The Need for Biofuels to Meet Global Sustainability Targets

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International Energy Agency

This presentation draws mainly on IEA's Energy Technology Perspectives (ETP 2012)

- Published in June 2012
- 6, 4 and 2 degree scenarios
- Status and way forward
  - progress tracking
  - policy, finance & behaviour
- Energy Systems feature
  - heating and cooling
  - flexible electricity
  - transport: interactions with other sectors
- Technology spotlights: coal, gas, CCS
- Electricity and demand sector outlooks
- Extended outlook to 2075
- Regional detail: BRICs, EU 27, US, ASEAN

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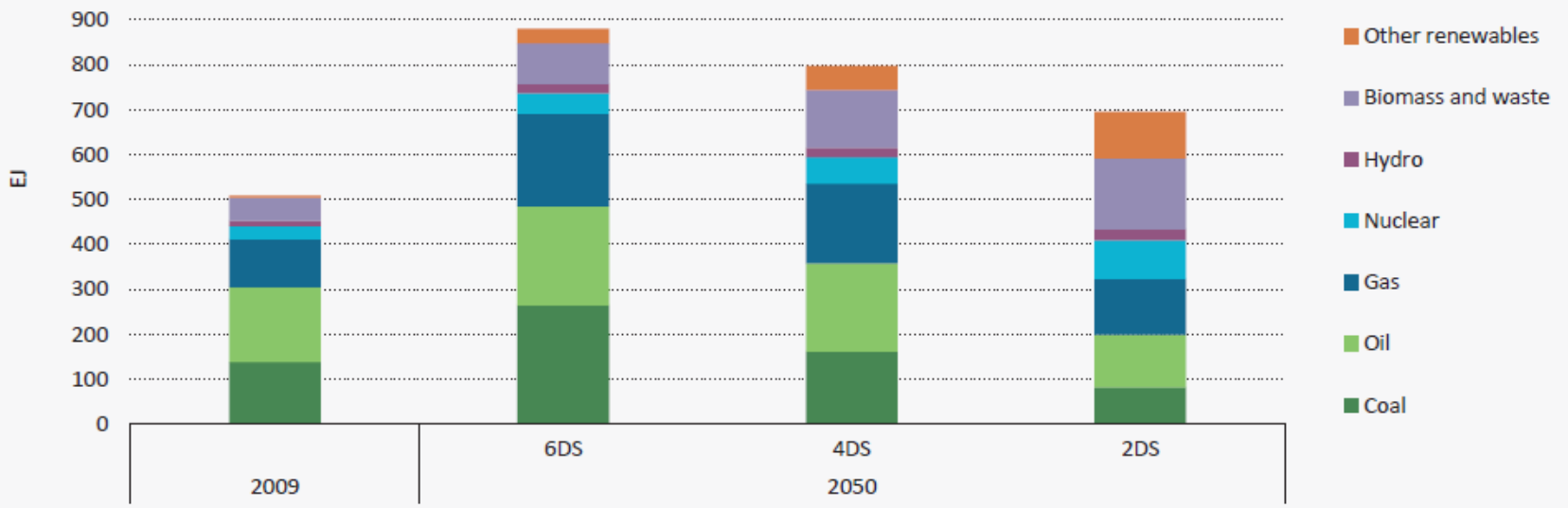
ETP2012 unveils three different futures

Figure 1.4 Total primary energy supply



Key point *The 2DS reflects a concerted effort to reduce overall consumption and replace fossil fuels with a mix of renewable and nuclear energy sources.*

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Emissions must be eliminated by 2075



A zero-carbon future looks possible but will be very challenging, even if 2050 targets are met in the 2DS.

