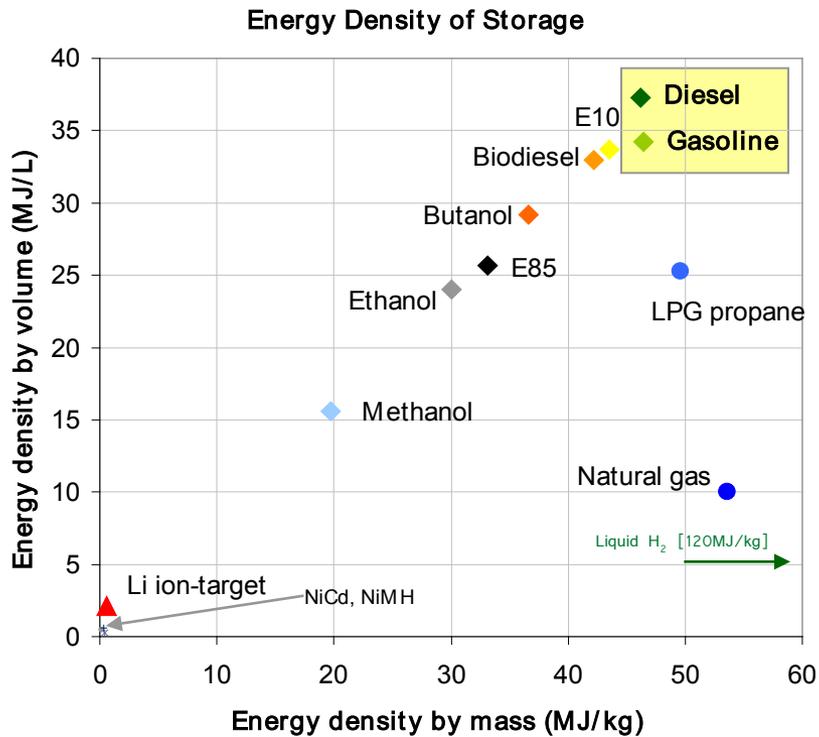
Economics & customer preference set the pathway



The importance of liquid fuels and efficiency



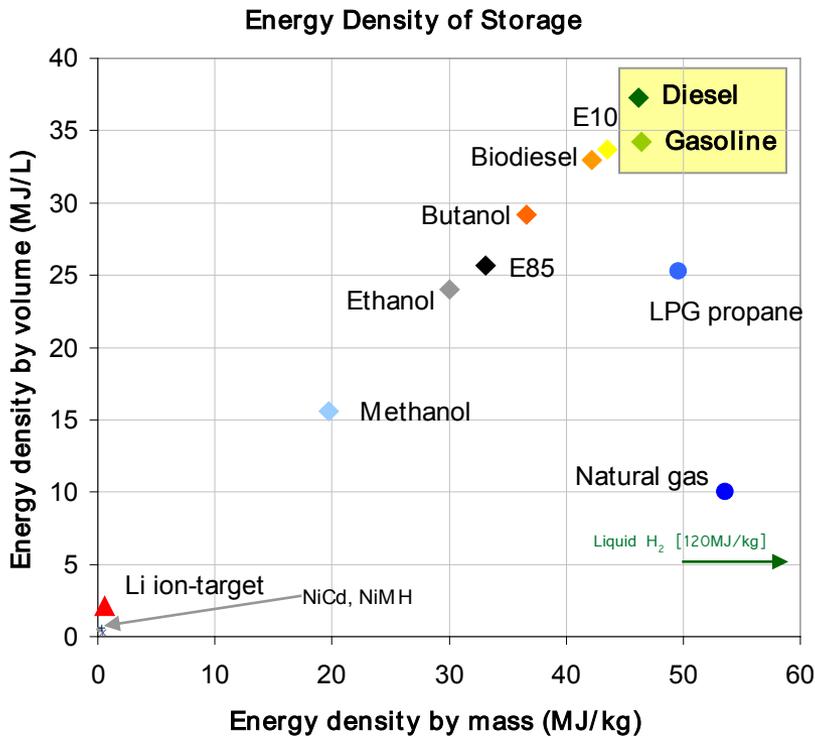
Liquid fuels are hard to beat...



