



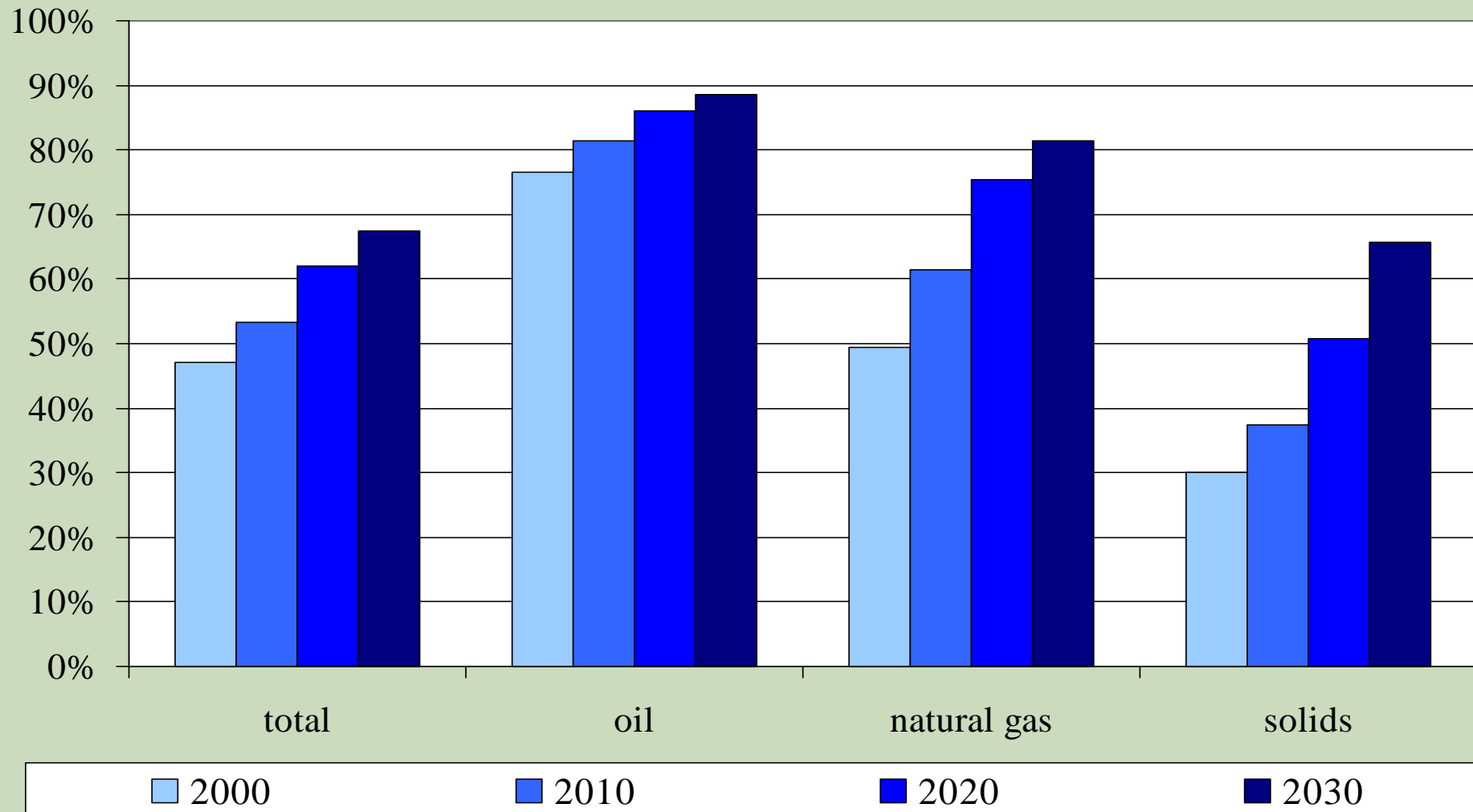
EU-Strategy on Hydrogen and Fuel Cells

- **European energy policy**
- **Hydrogen/Fuel Cells Technology Platform**
- **Research and development projects**

