



EWEA
THE EUROPEAN WIND ENERGY ASSOCIATION



Wind, the leading technology in 2030

Stephane Bourgeois, Head of Regulatory Affairs, EWEA
Ankara Wind Energy Workshop, 27 March 2013

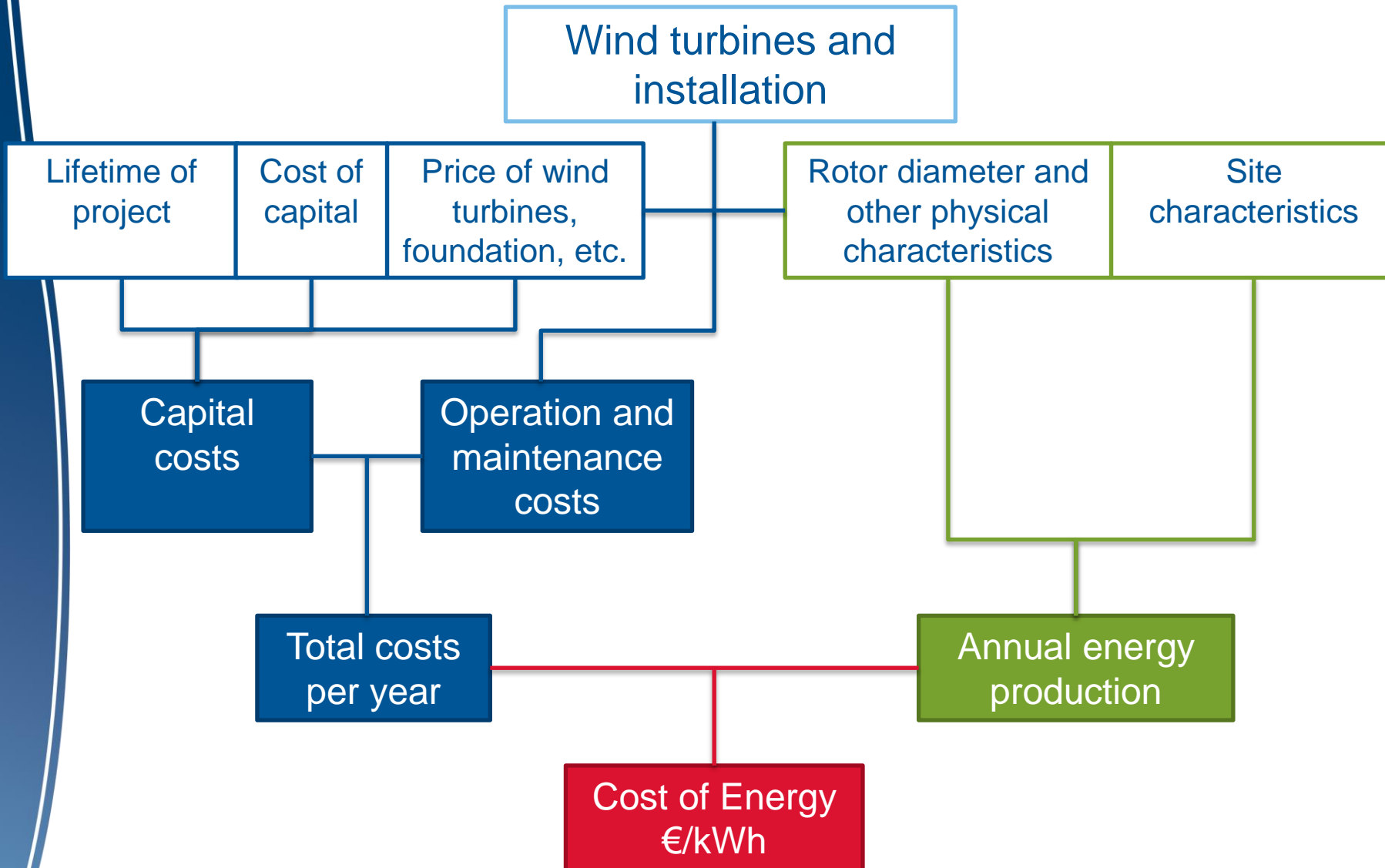
Outline

1. Cost of wind vs. others
2. Support for RES vs. others
3. Wind, the leading technology in Europe
4. The macroeconomic benefits of wind power