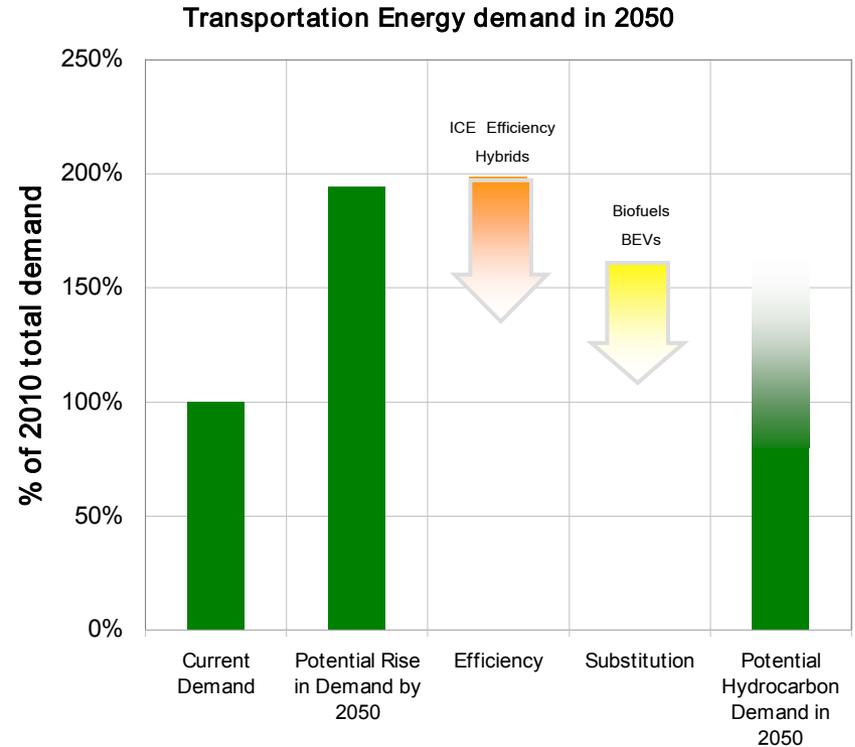
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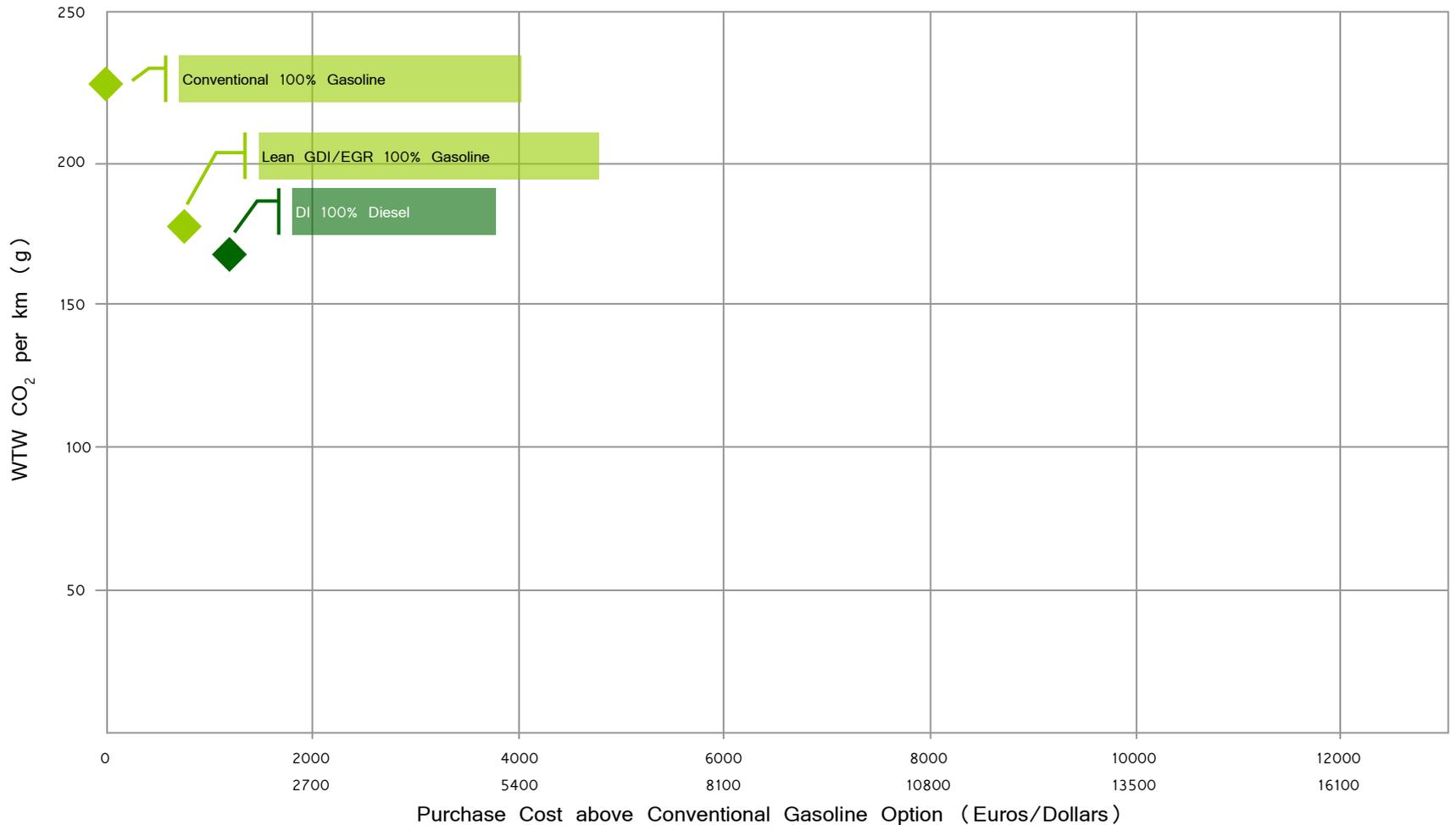
...and engine efficiency & alternatives play a significant role