William Borthwick
European Commission
Directorate General Energy and Transport
Unit A4, Clean Transport and Urban Transport

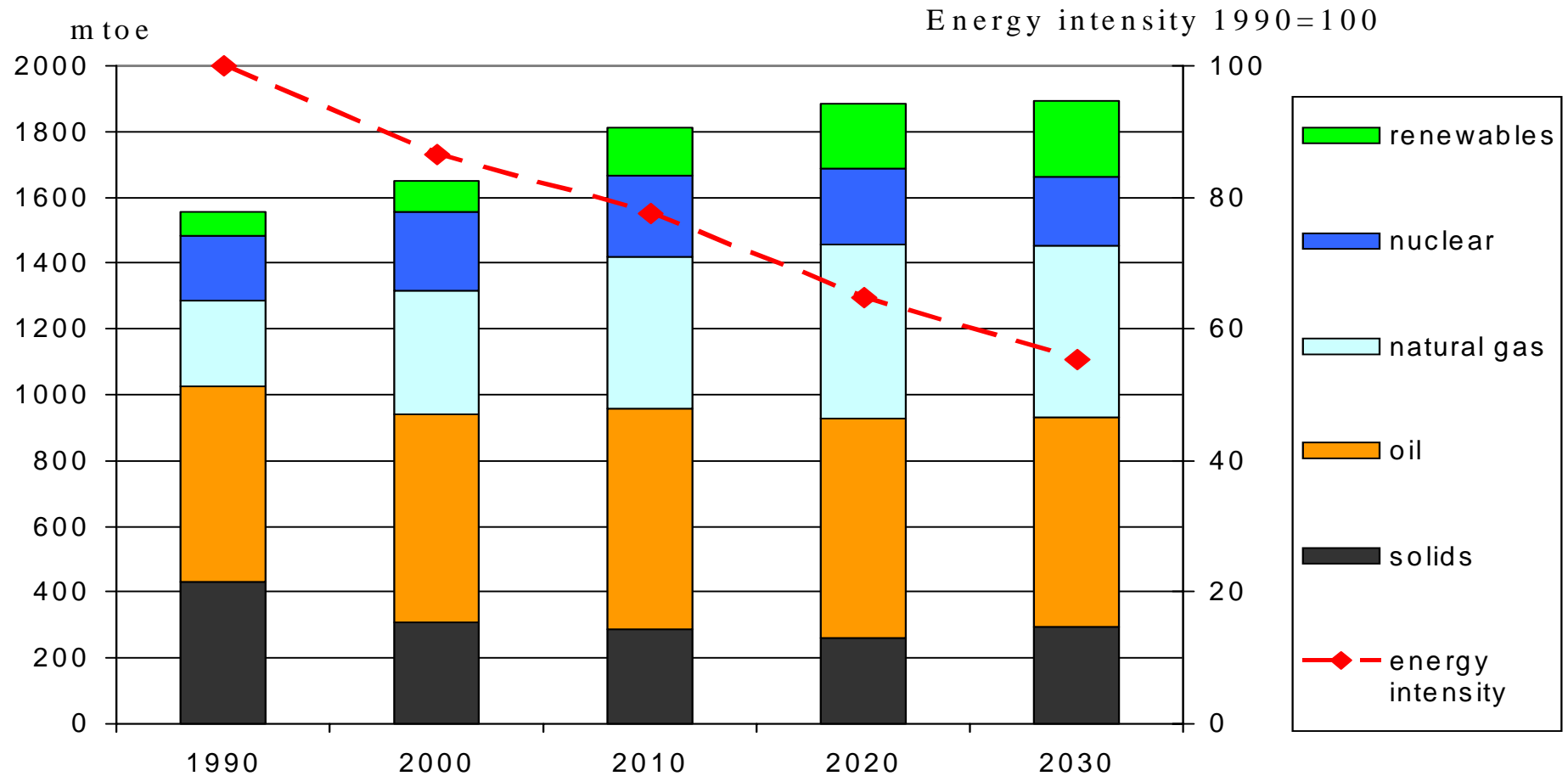


EU Energy Import Dependency





Trends in EU Energy Consumption

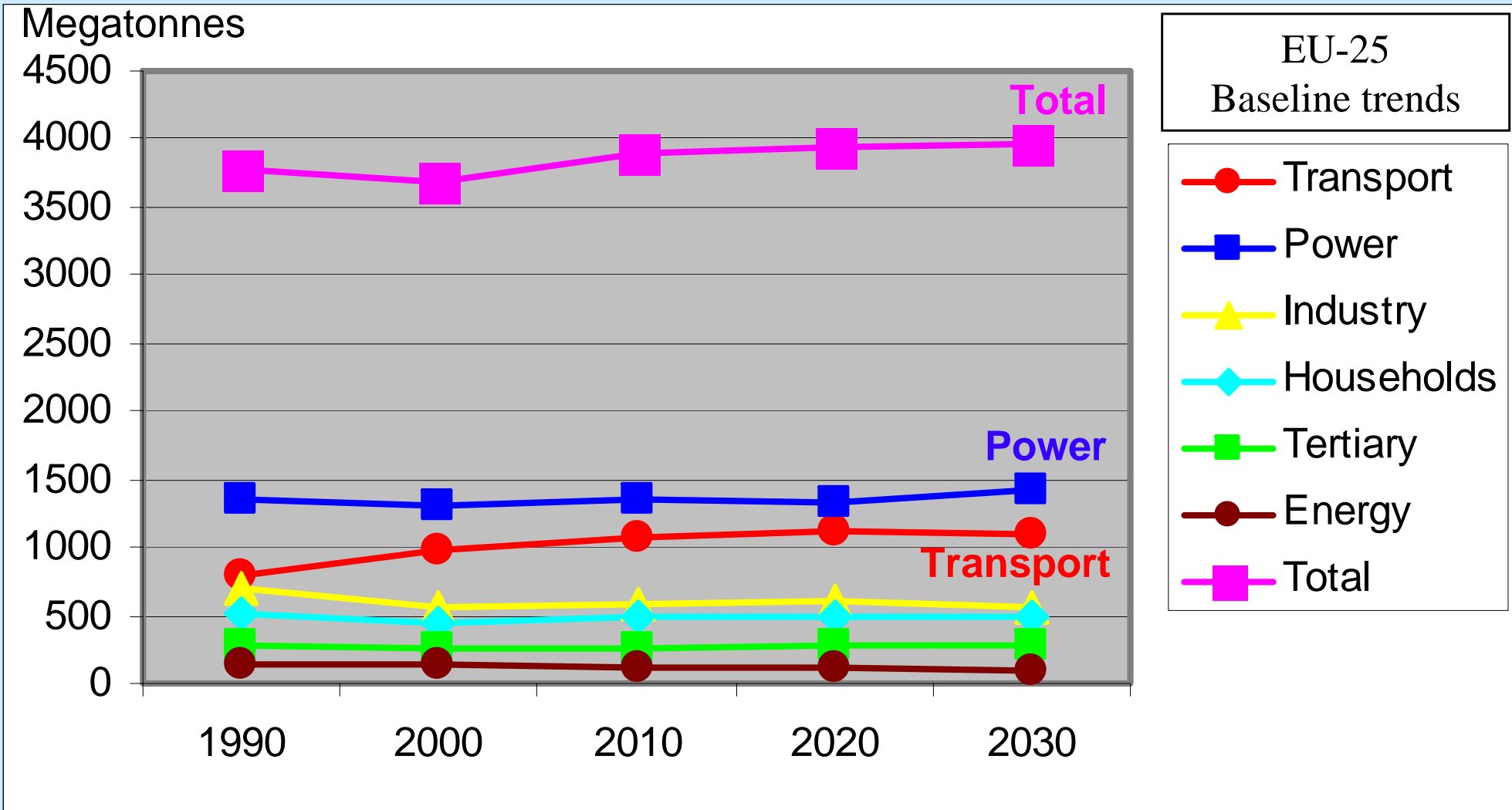


Renewables increase strongly
Natural gas increases its share considerably

Oil remains main energy source
Energy intensity continues falling



Trends in EU CO₂ Emissions



- **Power production and transport** remain main emitters



Policy Drivers of EU Energy and Transport Policy

Energy

Growing dependence on import from few suppliers
Expansion and substitution of supply infrastructure
Environmental concerns on climate change