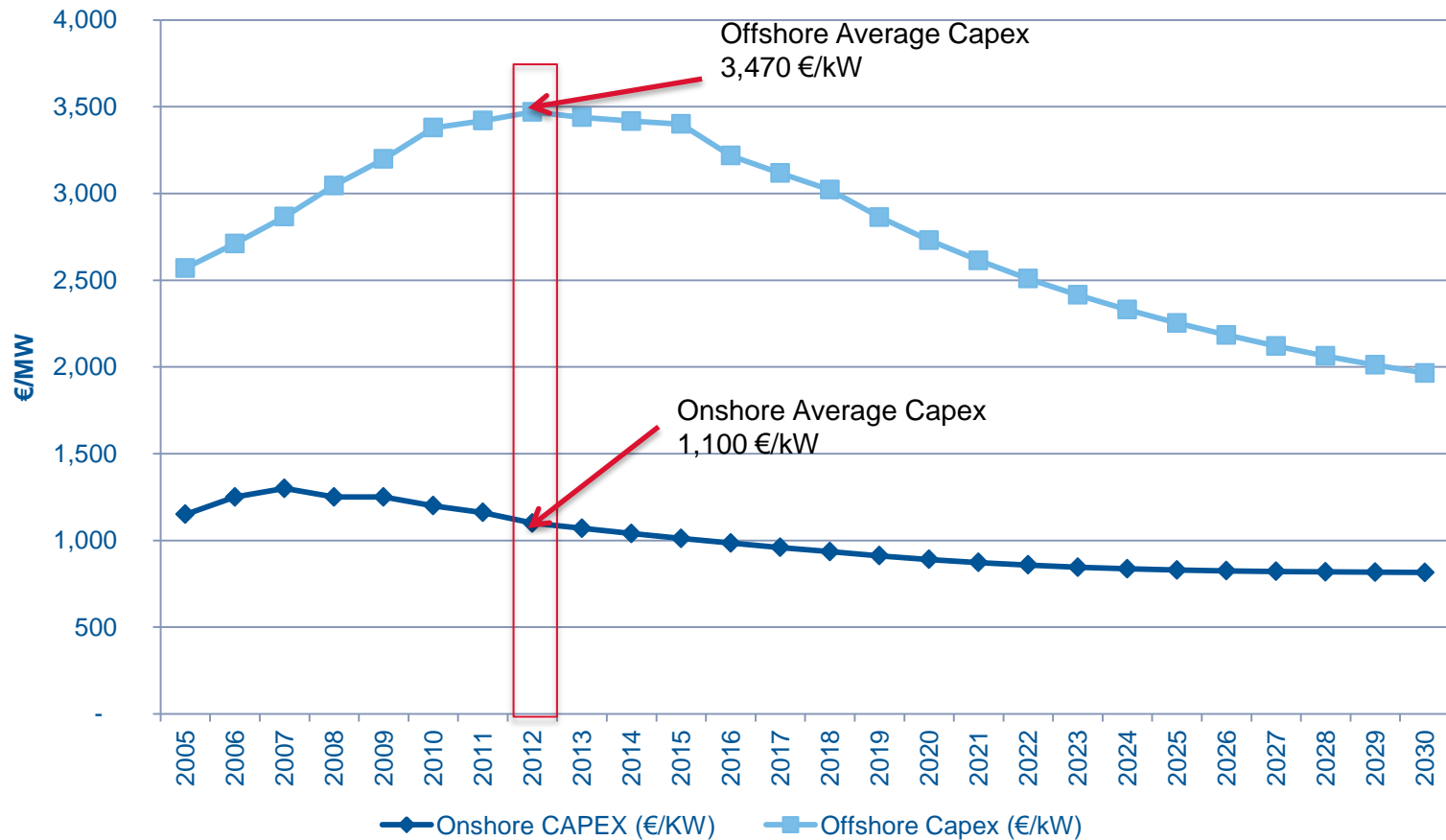
Cost of wind vs. others



Cost of wind energy



Evolution and future of Capital costs of wind power onshore and offshore



Range of CAPEX for power generating technologies

Capital cost per technology (euro/kW)		
Technology	2011	2020
Wind onshore	1,095-1825	803-1533
Wind offshore	2263-4,307	1,460-2,555
Gas	584-730	584-730
Coal	584-1606	584-1606
Nuclear	1825-4088	

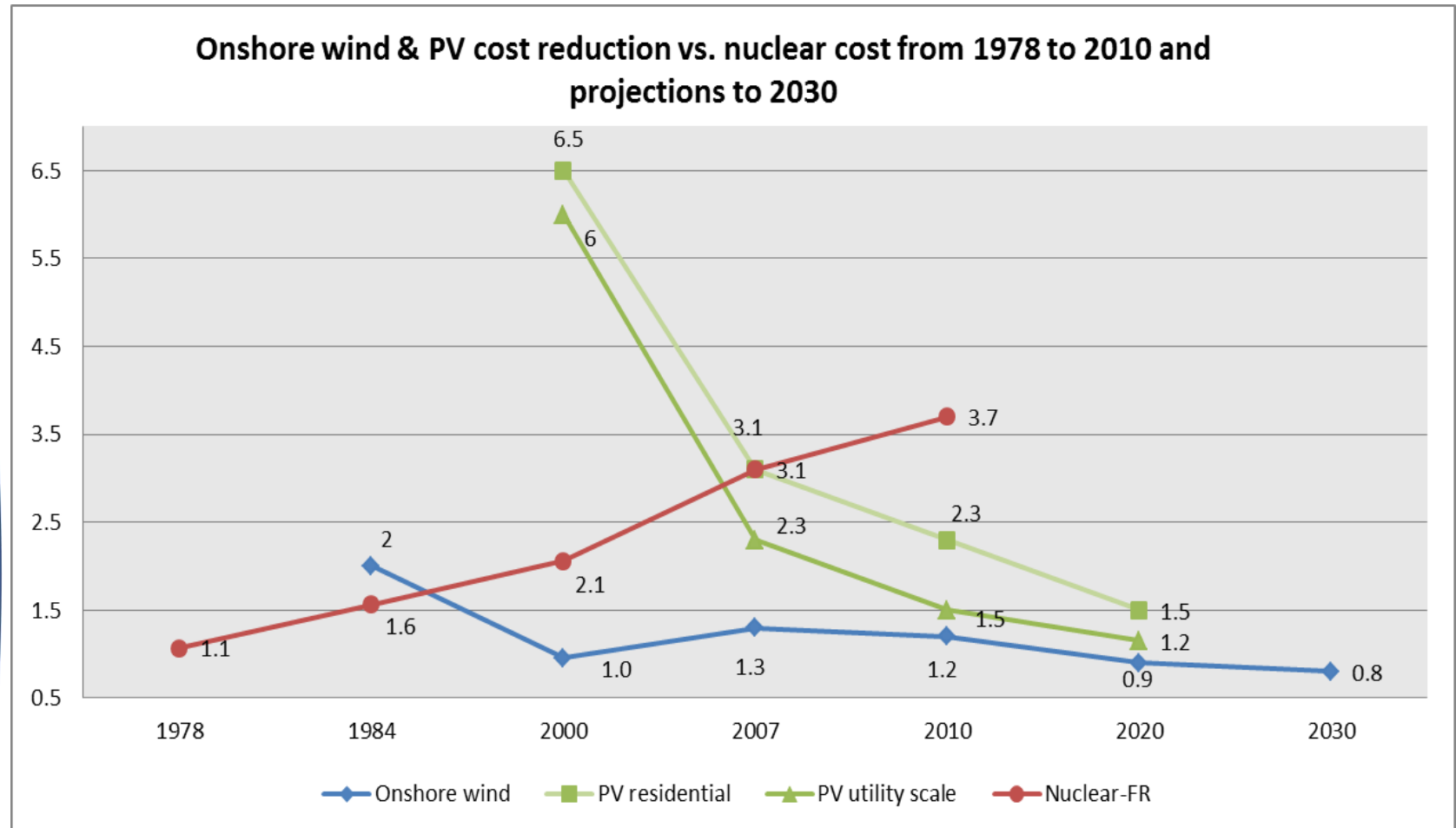
Source : IEA : Energy Technology Perspectives 2012

Levelised cost of electricity from different generating sources

<u>Levelised cost of electricity (€/MWh)</u>			
Technology	2007	2020	2030
Wind Onshore	85	68	64
Wind Offshore	104	85	76
Coal	68	69	68
Gas	63	84	90
Nuclear	69	67	68

Source: European Commission's Information System for the SET-Plan led by the Joint Research Centre (SETIS)

