



# Innovation opportunities from a transition to low carbon prosperity

ECO-Innovation Summit

March 23, 2010

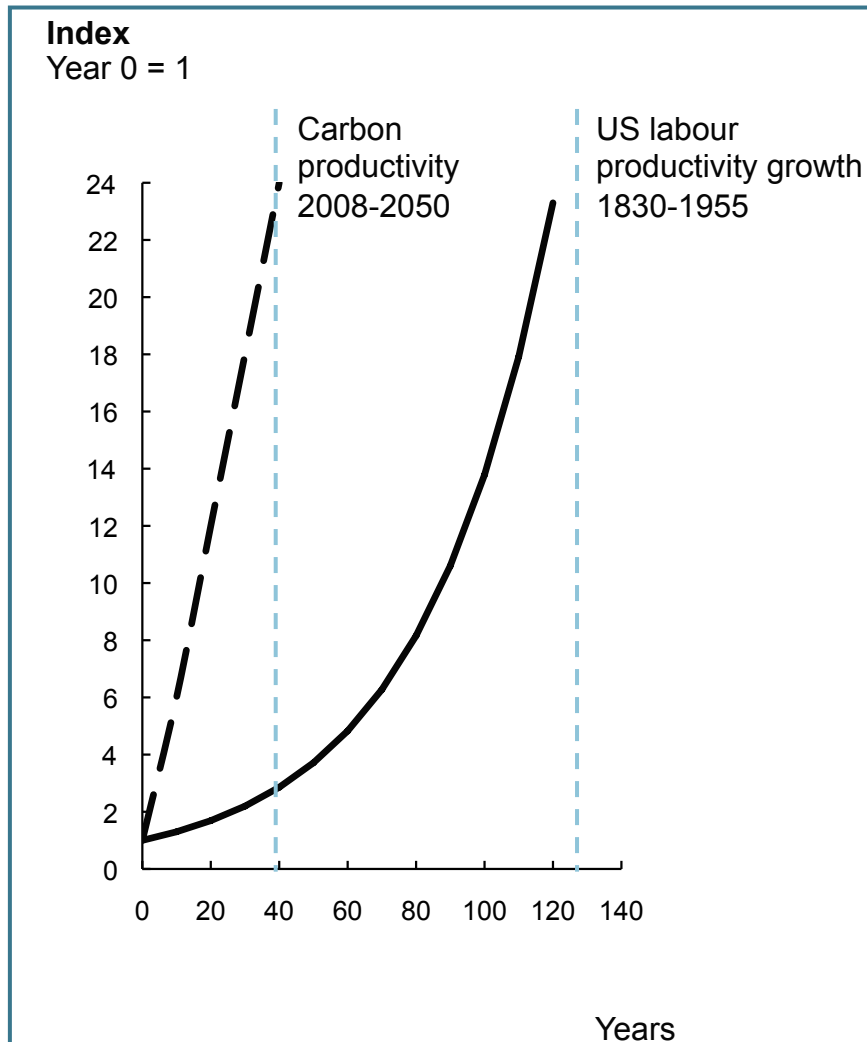
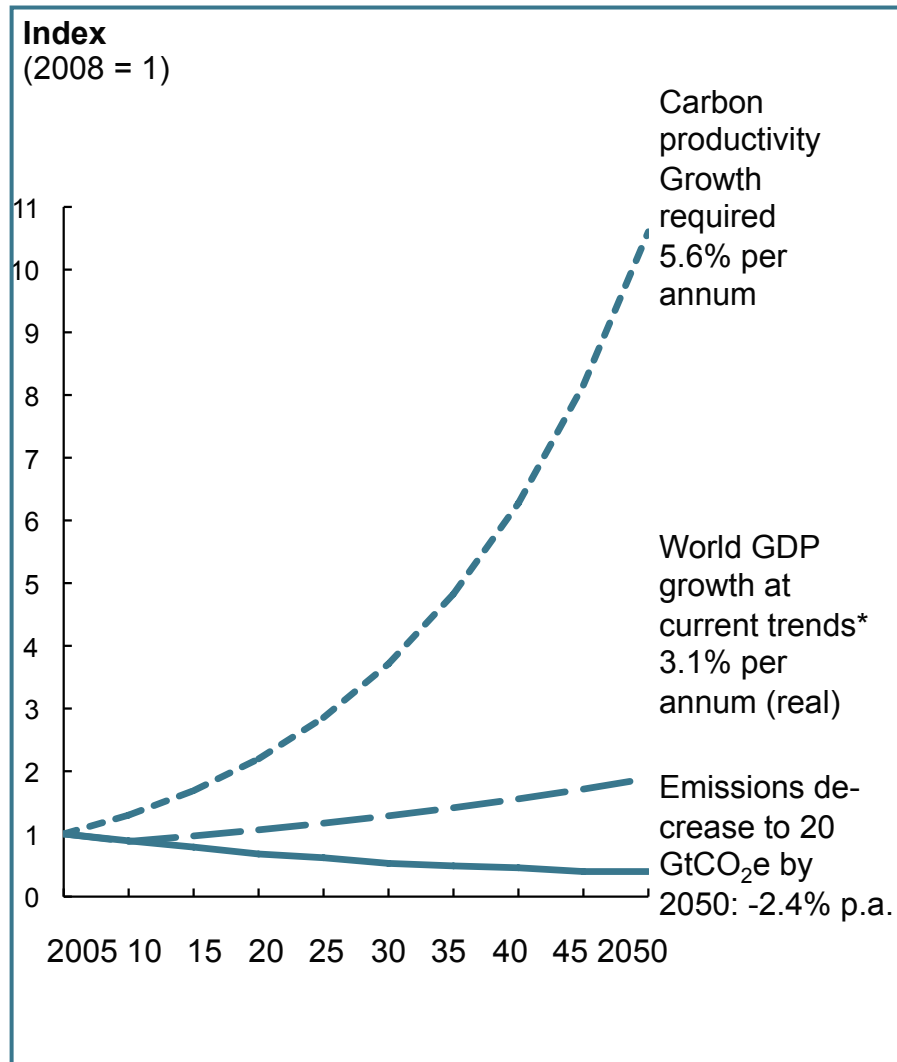
CONFIDENTIAL AND PROPRIETARY