Transport

Internal market and globalisation
Need for efficiency and sustainability
Environmental concerns on air quality and climate



Policy Framework Papers

Energy Efficiency Green Paper (7/2005)

Energy Efficiency Action Plan (10/2006)

European Strategy for Sustainable, Competitive and Secure Energy (3/2006)

Energy Policy for Europe (1/2007)

Renewable Energy and Climate Change Package (1/2008)

Mid-term review of Transport White Paper (6/2006)

Urban Transport Green Paper (9/2007)



EU-Activities on Alternative Fuels

- ◆ **Communication on alternative fuels (11/2001)**
Biofuels, natural gas, hydrogen
- ◆ **Directive on the market share of biofuels (5/2003)**
market share 2% in 2005, rising to 5.75% in 2010
- ◆ **Directive on the taxation of energy products (10/2003)**
lower taxation of alternative fuels enabled
- ◆ **Biomass Action Plan / biofuel strategy / binding targets**
Communications December 2005 / February 2006 / January 2007
- ◆ **European Technology Platforms**
Hydrogen / fuel cells (2004), Transport (2004), Biofuels (2005)
- ◆ **Joint Technology Initiatives**
Proposal for Fuel Cell and Hydrogen JTI (October 2007)

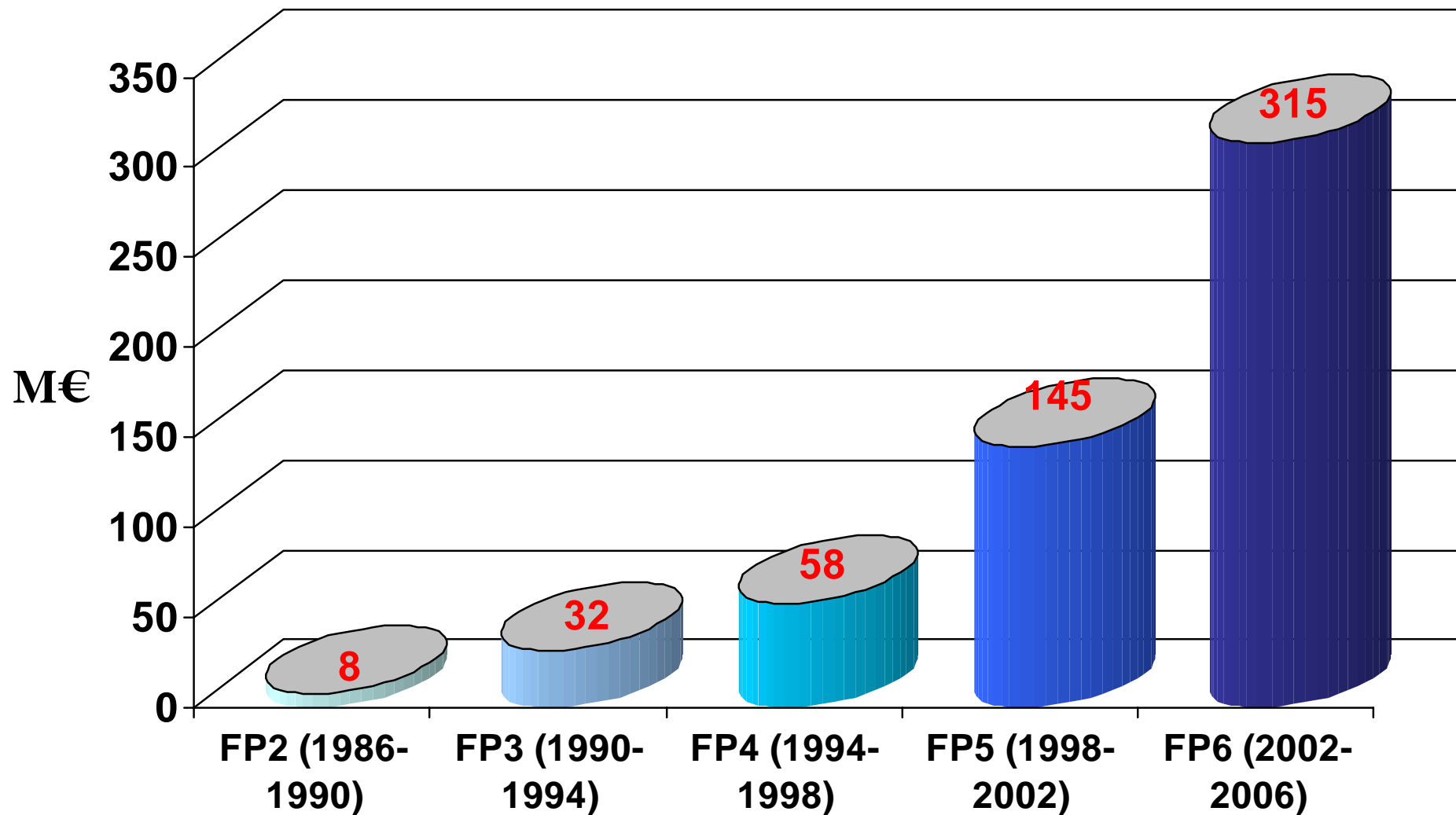


Hydrogen and Fuel Cells in Support of Policy Priorities

Security of Supply	Diversification of primary energy sources with hydrogen as universal energy carrier Energy saving through fuel cells as efficient energy converters
Climate Protection	Avoidance of greenhouse gas emissions with hydrogen from CO₂-lean production Less energy use with efficient fuel cells
Competitiveness	High market potential for investment into innovative technologies Creation of jobs in expanding markets



EC Support to Fuel Cell and Hydrogen RTD in Framework Programmes

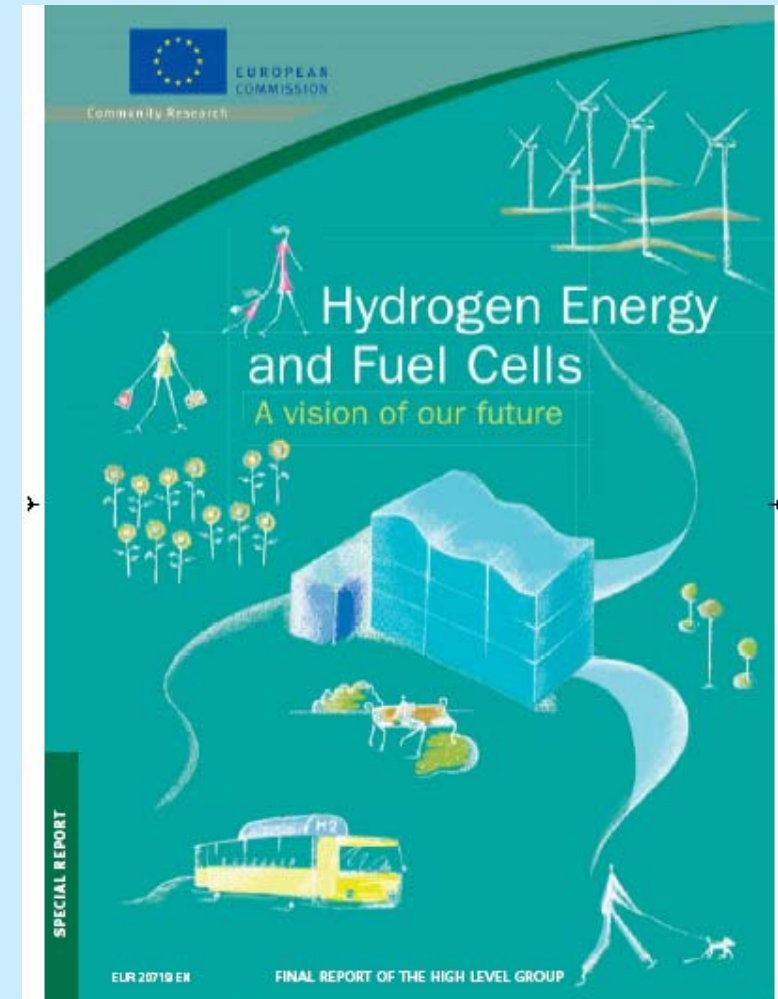


HyFLEET:CUTE workshop, Berlin: Preparing for the Hydrogen Future, 15-16 April 2008