Historical cost reductions – RES vs. nuclear



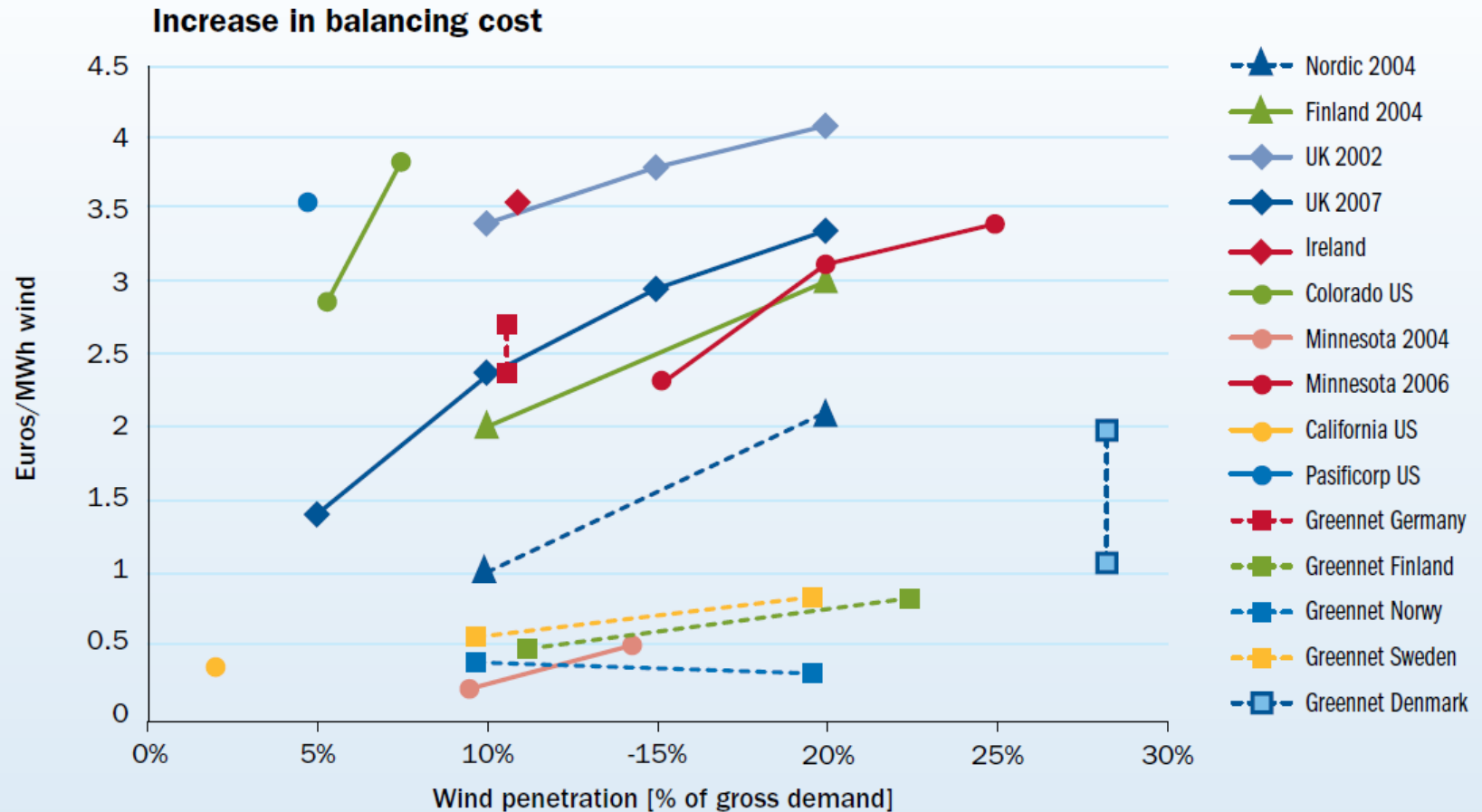
Sources: Bloomberg energy finance (wind 1984 CAPEX value), EWEA, EPIA, Cour des Comptes (Les coûts de la filière électronucléaire, Jan. 2012).

Fuel and carbon price risk

- To compare LCOE, risk on fuel and carbon price volatility has to be included
- When risk is included in cost comparison, wind is competitive more quickly
- Wind energy (on and offshore) is becoming more preferable not only as a renewable energy technology but also as an investment which will not suffer from unpredictable and volatile costs.