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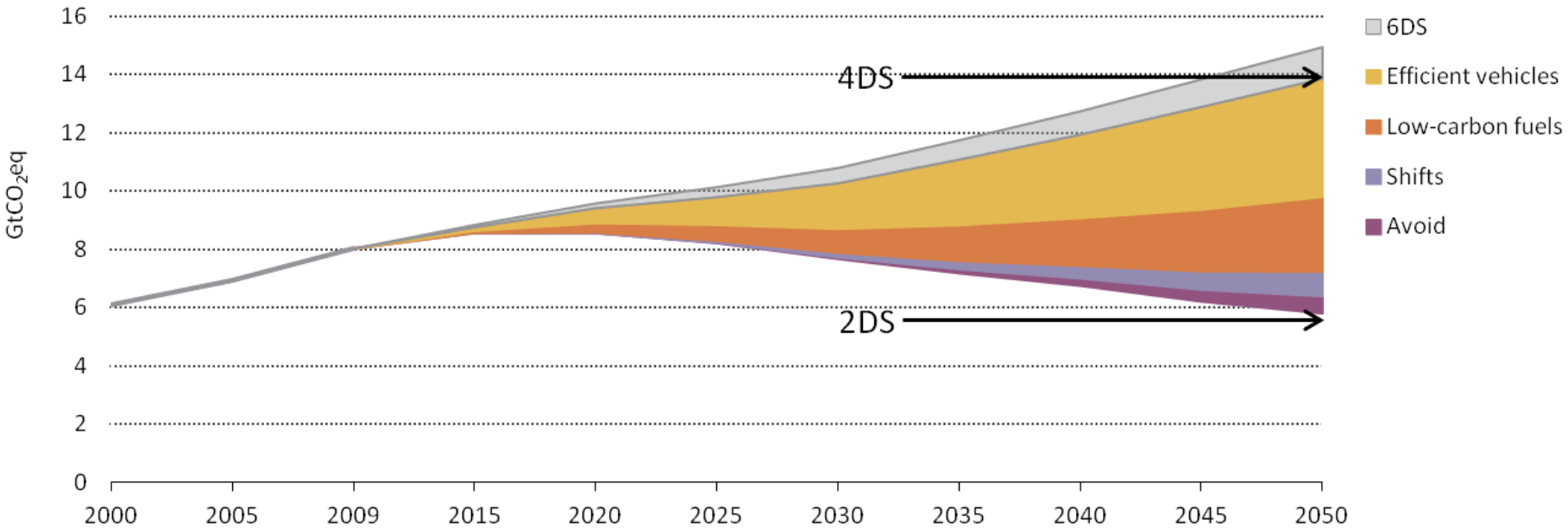
IEA ETP 2012: Efficiency and Low carbon fuels are key

ETP 2012

Low carbon fuels become increasingly important after 2030, but need a foundation well before then to succeed.



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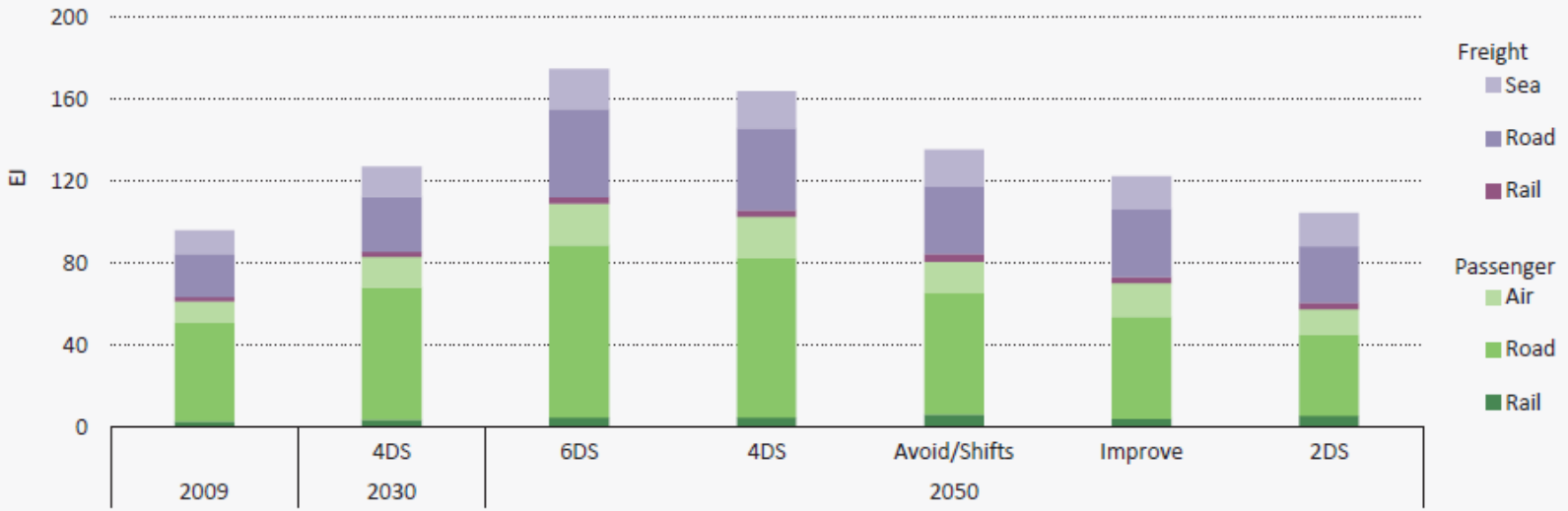
Getting back to where we started…

