



INTERNATIONAL ENERGY AGENCY

**Transport, Energy and CO<sub>2</sub>:  
Moving Toward Sustainability**

**Low Fulton, IEA**  
**Global auto makers event at COP 15**  
Copenhagen, 14 December 2009



## IEA and transport

### Relevant publications



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■ **Medium term Oil Market Report**  
Horizon 2015, focus on oil  
Scenarios currently based on two different GDP growth assumptions, includes biofuels projection
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■ **World Energy Outlook (WEO)**  
Horizon 2030, all energy sources  
Scenarios depicting different developments on the basis of policy actions  
One underlying assumption for GDP and population growth  
Includes a thorough analysis on the oil supply availability
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■ **Energy Technology Perspectives (ETP)**  
Horizon 2050, all energy sources  
Scenarios that pay particular attention to the role of technology, especially on the demand side  
One underlying assumption for GDP and population growth
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■ **Transport, energy and CO<sub>2</sub> *Just Out!***  
Moving towards sustainability  
"Transport book"  
Horizon 2050, all energy sources  
Builds and expands the work done on ETP

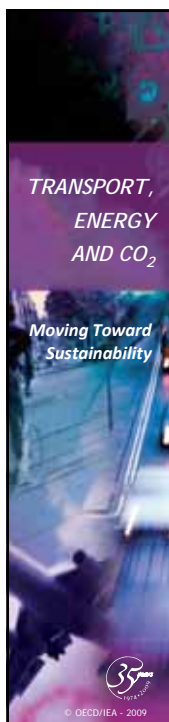
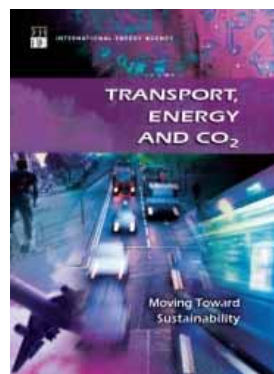
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## IEA's New Transport Publication

- Released 27 October, 2009
- Builds on ETP 2008, will feed into ETP 2010
- Transport analysis based on on-going development of IEA Mobility Model, supporting research
- Book features:
  - Indicator update and extension to more countries
  - Technology potential and cost updates
  - Fuel and Modal assessments (LDV, truck, aviation, shipping)
  - Detailed scenario analysis with regional detail – Baseline, High Baseline, Modal Shift, BLUE technology scenarios
  - Role of future technologies, modal shift
  - More regional detail than in ETP
  - Continuing development of CO<sub>2</sub> mitigation cost analysis
  - Policy considerations



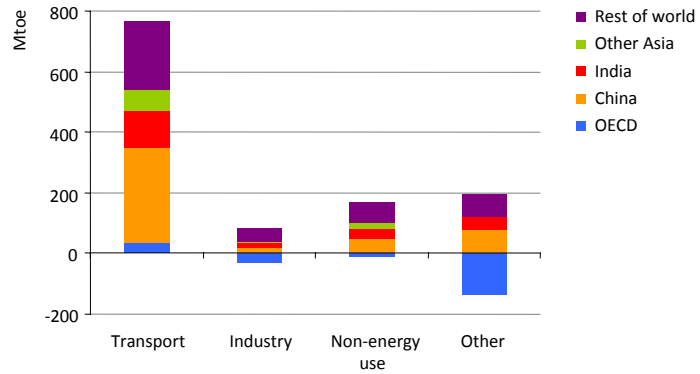
**IEA Electric and Plug-in Hybrid Vehicle Roadmap published October 2009**

[www.iea.org](http://www.iea.org)





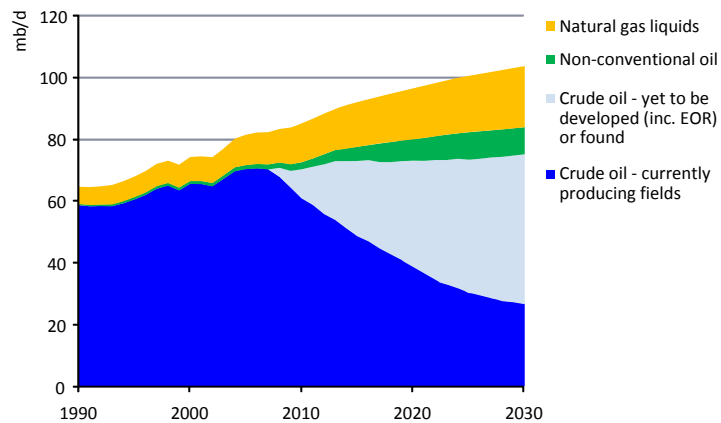
## WEO 2008 Reference Scenario: Incremental oil demand, 2006-2030