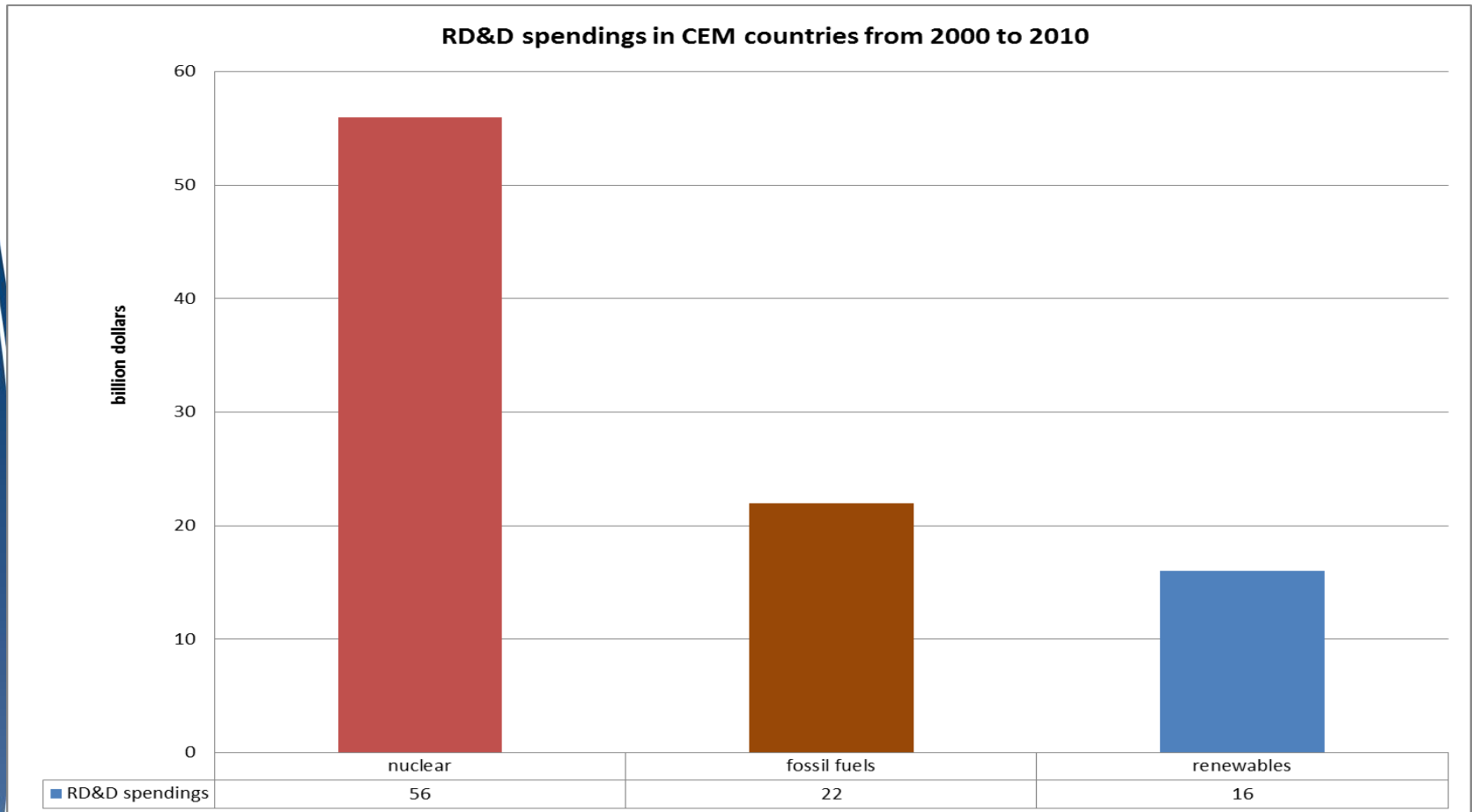


Balancing costs



2. Support for RES vs. Others

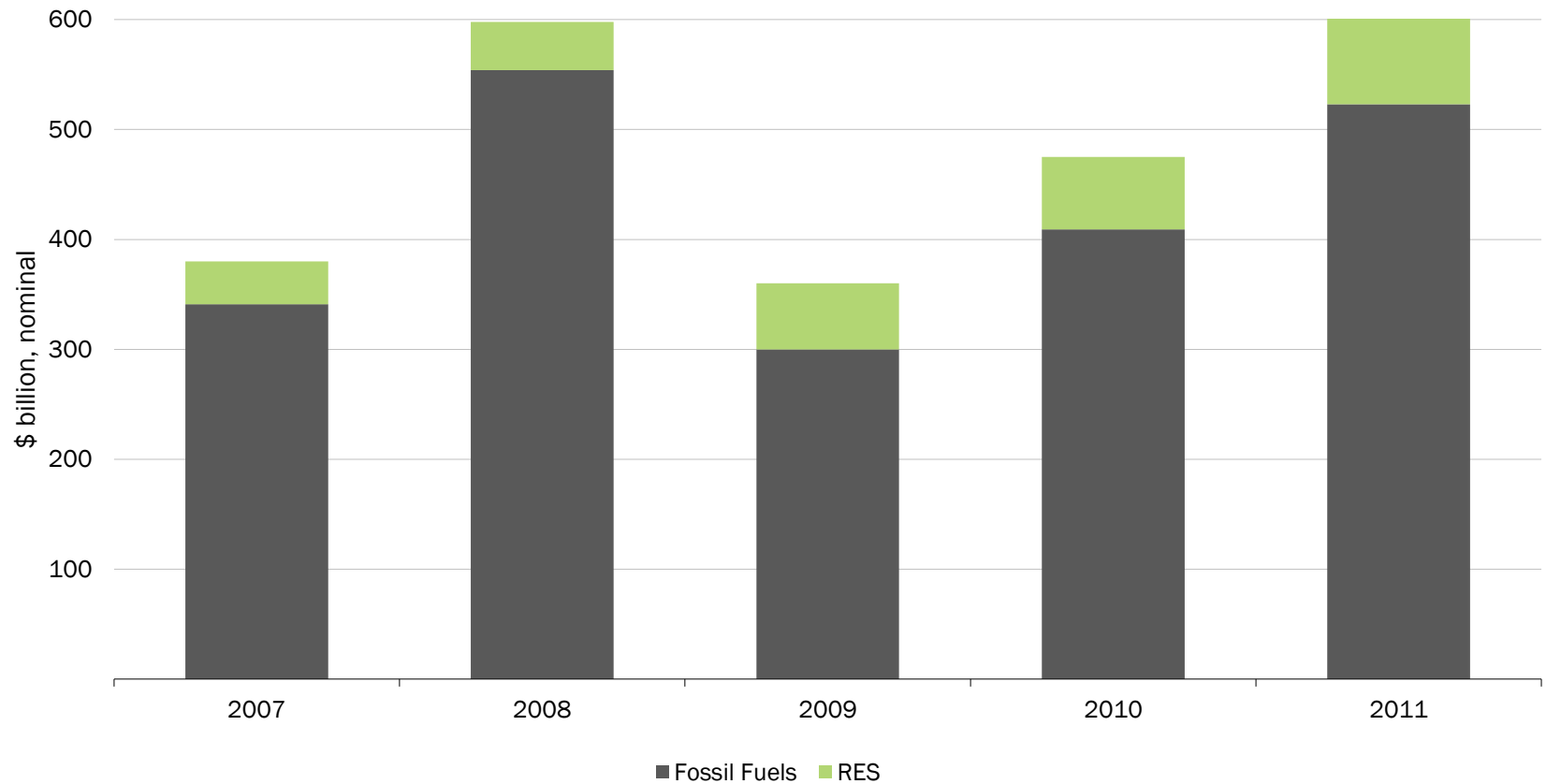
Historical and current R&D support



Source: Clean Energy Progress report, OECD/IEA 2011

CEM countries: Australia, Brazil, Canada, China, Denmark, the European Commission, Finland, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, Norway, Russia, South Africa, Spain, Sweden, the United Arab Emirates, the United Kingdom, and the United States.

Subsidies for RES vs. fossil fuels



Source: IEA WEOs

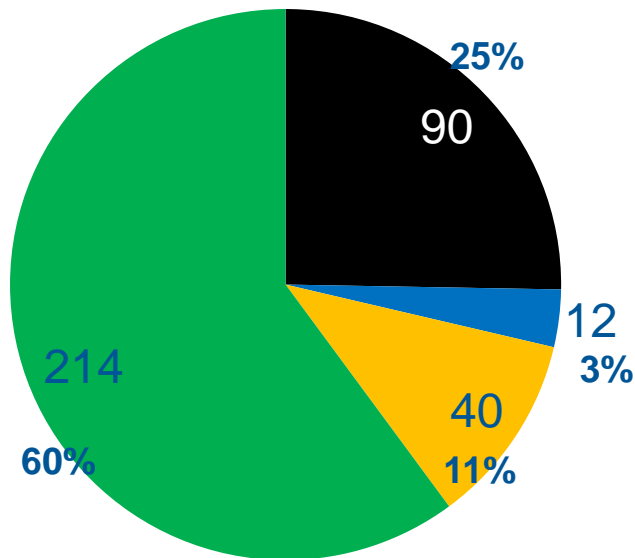
Wind, the leading electricity technology in Europe?