Figure 13.20 Energy demand in the transport sector by mode



Key point *The 2DS reflects both travel* Avoid/Shift *changes and vehicle* Improve *changes, which combine for maximum fuel savings.*

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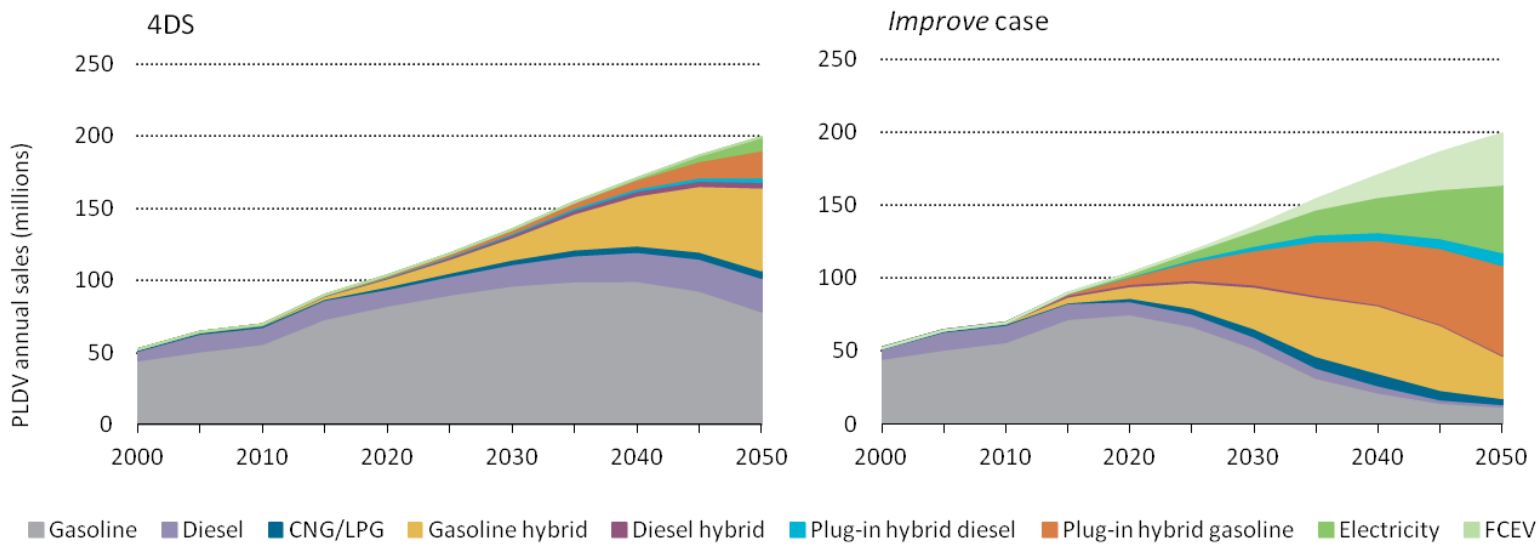
The 2 degree scenario reflects a range of vehicle types