Any use of this material without specific permission of the European Climate Foundation is strictly prohibited



## Maintaining growth and reducing emissions implies carbon productivity must increase by ten times

### Carbon productivity trends and forecast requirements

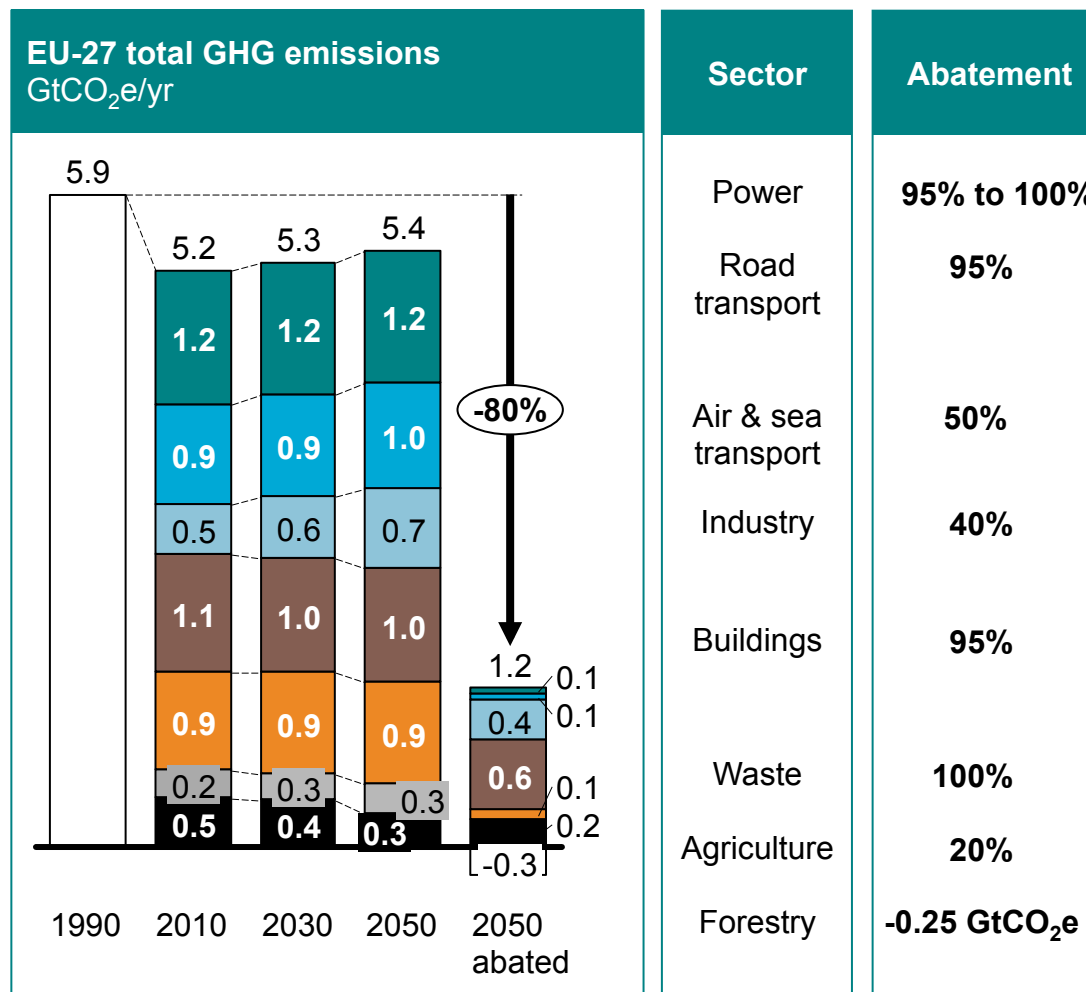


\* Global Insight GDP forecast to 2037, extrapolated to 2050

Source: McKinsey analysis, Contours of the World Economy 1–2030 A.D., Maddison, 2007