*Around three-quarters of the projected increase in oil demand comes from transportation*

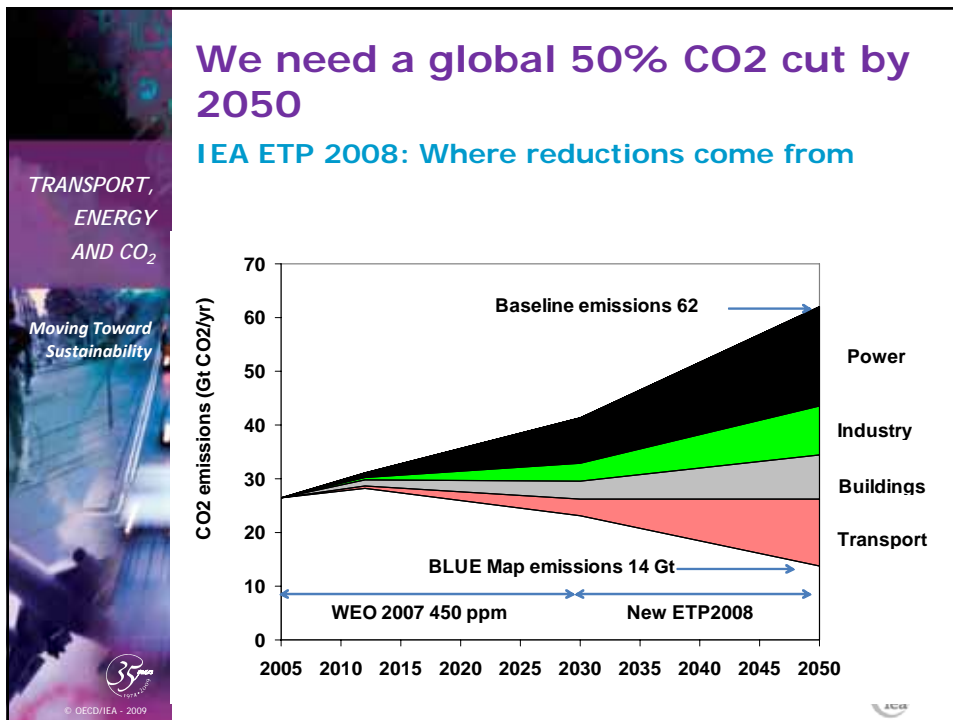


## World oil production by source in the Reference Scenario



*64 mb/d of gross capacity needs to be installed between 2007 & 2030 – six times the current capacity of Saudi Arabia – to meet demand growth & offset decline*



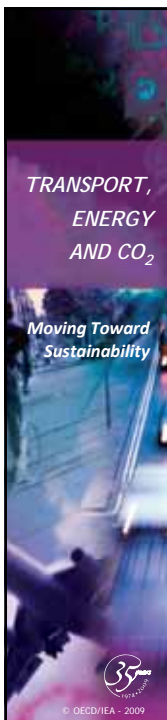


- How do we get there? The IEA ETP BLUE Map approach**
- 1. Integrated transport planning and investment**
    - 25% reduction in growth of car use/air travel by 2050
    - Doubling of investment in and use of transit systems compared to baseline
    - Some motorised transport avoided (shorter trips, more walking/cycling, telematics)
  - 2. Achieve 50% reduction in new car fuel intensity by 2030 (doubling of MPG and KM/L)**
    - From about 8 L/100km down to 4
    - Existing, commercial technologies
      - ♦ including hybrid vehicles, better components, light weighting
    - With fuel savings, net cost from a societal perspective will be low or even negative
    - Also 30-50% improvement potential for other modes (trucks, trains, ships, planes)
- © OECD/IEA - 2009
- International Energy Agency