But most new cars have an electric motor after 2030



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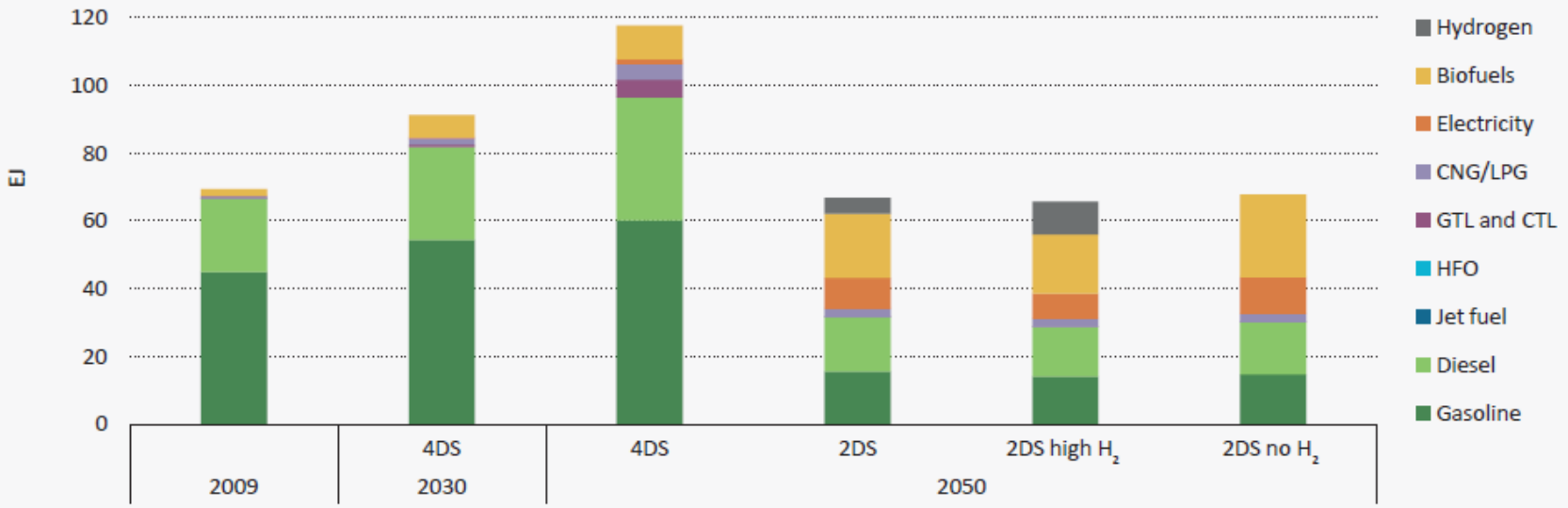
Road fuel use scenarios