The EC Energy Roadmap 2050

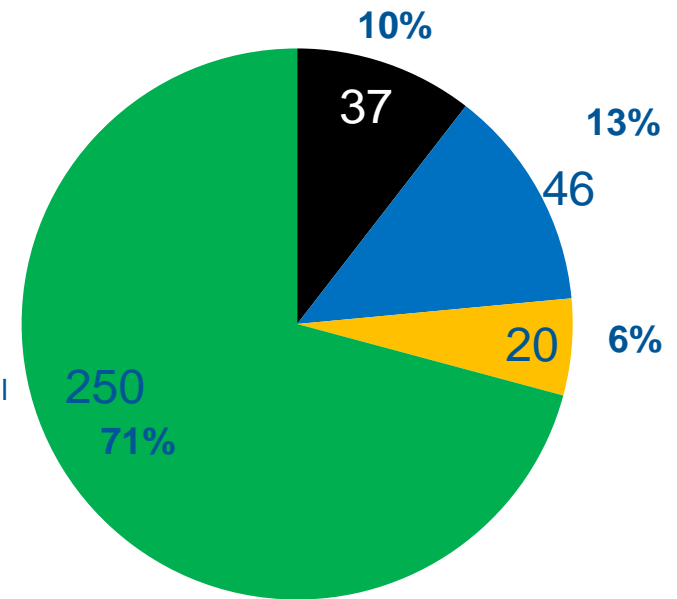
New EU power capacity installations 2011-2030 (GW)