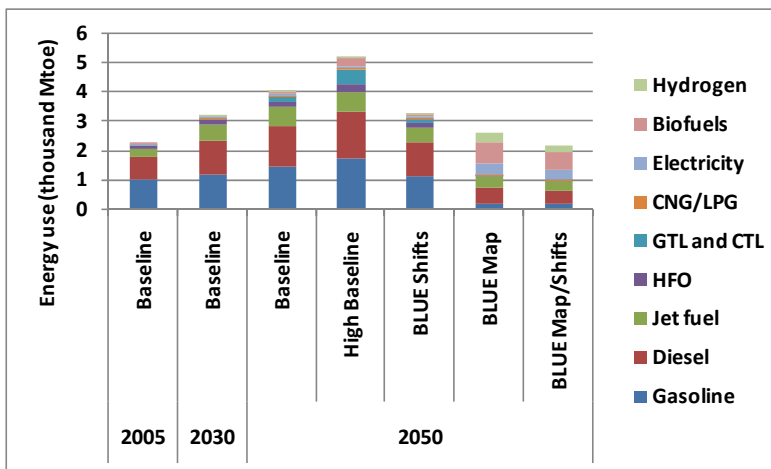
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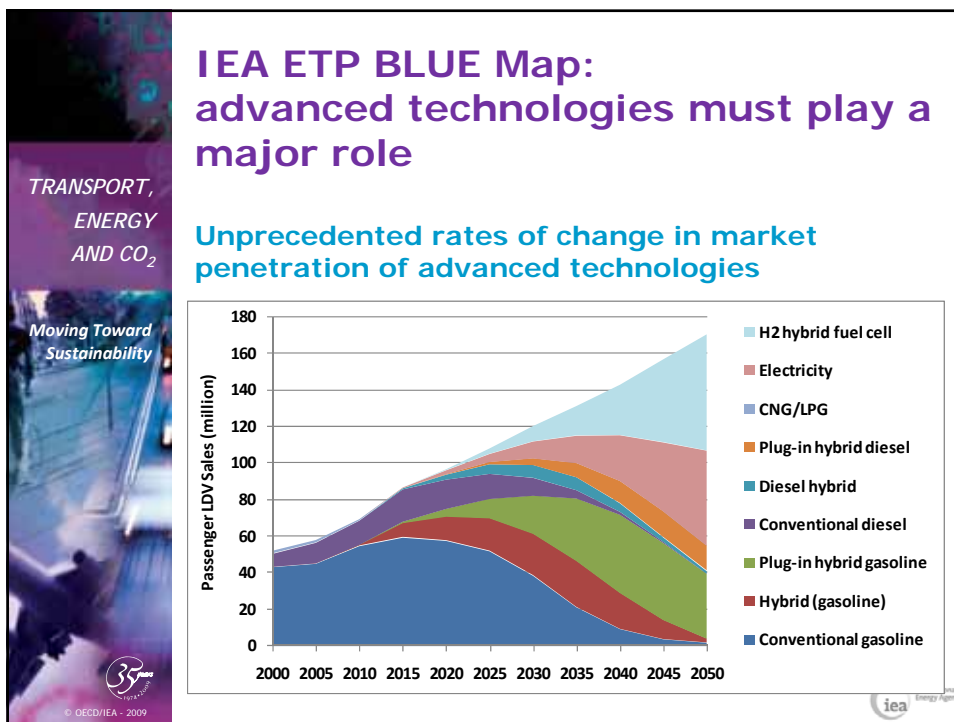
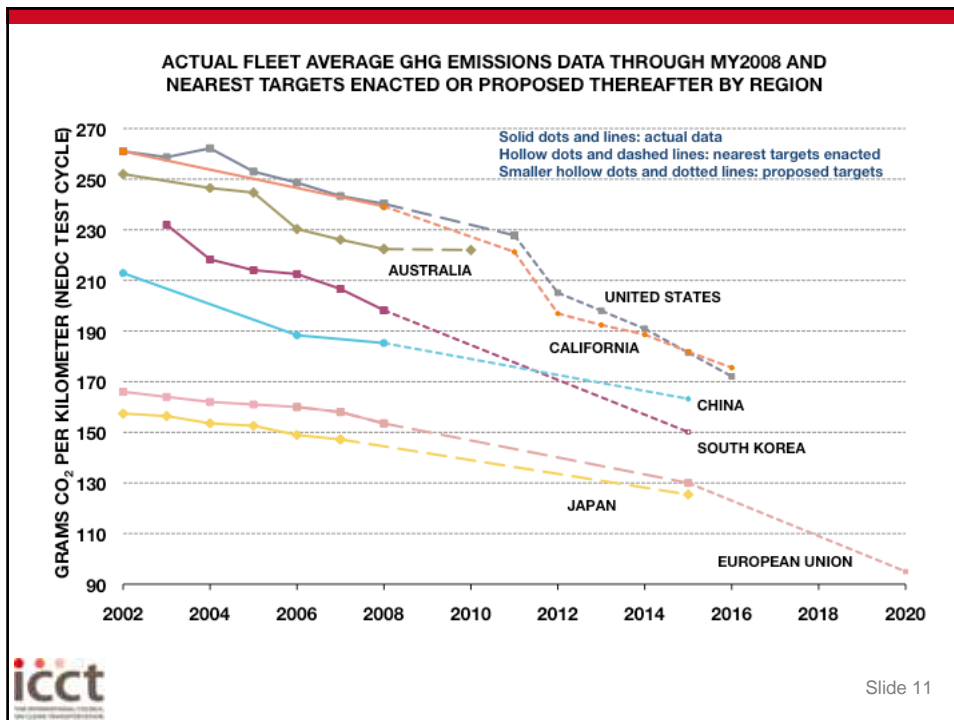
3. **Widespread introduction of advanced technology vehicles by 2030, dominance by 2050**
  - ETP BLUE Map: EVs/PHEVs reach sales of 7 million by 2020, 30 million by 2030
    - ◆ Fuel cell vehicles start ramp up after 2020
  - Battery costs are dropping, must reach USD 300/kWh by 2020
  - Plug-in hybrids (PHEV) are a promising transition strategy
  - Low GHG electricity/hydrogen must be widely available by 2030
  