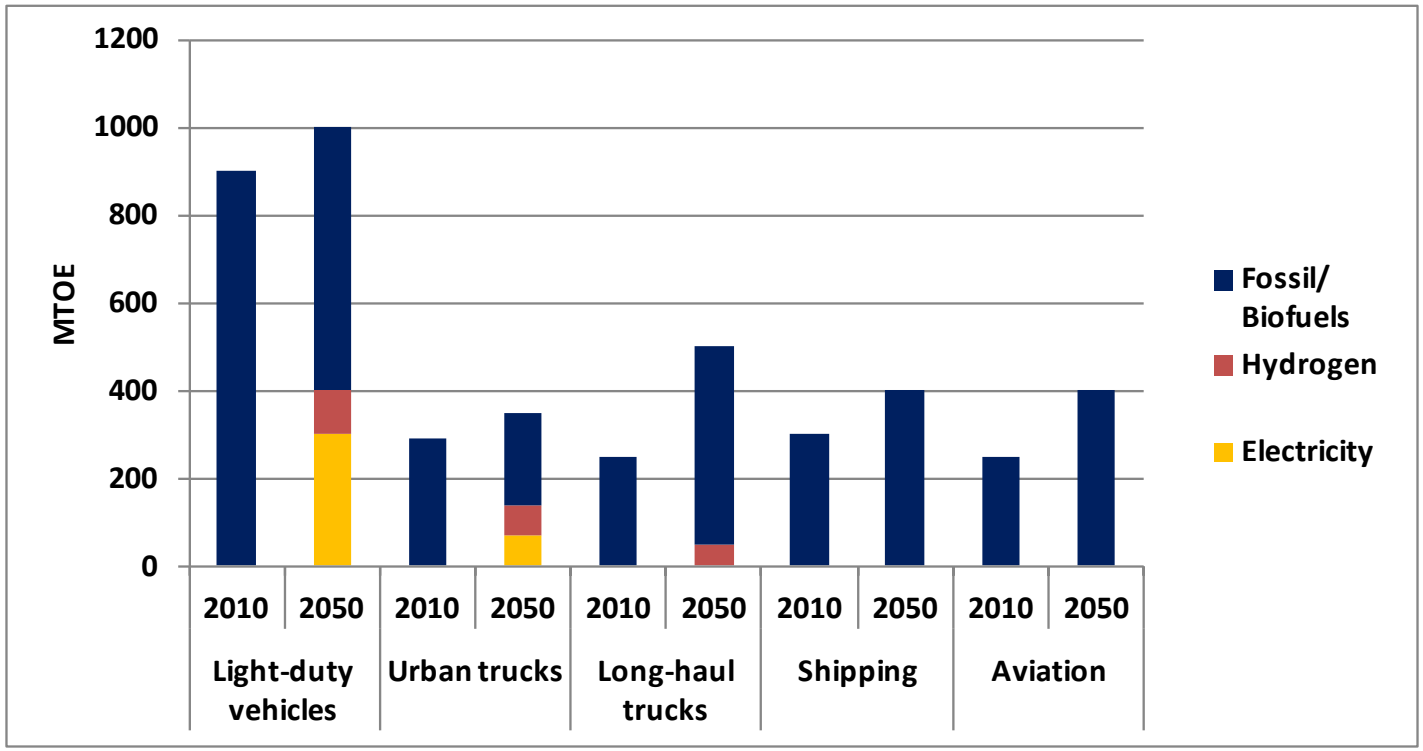
Figure 7.15 Fuel demand by fuel type



Key point *Compared to the 4DS, total road vehicle fuel demand in all 2DS variants is almost halved and much more diversified by 2050.*

How far can electricity and H2 take us by 2050?

Even in ETP 2 degree scenario, electricity and H2 will have limited transport application if no technology breakthroughs; 2000 MTOE up for grabs