Milestones of a European Strategy for Hydrogen and Fuel Cells

- **High Level Group (2002-2003)**
Vision report : *“Hydrogen energy and Fuel Cells – A vision of our future”*
- **President Prodi’s Communication**
proposing European Hydrogen Partnership
(September 2003)
- **European Technology Platform**
on Hydrogen and Fuel Cells
(January 2004)
- **Strategic documents** of the Platform
“Strategic Research Agenda”
“Deployment Strategy”
“Strategic Overview”
(March 2005)
“Implementation Plan”
(January 2007)
- **Joint Technology Initiative** proposal
on Fuel Cells and Hydrogen (October 2007)





Project Family

Hydrogen for Transport

Buses

HyFLEET:CUTE



Cars

ZERO REGIO



Zero Regio
H2-MotorFuel



Mini-Transport

HyCHAIN



200 Vehicles - Investment: 105 M€ (EC: 48 M€)

Coordinated Action



Project evaluation, preparation for »Lighthouse Projects»



Joint Technology Initiatives (JTI's)

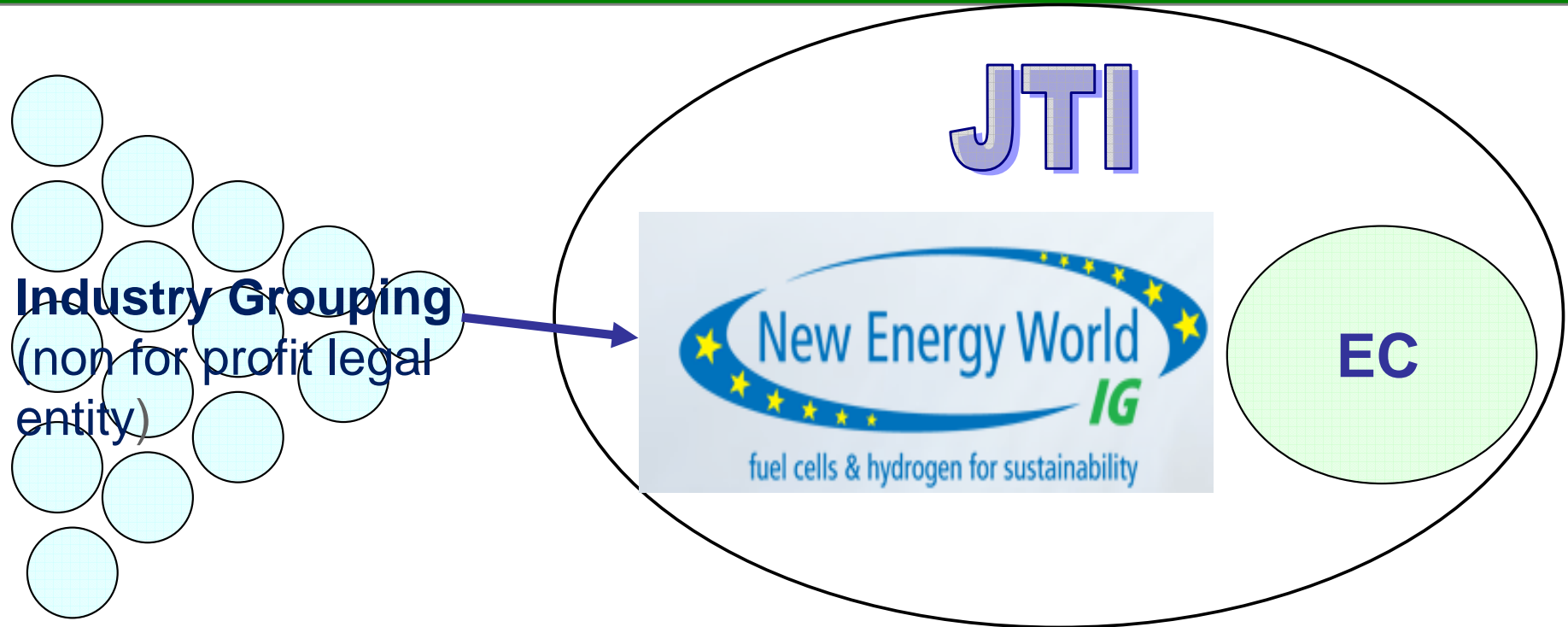
Joint Technology Initiatives are a new way of realising public-private research partnerships at European level