European Commission Energy Roadmap 2050 – Diversified Supply Scenario

2011-2020
Total: 356 GW



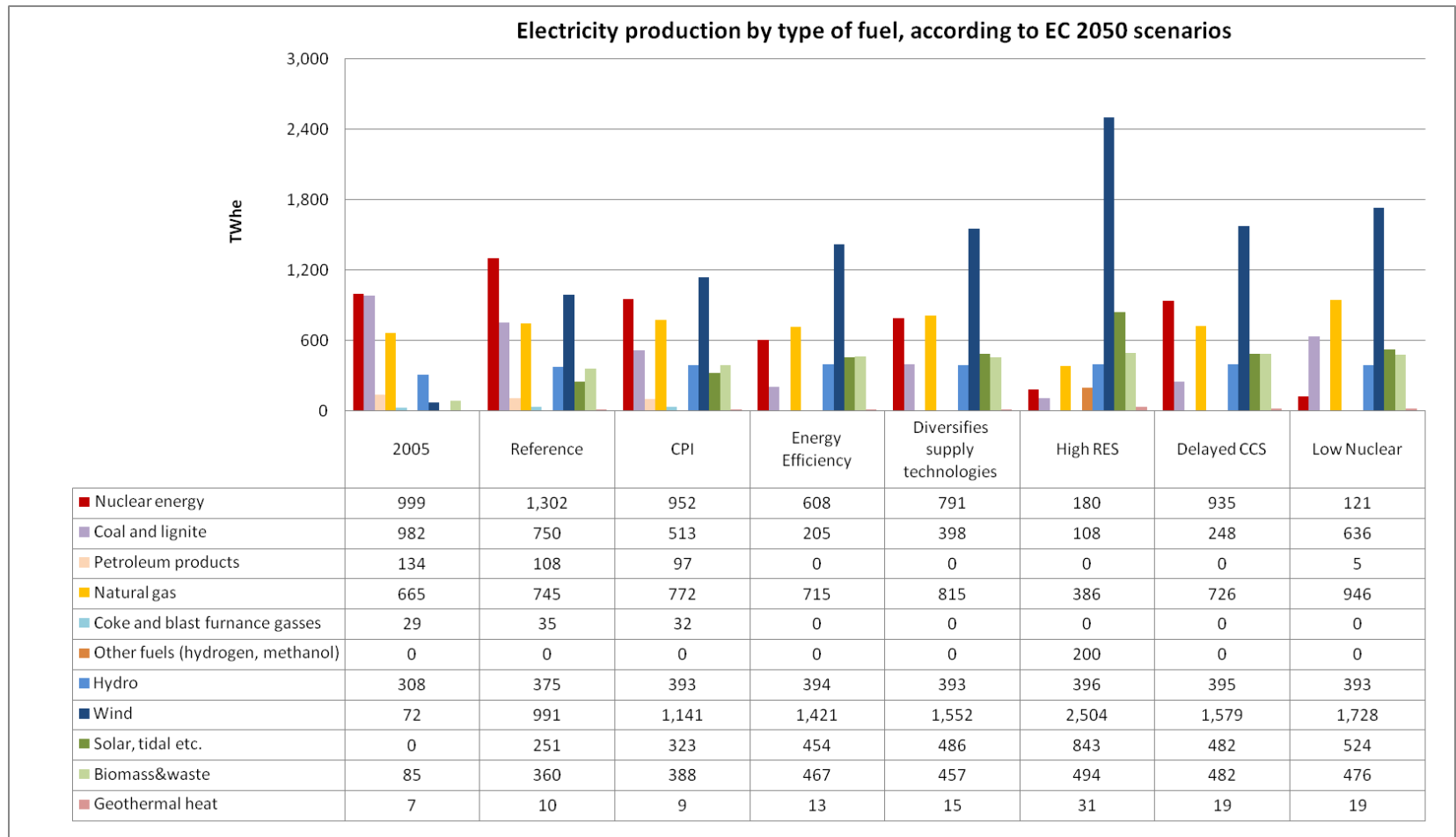
2021-2030
Total: 353 GW



- Thermal fossil
- Nuclear
- Thermal RE
- Renewables

Electricity Production in 2050

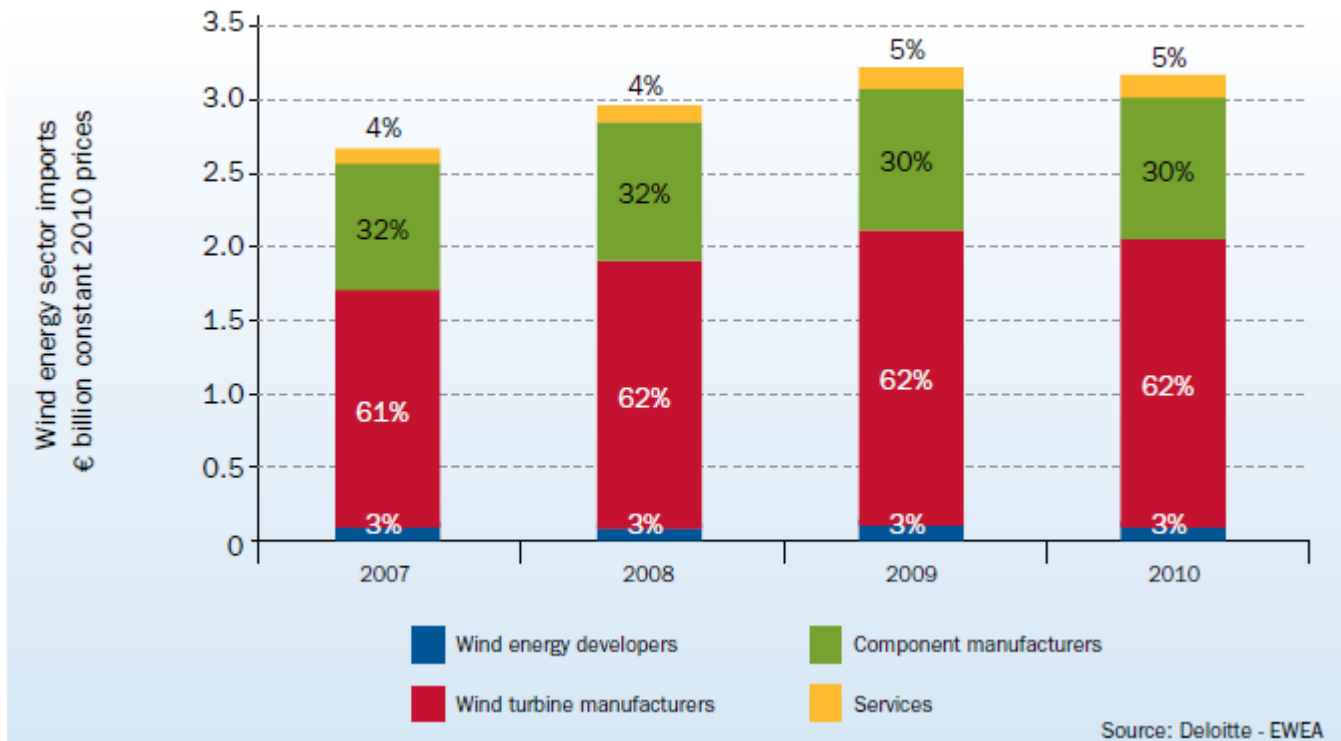
European Commission Energy Roadmap 2050



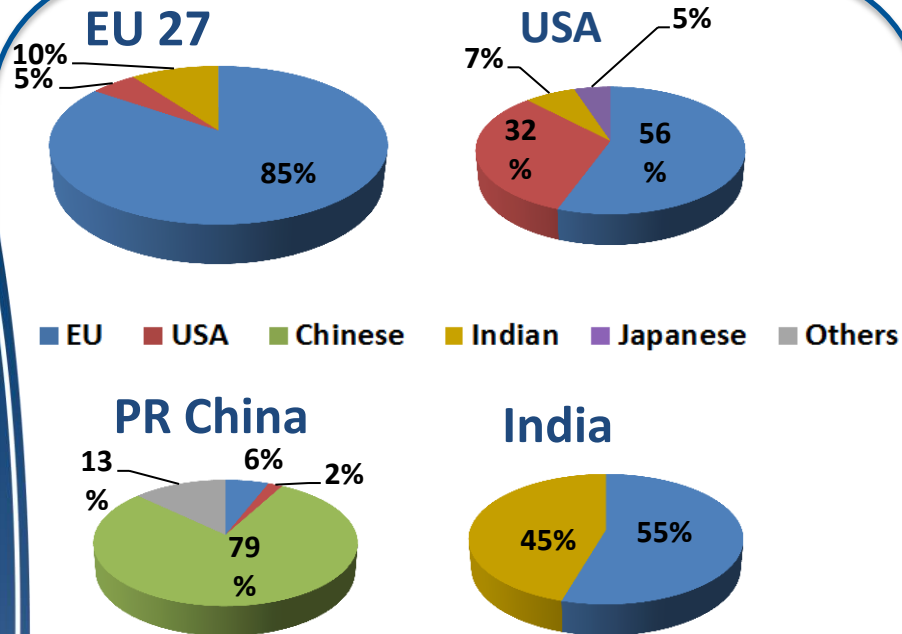
Macroeconomic benefits of wind power

An exporting industry

€ bn	2007	2008	2009	2010
Exports	6,6	7,8	8,5	8,8
Imports	2,7	3,0	3,2	3,2
Balance	3,9	4,9	5,3	5,6