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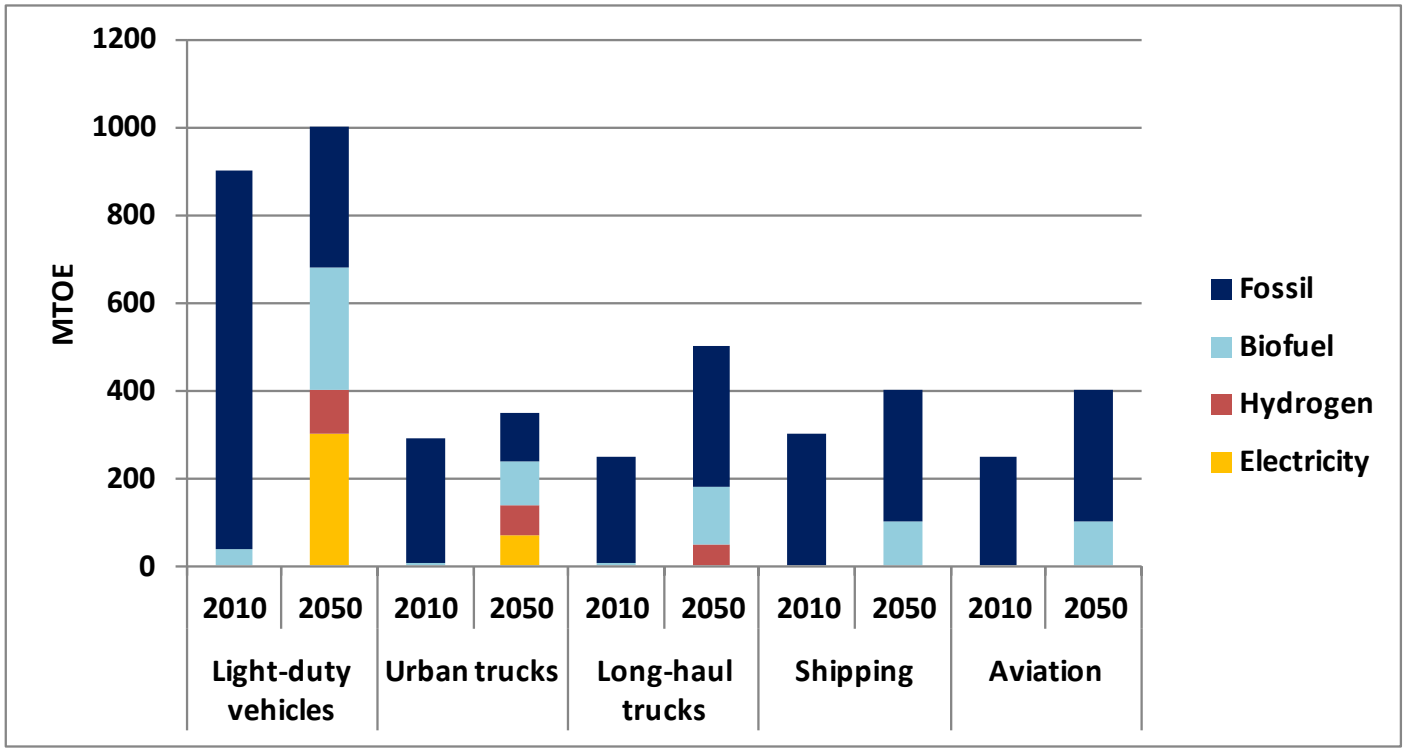
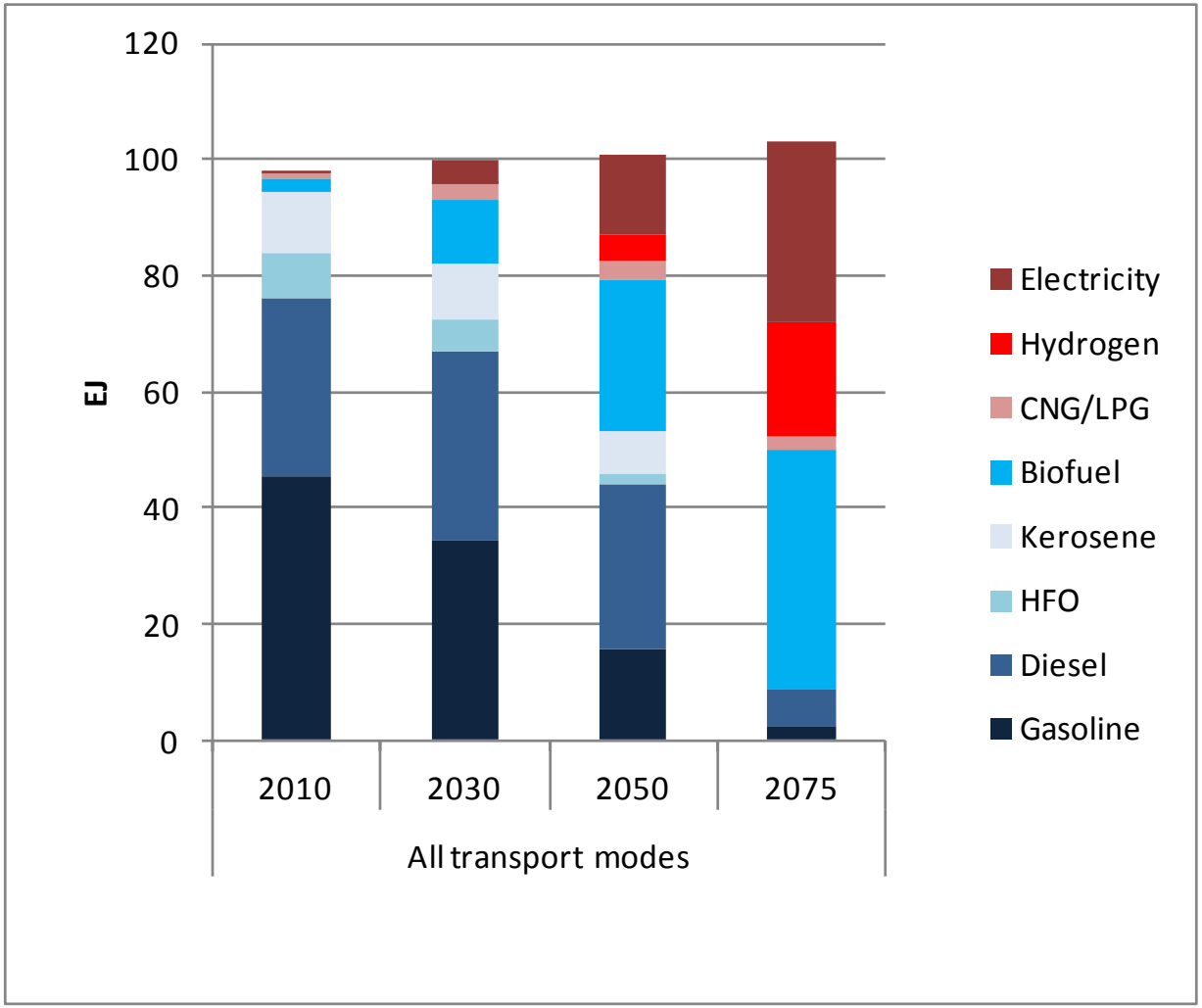
How much biofuels will we have, sustainably, by 2050?