- Public and private interests are brought together to jointly manage an EU research programme
- Joint Undertakings based on art.171 of the treaty will be created
- Research resources in Europe will be used more efficiently
- Technology Platforms have made major contributions during the process
 - EC budget to be drawn from FP7 "Cooperation" Programme"
 - Commission submitted proposals for **6 JTIs**, including **Fuel Cells and Hydrogen**



JTI for Fuel Cell and Hydrogen

(Proposal for Council Regulation adopted by EC on 10 October 2007)

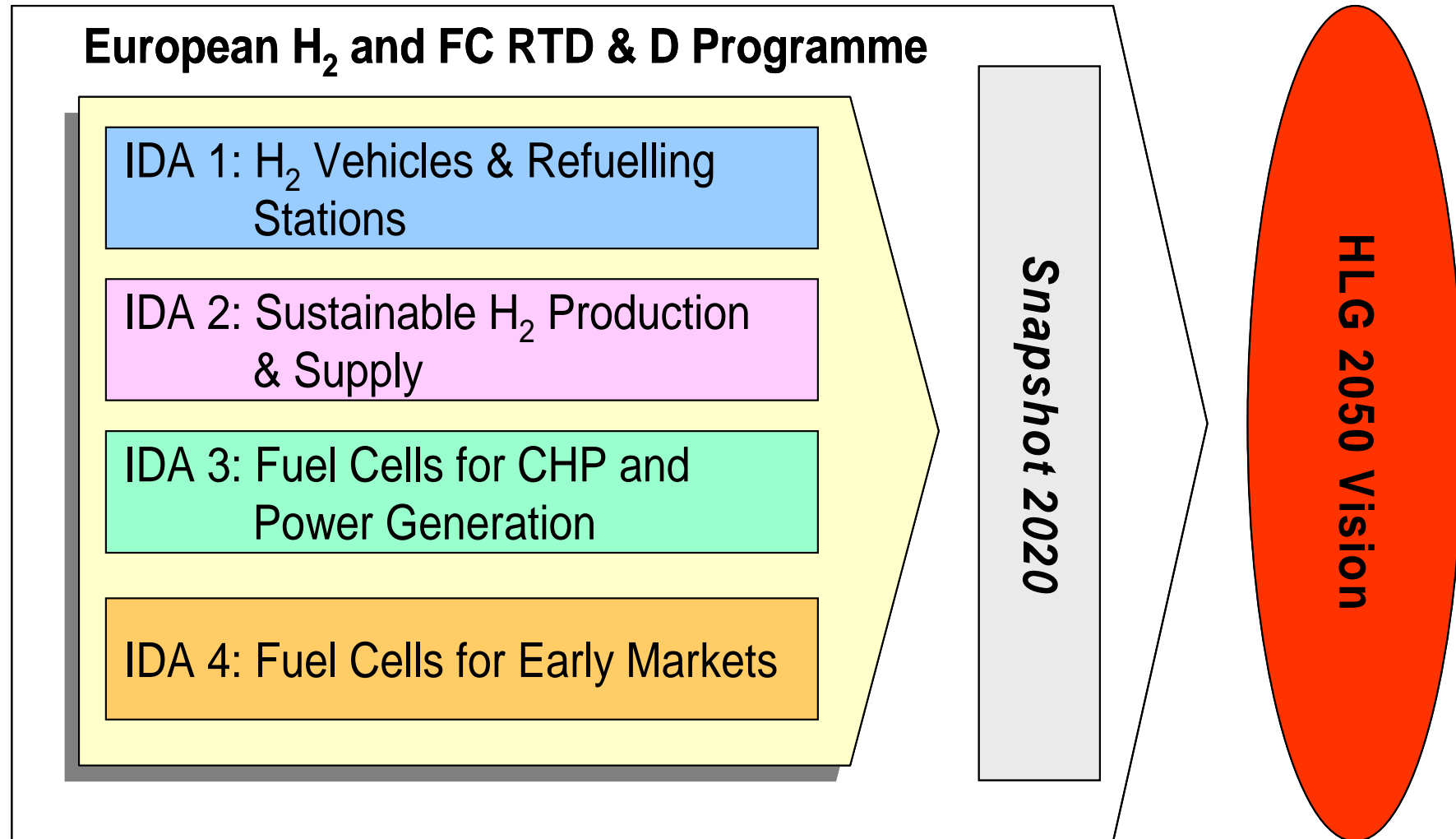


JTI proposed decision-making bodies

- **Governing Board**
- **Executive Director and Programme Office**



HFP Implementation Plan*: 4 Innovation & Development Areas (IDAs)



(*) Integrated RTD&D programme requiring 7.4 Billion Euros for 2007-2015

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HFP - Reference market scenario for Implementation Plan: “Snapshot 2020”

	Portable FCs for handheld electronic devices	Portable Generators & Early Markets	Stationary FCs Combined Heat and Power (CHP)	Road Transport
EU H2/ FC units sold per year projection 2020	~ 250 million	~ 100,000 per year (~ 1 GW _e)	100,000 to 200,000 per year (2-4 GW _e)	0.4 million to 1.8 million
EU cumulative sales projections until 2020	n.a.	~ 600,000 (~ 6 GW _e)	400,000 to 800,000 (8-16 GW _e)	1-5 million
EU Expected 2020 Market Status	Established	Established	Growth	Mass market roll-out
Average power FC system	15 W	10 kW	<100 kW (Micro HP) >100 kW (industrial CHP)	80 kW
FC system cost target	1-2 €/ W	500 €/kW	2.000 €/kW (Micro) 1.000-1.500 €/kW (industrial CHP)	< 100 €/kW (for 150.000 units per year)



JTI Joint Undertaking for Fuel Cells and Hydrogen

- Located in **Brussels**