## An 80% GHG reduction could be achieved by maximum abatement within and across sectors





**The pathways cover a wide range of technology mixes and are assessed based on set criteria**

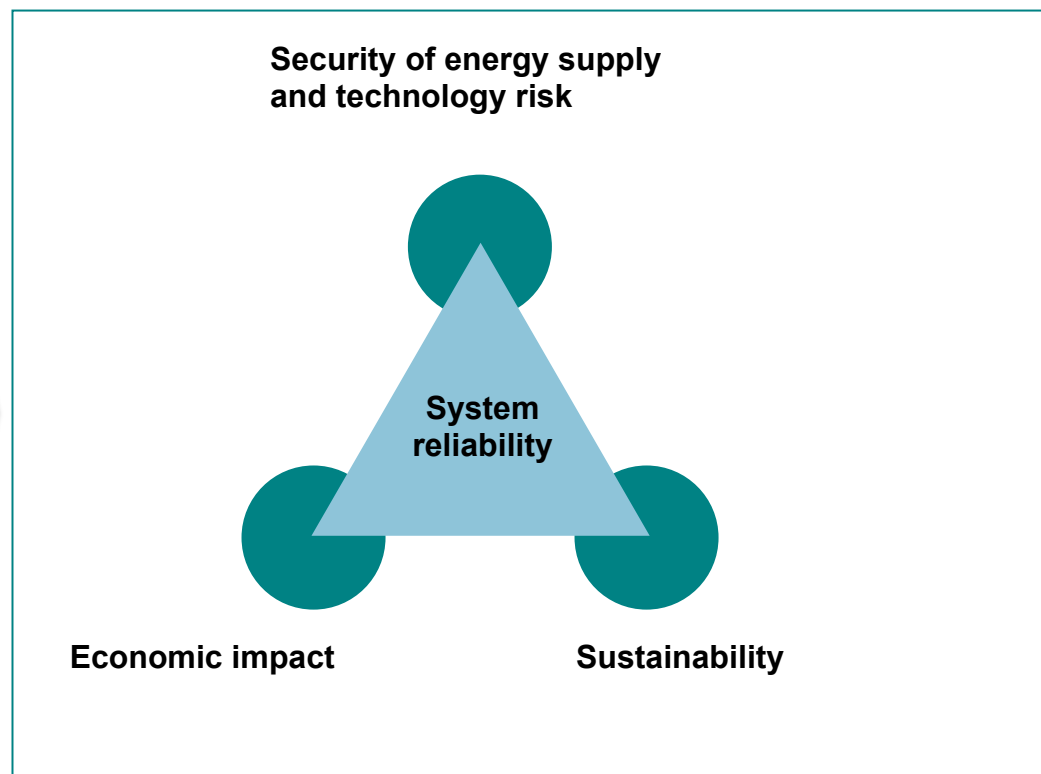
### **Decarbonization pathways**

**40% RES<sup>1</sup>  
30% Nuclear  
30% CCS**

**60% RES  
20% Nuclear  
20% CCS**

**80% RES  
10% Nuclear  
10% CCS**

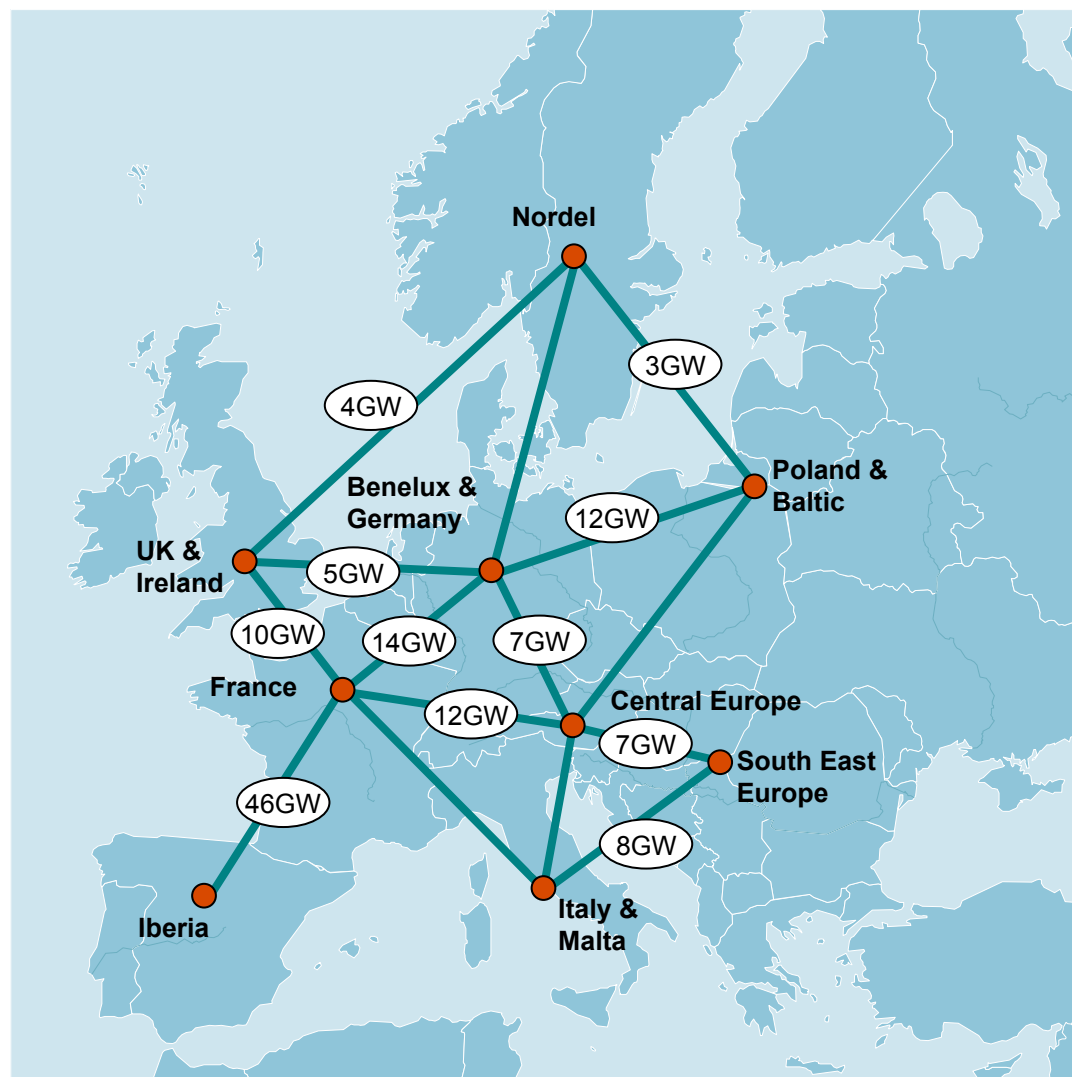
**100% RES**





## 80% RES: DSM reduces transmission requirements with 24%

80% RES, 20% DSM



● Centre of gravity

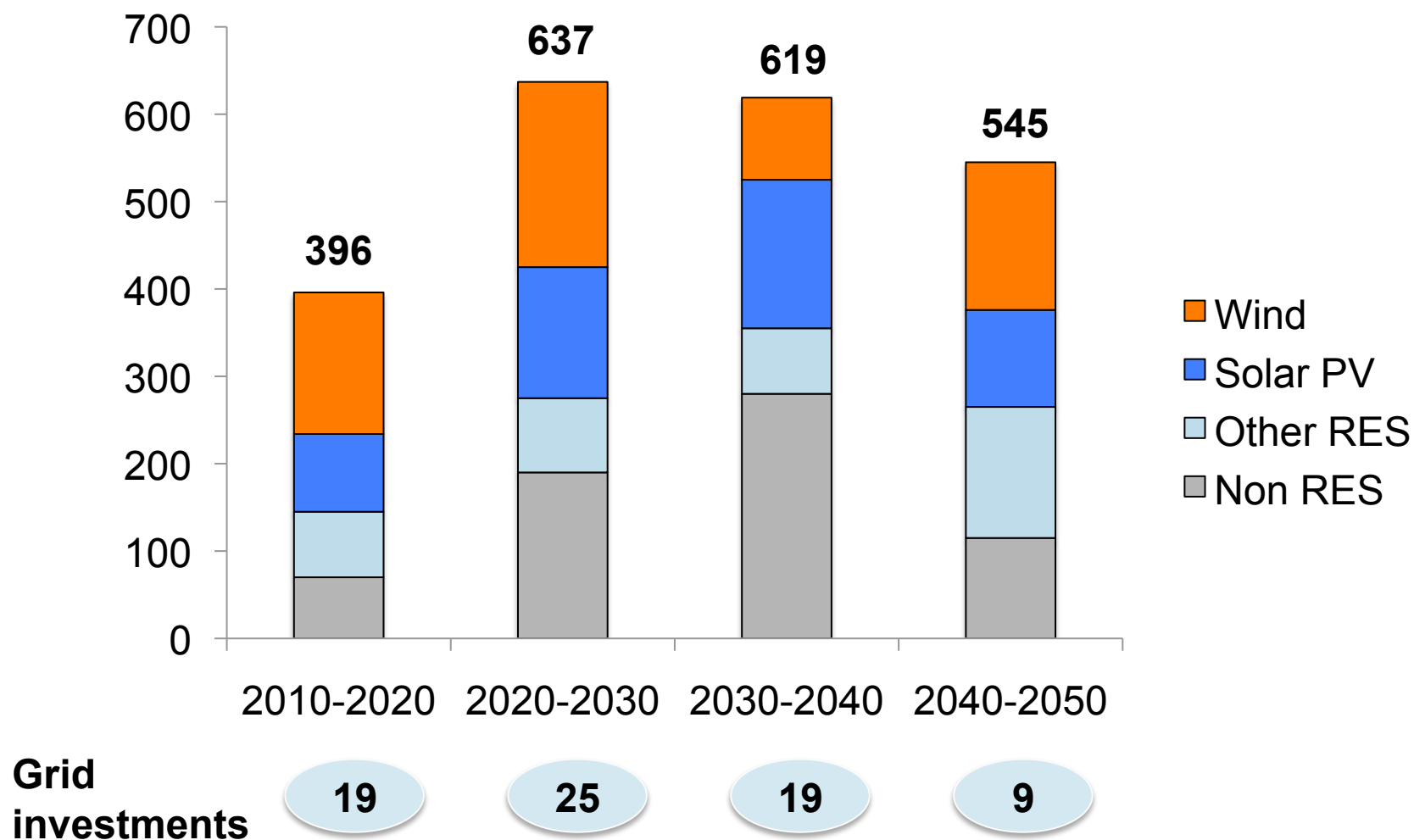


## Half of the capex is required for wind and solar PV up to 2050 for a 60% RES decarbonized pathway

EXAMPLE

Capex by technology by decade, EUR billions