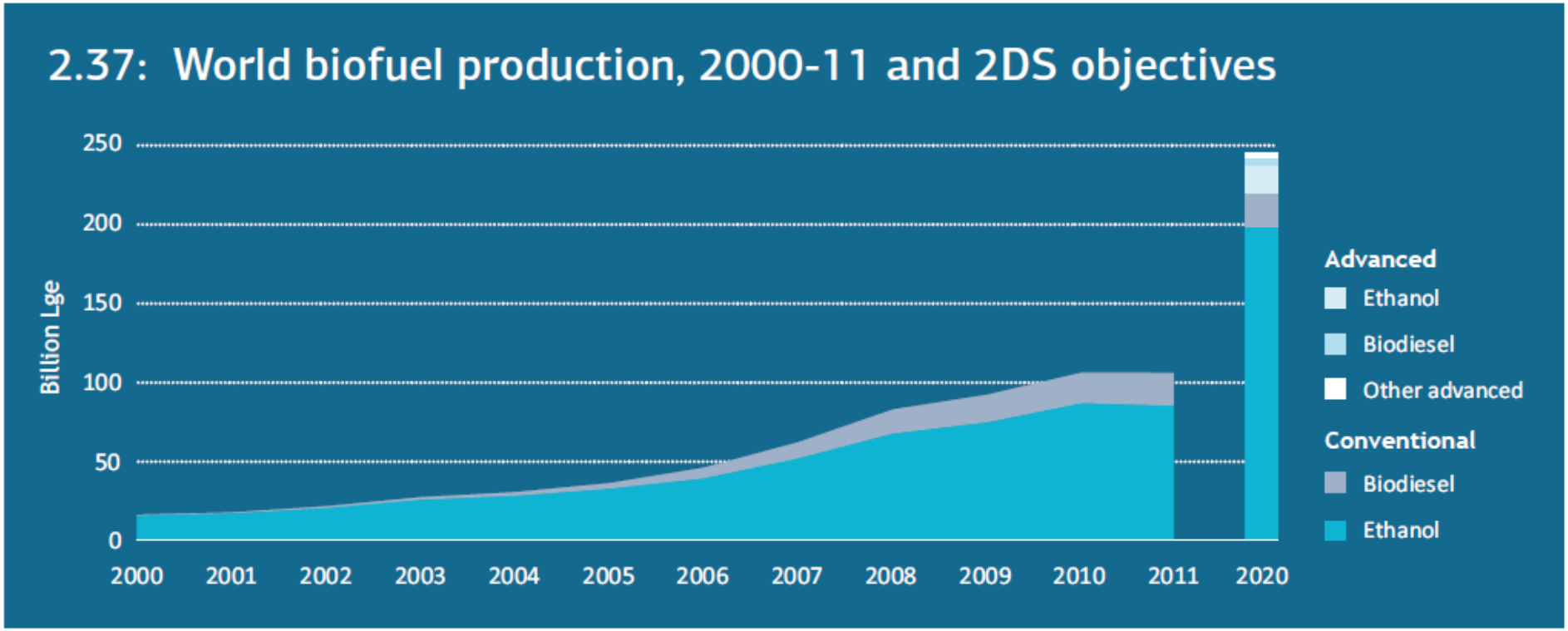
In ETP 2 degree scenario, we include about 700 MTOE of biofuels (30 EJ) in 2050 compared to 70 (3) today; can we do this? And, must keep rising after 2050 to stay on 2DS.



