



EUROPEAN  
COMMISSION

Community research

# European H<sub>2</sub>/FC (RCS) research: Present activities and future prospects

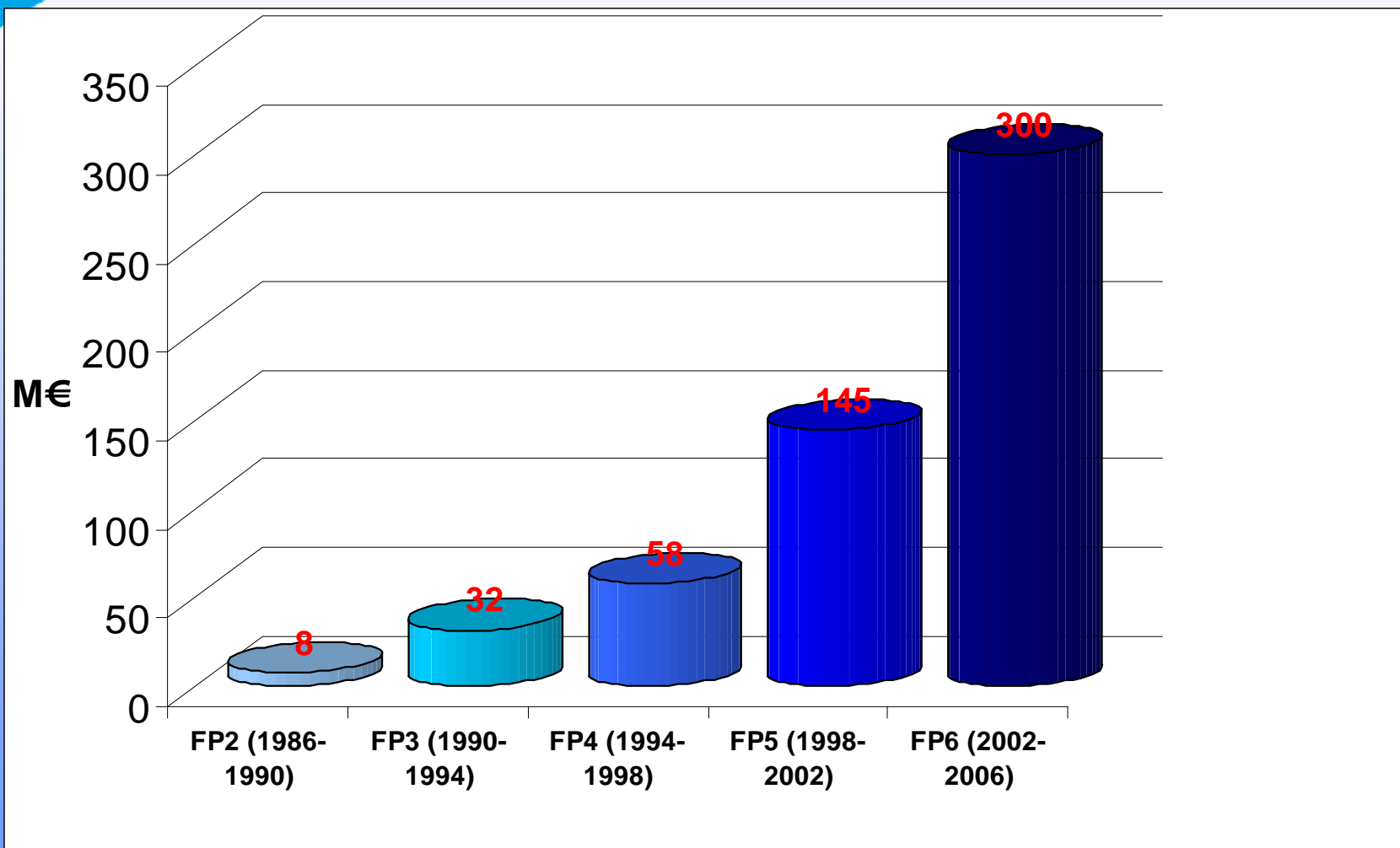
Ms. Beatrice Coda - Scientific Officer  
Unit K2- Energy Production and Distribution System  
DG RTD/K- European Commission