- The **Research community** may establish a representative association and also become a member of the JU
- It will operate in **2008 – 2013 (2017)**
- **Financing**
 - ⇒ Budget : 470 M€ from FP7 (**Energy, Transport, Materials and Environment**) **matched by at least 470 M€ from the private sector**
 - ⇒ Administrative costs **shared 50/50 between the private and public sectors (cash contributions)**
 - ⇒ Operational costs (**project funding**) **shared between the private and public sectors (in-kind contributions and cash contributions respectively)**
 - ⇒ **Close follow-up of in-kind contributions to monitor the principle of 50/50 financing**



JTI Joint Undertaking for Fuel Cells and Hydrogen

The Joint Undertaking will have its own:

- ⇒ **multiannual/annual programming**
(Implementation Plan as the starting point)
- ⇒ **staff establishment plan and accounting system**
- ⇒ **provisions on evaluation and selection of proposals**

information and dissemination of activities

.....based on principles of transparency and openness

⇒ **International Cooperation Strategy**



JTI - Participation in projects

- ⇒ **Open** calls for proposals
- ⇒ **Minimum 3 independent** legal entities from different MS/AC
- ⇒ **At least** one legal entity **belonging to the Industry Grouping or Research Grouping in each project**
- ⇒ All **legal entities and international organisations** can participate
- ⇒ **As a rule**, third country **participants** are not eligible for funding
- ⇒ **As a rule**, **project coordinator will be IG/RG member**



What's next?

- The proposal currently under discussion in the **Council** and the **European Parliament**
- **Adoption** by the Council is foreseen for spring 2008
- First JTI call for proposals is planned for mid 2008



Thank you for your attention!