The 2DS extension out to 2075



Biofuels: can we get on track?



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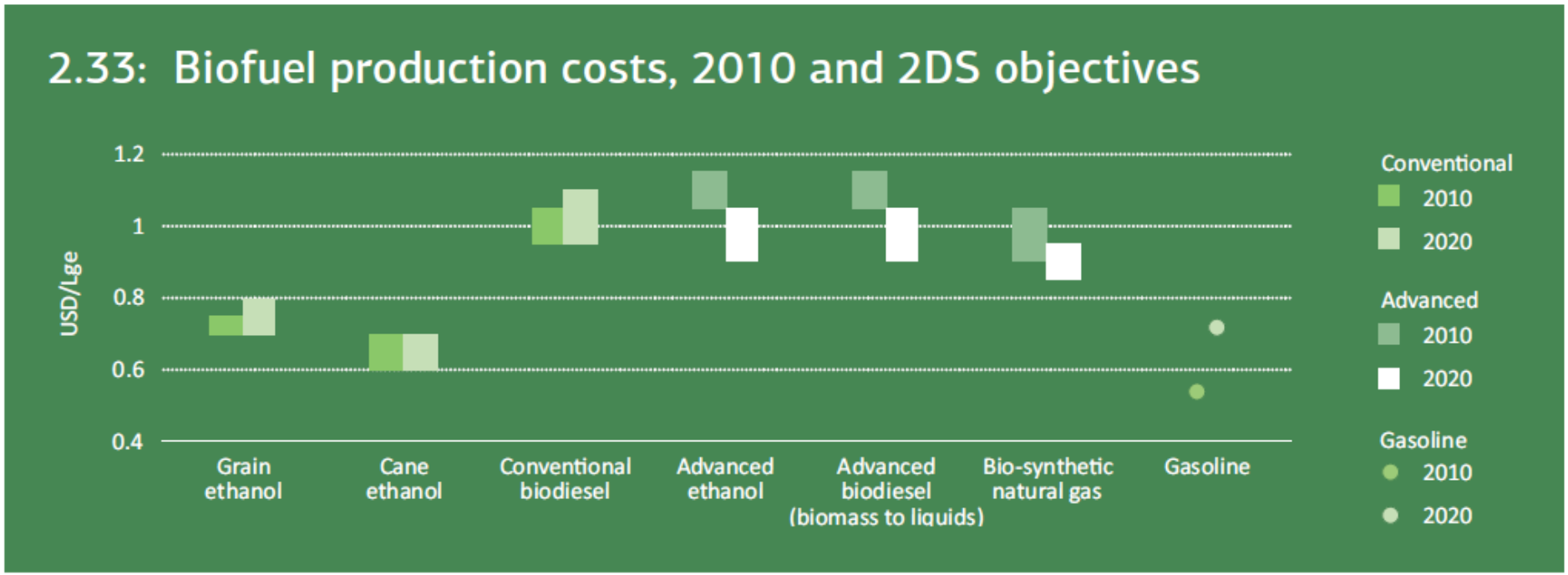
Biofuels cost targets to 2020



Conclusions

- Climate 2DS: need to reach 50% near-zero carbon fuels in transport by 2050, near 100% by 2075
- H2/electricity may only get you 1/3 to half way
- Hard to achieve without dense liquid fuels
- Question becomes: can we deliver very large volumes of very low (net) GHG, truly sustainable biofuels? How much and by when?