**Email: [Beatrice.Coda@ec.europa.eu](mailto:Beatrice.Coda@ec.europa.eu)**

# Presentation outline

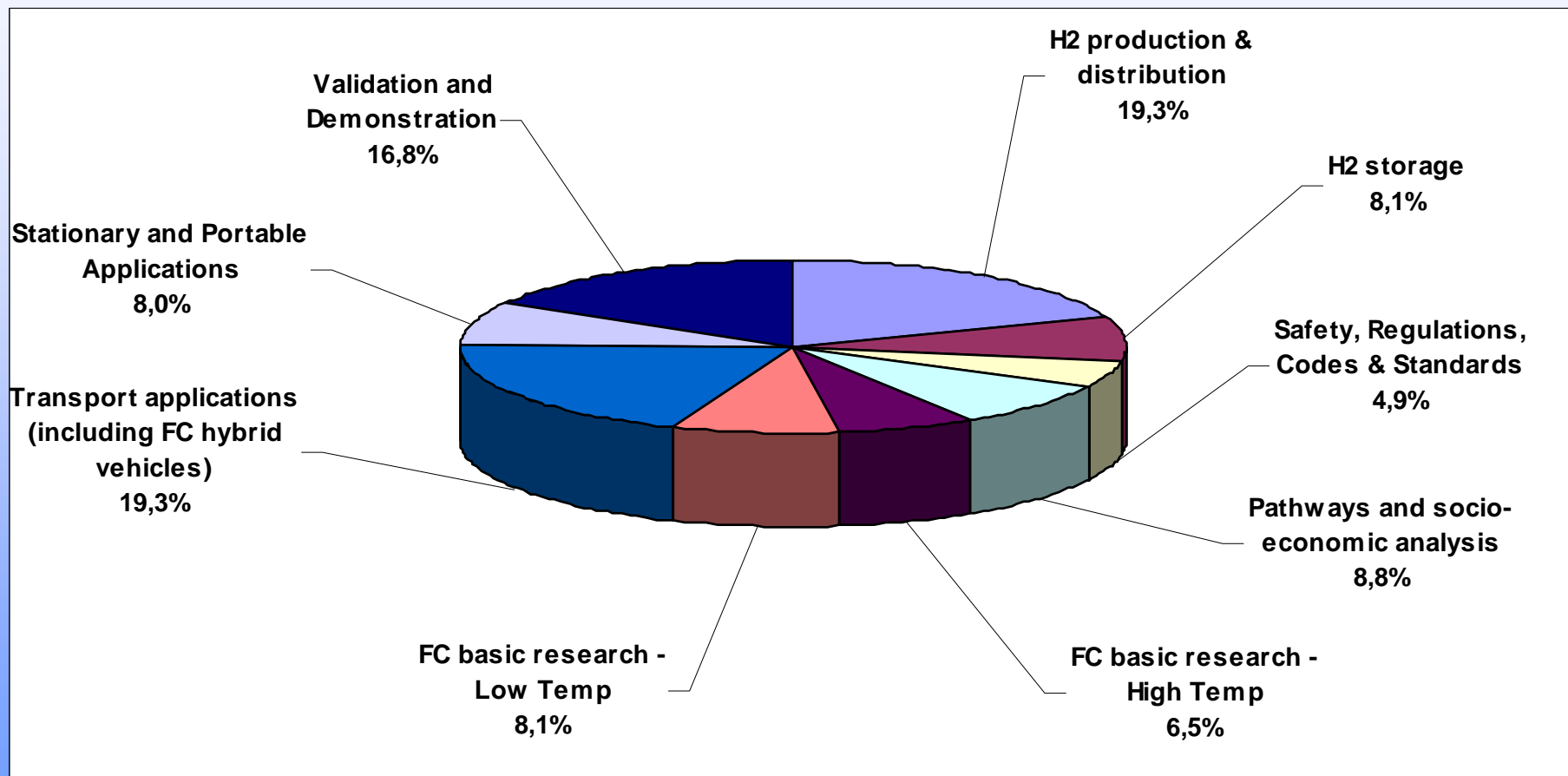
- × **EC funding to H2/FC area in FP6**
- × **Prenormative research projects**
- × **The European Hydrogen and Fuel Cell Technology Platform- Strategy**
- × **FP7 future prospects**