The four technology race...



- 1) Reduced WTW CO₂ through advanced engine technology

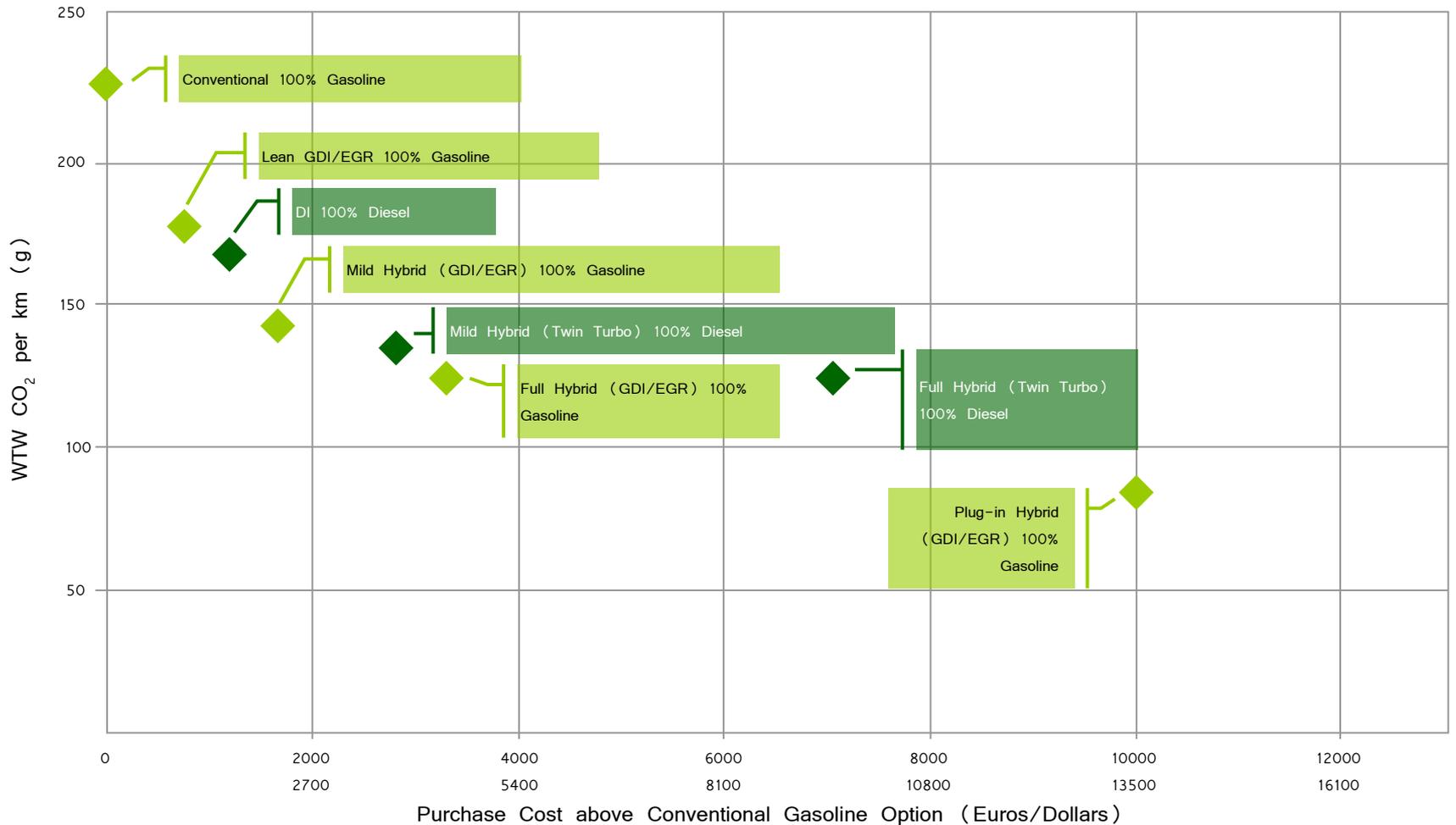


Based on a medium size car example

The four technology race...