60% RES PATHWAY





## Key low carbon technologies

**On- / Offshore wind**



**Solar PV / CSP**



**Automotive power train**



**Energy Efficiency**



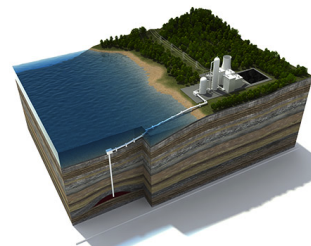
**Super / Smart Grid**



**Biomass & -fuels**



**CCS**





## To achieve this, the EU is facing large challenges over the next years

### Energy Efficiency

- Drive faster investment in cost-effective measures to reach 20% end-use efficiency improvement by 2020 and continue efficiency gains beyond 2020

### Power Markets

- Ensure timely retirement of existing high-carbon resources
- Drive commercialization and deployment of critical low-carbon technologies
- Create a durable business case for investment in long-lived, capital-intensive low-carbon resources needed to meet load growth

### Grid Expansion

- Timely delivery of the required expansion in inter-regional power transfer capability
- Create a business case for appropriate load mgmt/smart grid investments





## Opposing and supporting voices are quoted

### Opposing voices

"A 30 per cent reduction by 2020 would be physically impossible", **F. Conti, CEO Enel**

"EU must not increase in any way its 20 per cent commitment without a full global deal ", **BusinessEurope**

"Europe's competitiveness vs. the US is at risk [with ambitious climate targets]", **F. Sijbesma, CEO DSM**

### Supporting voices

"The green revolution has started and by 2020, green technology will have surpassed the car industry as well as the engineering sector in Germany", **P. Löscher, CEO Siemens**