4. **Use of advanced biofuels**
  - Reach 12% of transport fuel by 2030, 25% by 2050
  - Feedstocks from residues, wastes, dedicated lignocellulosic crops
  - Must resolve land use change, soil carbon, ecosystem, food security issues



## Energy use by scenario

In ETP BLUE Map/Shifts scenario, energy use returns to 2005 level, with more than 50% very low CO2 fuels







## IEA work on vehicle efficiency Linked to the Global Fuel Economy Initiative (GFEI)

- Launched on 4 March 2009 in Geneva by IEA, ITF, UNEP, and the FIA Foundation

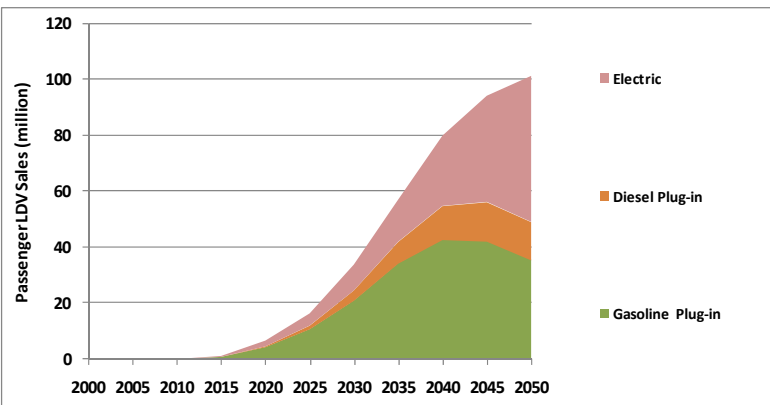


- GOAL: 50% reduction in fuel consumption per km of 2050 (for the vehicle stock) compared to 2005
- Roughly equivalent to an implementation of a 50% improvement by 2030 for new sales, worldwide (from about 8 L/100km down to 4)
- Four main activity areas:
  - Analysis of global fuel economy trends and potential
  - Outreach to governments, assistance in policy development
  - Outreach to stakeholders, dialogue to improve coordination
  - Information campaigns



## BLUE Map EV/PHEV sales trajectory to 2050

*How can we achieve this?*



**Annual sales targets:**  
 2020: 7 million: e.g. 70 models selling 100,000 each  
 2030: 30 million: e.g. 150 models selling 200,000 each  
 2050: 100 million: e.g. 400 models selling 250,000 each





## Um, Policies?

- Clearly we will need strong policies both internationally and at national levels (and local!)
  - (cross sectoral) cap and trade – yes, but time to implementation might be long
  - Carbon price – yes, but \$50/tonne is only \$0.12/litre for gasoline
  - Bigger price changes can be achieved in many countries just by removing subsidies
- National measures should include:
  - Major increase in investments in the most efficient modes and related infrastructure
  - Fuel economy standards on all types of vehicles – 30-50% reductions in energy intensity by 2050 seem possible for most
  - Advanced biofuels – yes, but we should not push this too fast! Low carbon fuel standards can help
  - EVs/FCVs but relatively high cost and massive infrastructure investments and coordination will be needed – need to start now
- Local level – integrated planning / land use/ modal shift policies (but national gov's can encourage)