- 2) Reduced WTW CO₂ through hybrid technology

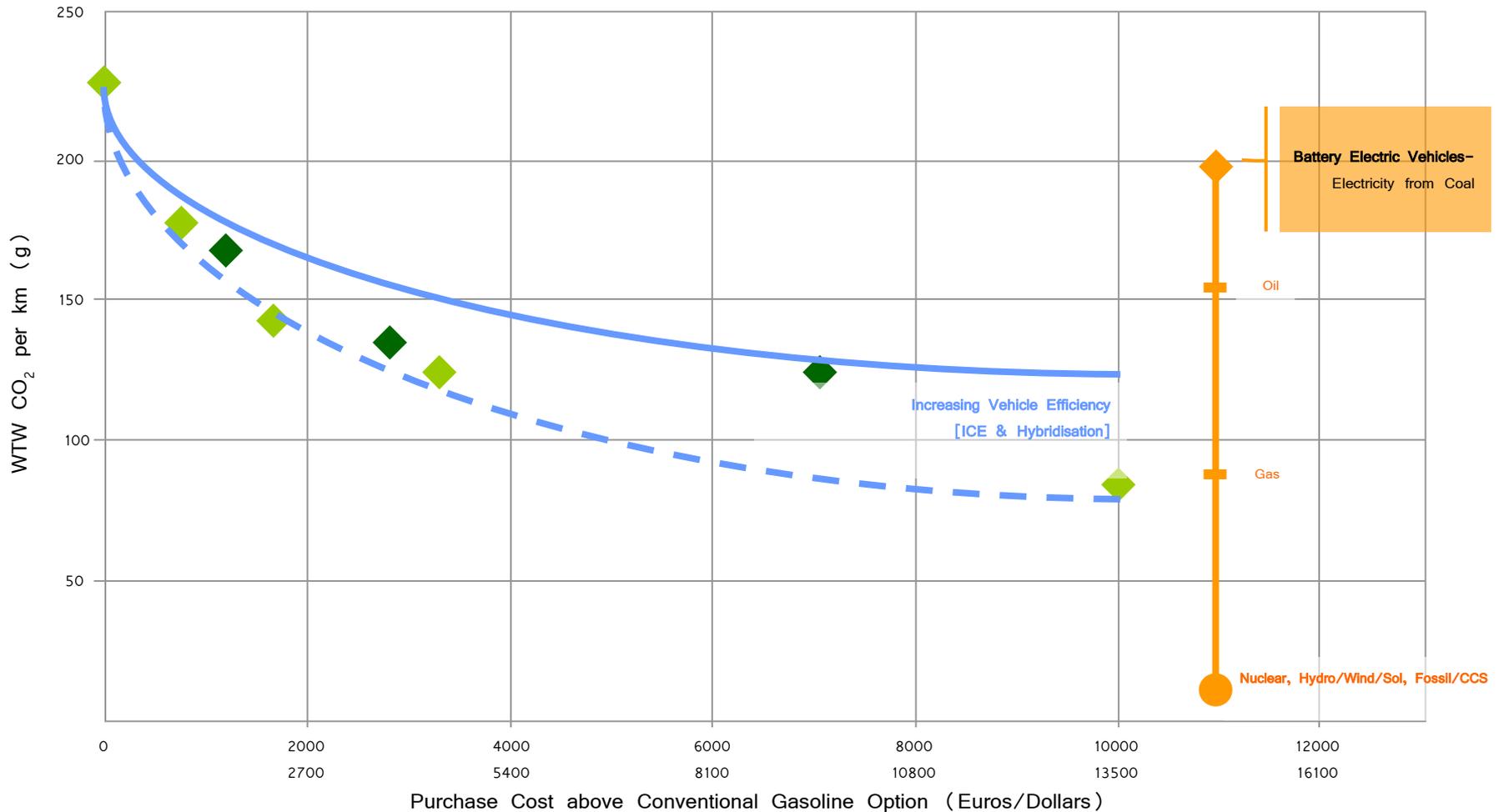


Based on a medium size car example

The four technology race...



- 3) Reduced WTW CO₂ through BEV technology (incl. power generation source)