"[...] we must rely much more on renewable energy, which is clean, safe and make us more independent", **N. Röettgen, Germany's environment minister**

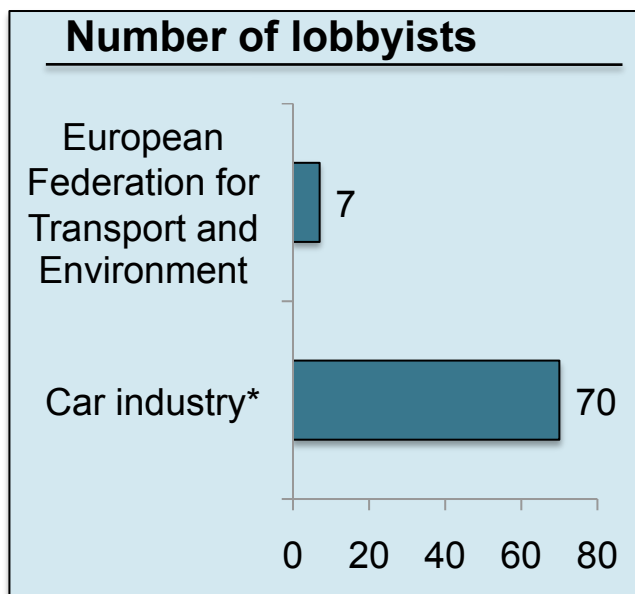
"Whoever is first to conquer green-tech markets will have an enduring export advantage and create jobs" **Angela Merkel**

"The private sector can and will make GHG reductions" **J. vd Veer on behalf of ERT**



## Incumbents' voices have traditionally been much louder than the new industry's

How effective would you say the NGO & Industry lobbying efforts are in each of the following sectors?



\* Estimate

Source: Burson Marsteller, Guide to Effective Lobbying 2009; European Commission Register of interest representatives