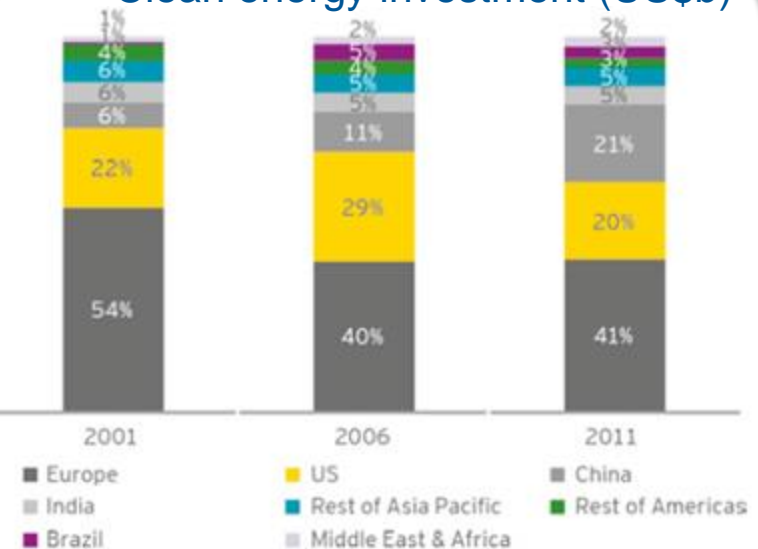


A European Industry



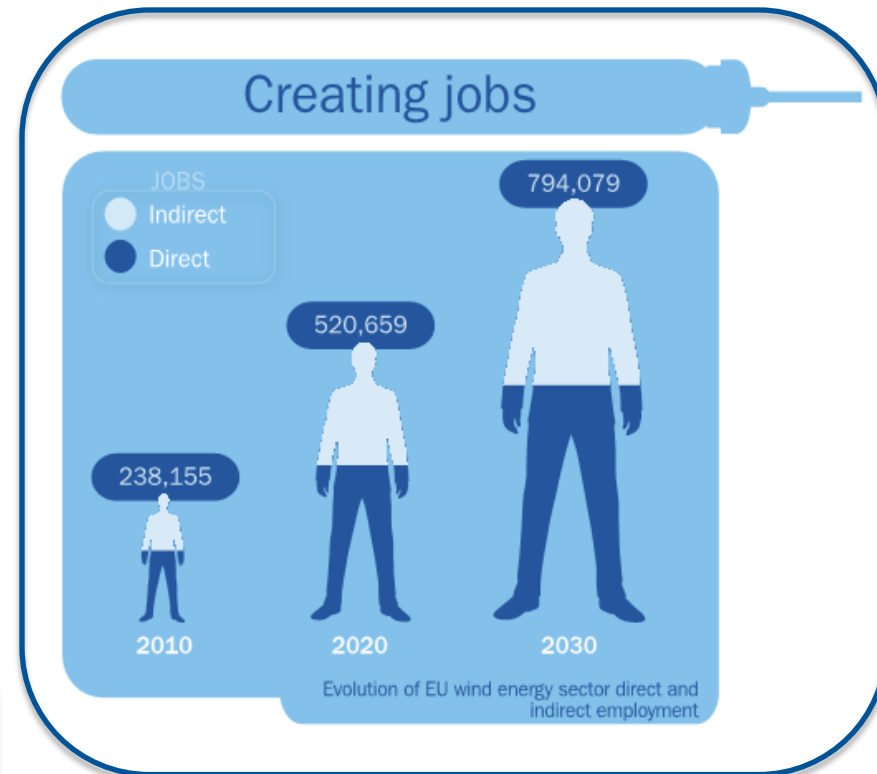
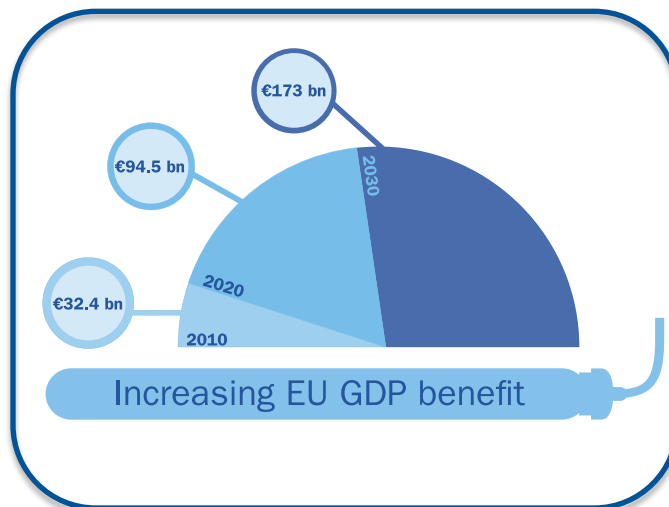
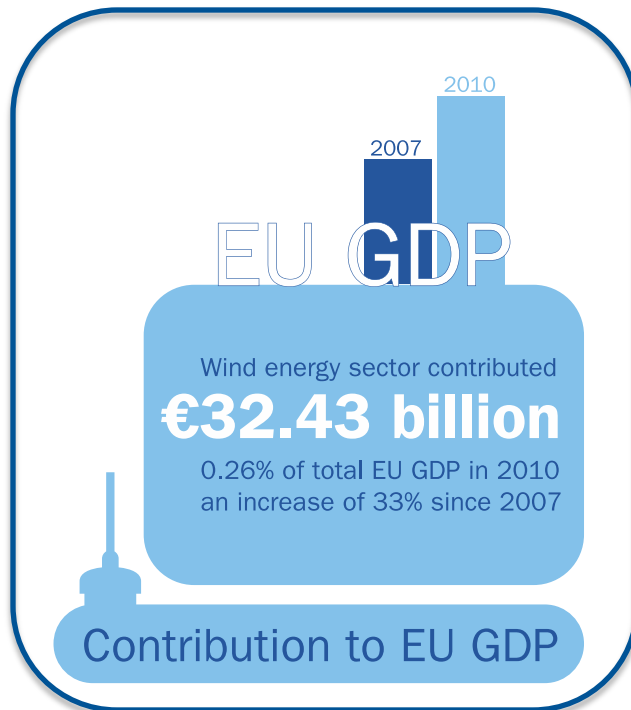
EU manufacturers are leading on world markets

Clean energy investment (US\$b)



Bloomberg New Energy Finance & UNEP
Global Trends in Renewable
Energy Investment 2012; Ernst & Young
analysis