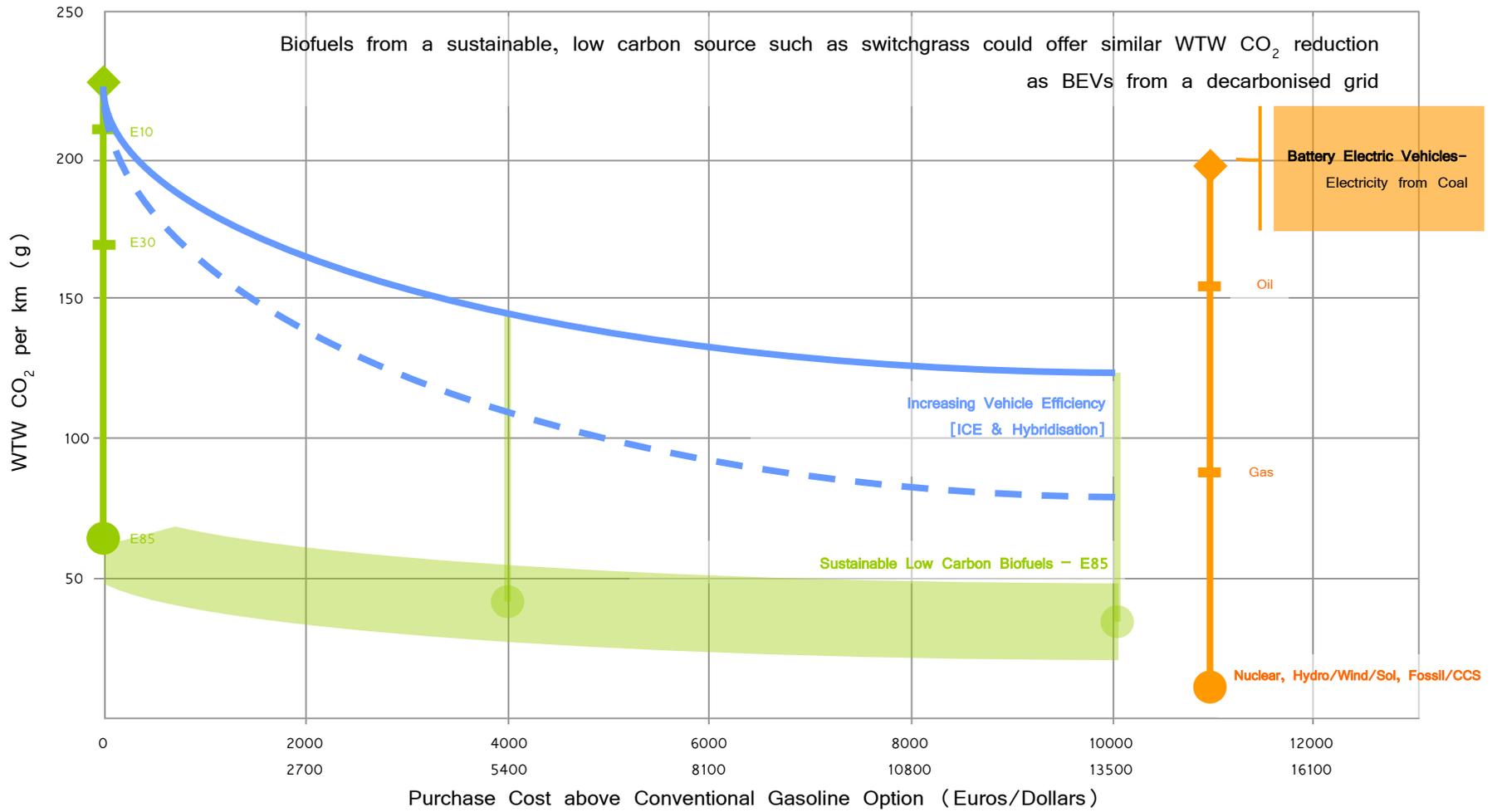


Based on a medium size car example, BEV Battery costs assumed at €300/kWh

The four technology race...