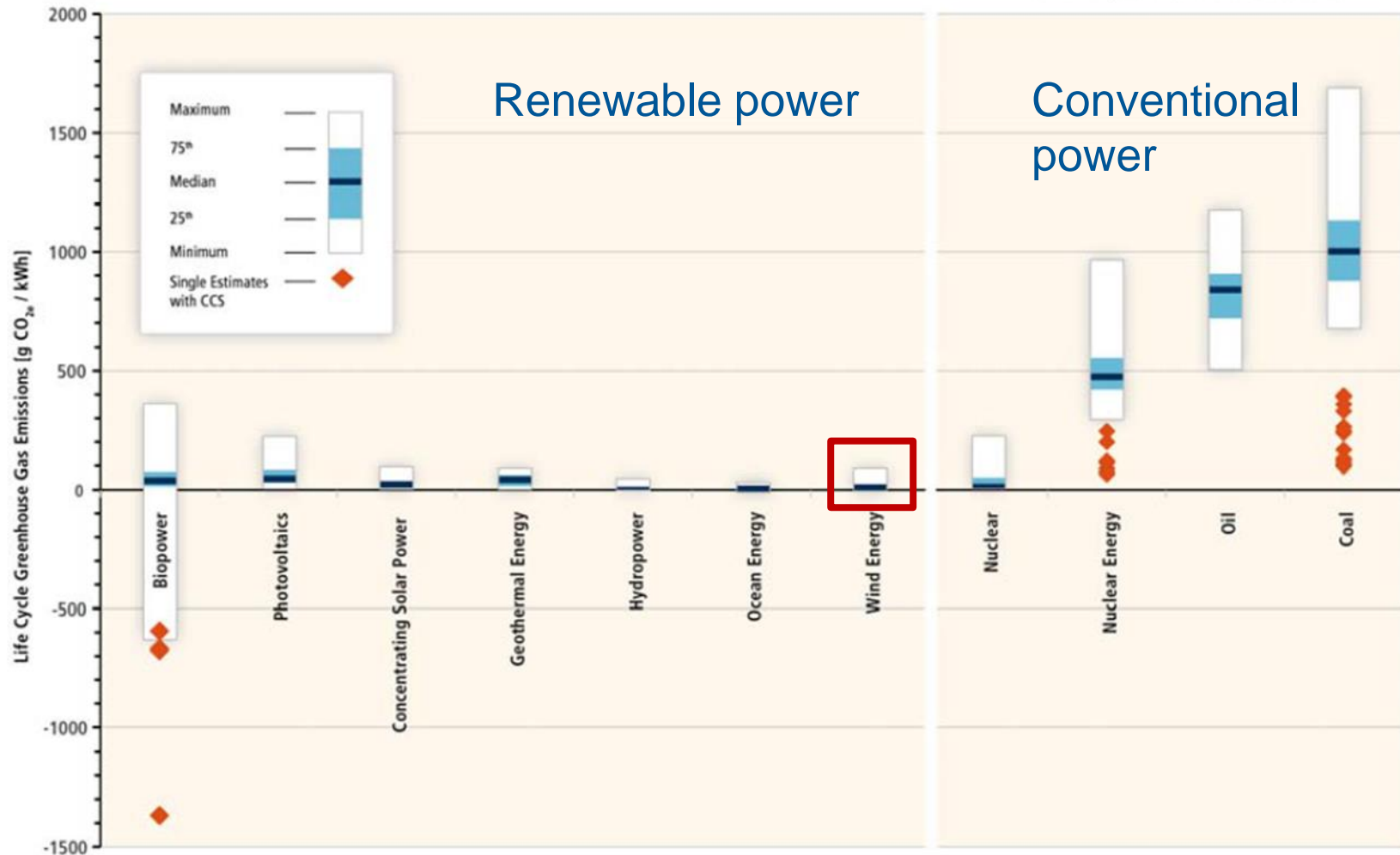
An Industry creating growth and jobs



An Industry avoiding GHG emissions

Electricity Generation Technologies Powered by Renewable Resources

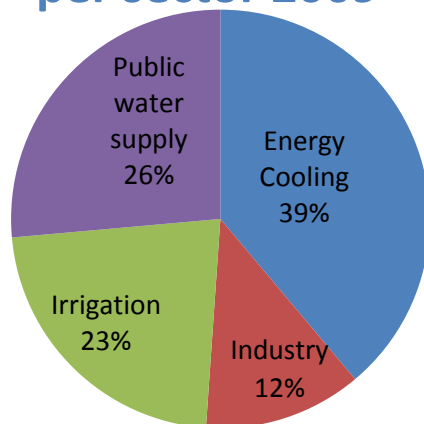
Electricity Generation Technologies Powered by Non-Renewable Resources



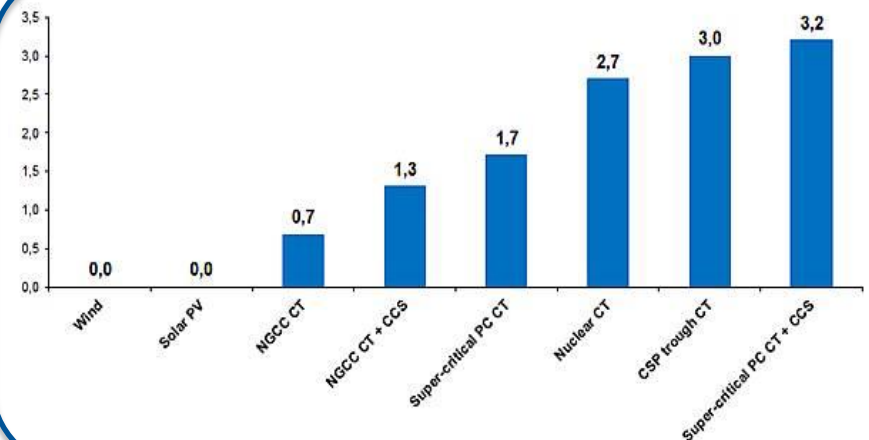
An Industry protecting the environment

- No NO_x (nitrus oxides) emissions
- No other air pollutants like SO₂ (sulphur dioxide)
- Simple decommissioning processes and no storage of waste needed
- Zero fuel extraction
- Minimal use of water

Share of EU water use per sector 2009

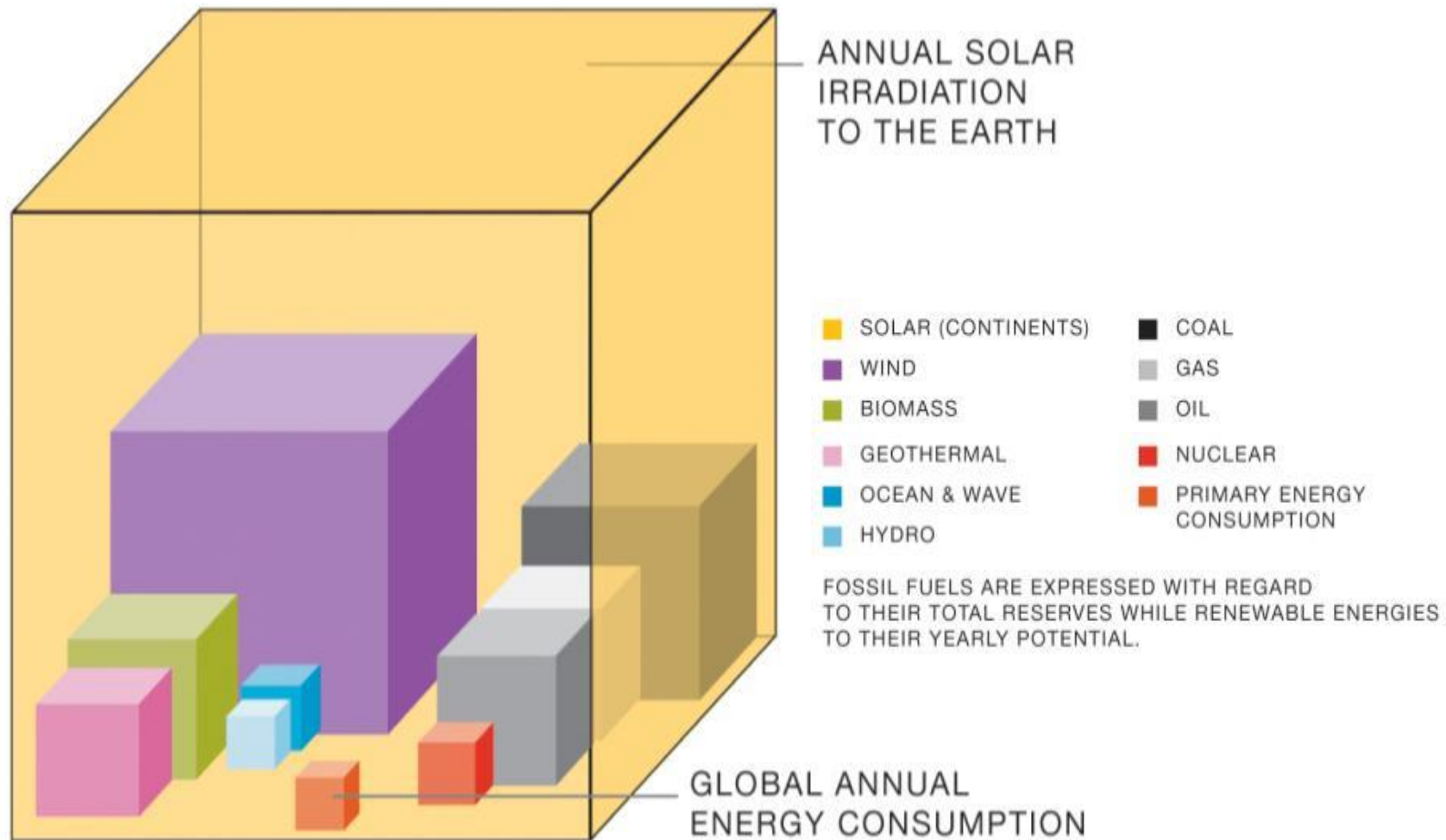


European Environmental Agency - EEA



Water intensities of power generation(m³/MWh), Vestas, 2009

World RES yearly potential vs conventional reserves



THANK YOU!!!

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