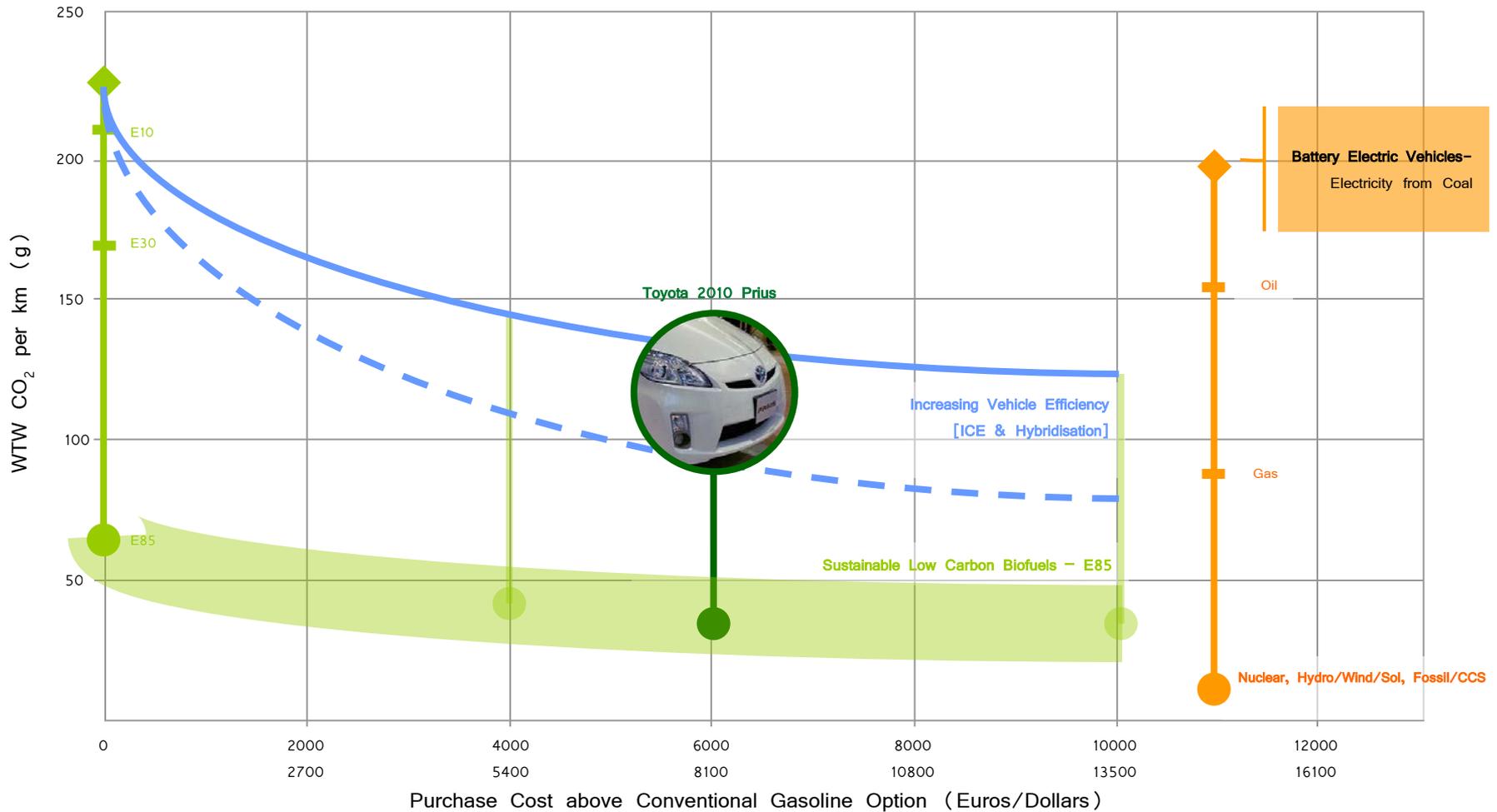


- 4) Reduced WTW CO₂ through application of biofuels



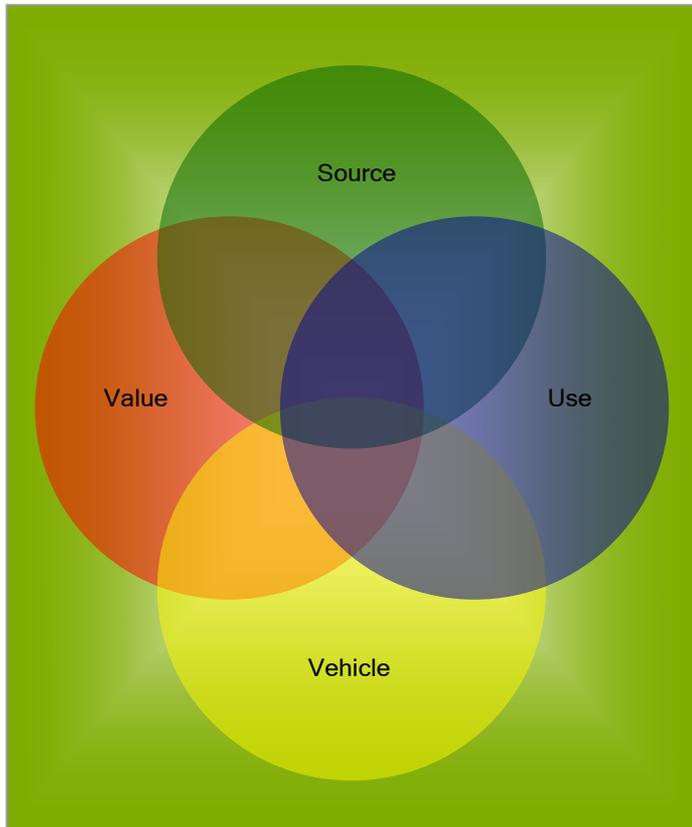
BEV Battery costs assumed at €300/kWh
 Biofuel source: C=Corn, S=Sugarcane, M=Miscanthus

Where are we today...?



BEV Battery costs assumed at €300/kWh
 Biofuel source: C=Corn, S=Sugarcane, M=Miscanthus

What is needed for fuels?



- ✓ Produced from domestic, renewable resources in high volume and reasonable cost.
- ✓ Use in existing vehicles and existing infrastructure
- ✓ Offer good value to consumers
- ✓ Meet the evolving demands of vehicles

BP plays a role in all areas...



Oil

+



Gas

+



Wind

+



Solar

+



Biofuels



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Thank you