# EC Support to Fuel Cell and Hydrogen RTD in Framework Programmes



# FP6 Budget Breakdown for H2/FCs

## Total EC Contribution ~ 300 M€



# Pre-normative research in FP6

## Main dedicated projects

Project	Co-ordinator	Duration (months)	EC funding	Emphasis
<b>HYSAFE</b>	FZK (DE)	4 years	~ 7 M€	Safe introduction of H2 as an energy carrier
<b>HYAPPROVAL</b>	LBST (D)	2 years	~ 1.9 M€	EU wide approval of H2 refuelling stations
<b>HYPER</b>	University of Manchester	2 years	~ 1.5 M€*	EU wide Approval of H2/FC stationary systems
<b>FCTESTQA</b>	ENEA(I)/JRC	4 years	~ 2.5 M€*	FC Testing benchmarking, QA
<b>FCTEDI</b>	ENEA/JRC	2 years	~ 0.5 M€*	Strategic dissemination of FC testing (e.g. SDOs)
<b>HARMONHY</b>	AVERE(B)	1 year	~ 0.5 M€	Road map for world wide harmonised RCS

# Other major FP6 projects with prenormative research components



- × **Project : NATURALHY-H2 /natural gas mixes using existing pipeline network**  
Safety issues related to transmission, distribution and end use of mixes (e.g. pipeline durability and integrity)

Total EC funding: 11 M€



- × **Project: STORHY- Development of safe and efficient on-board vehicle storage system**  
Improvement of safety equipment and testing (e.g. bonfire, impact damage, accelerated stress rupture test), safety evaluation of design and approval

Total EC funding: 10.7 M€



- × **Project: FLAMESOFC- Development of innovative micro SOFC-based CHP system**  
Safety issues, HAZOP analysis, component and system certification

Total EC funding: 7.5 M€

# "HYDROGEN FOR TRANSPORT" (Demonstration Projects in FP6)

## Buses

### HyFLEET:CUTE



## Cars

### ZERO REGIO



*Zero Regio*
  
*H2-MotorFuel*



## Mini:Transport

### HyCHAIN



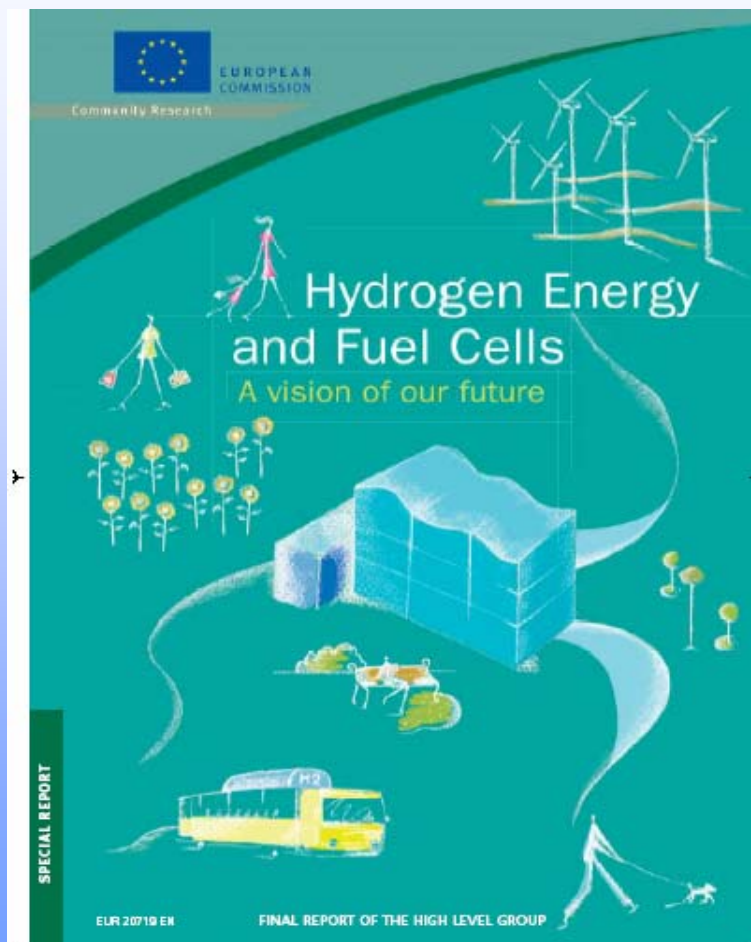
### PREMIA

### HyLights

Monitoring and Preparation of « Lighthouse projects »

# The European Hydrogen and Fuel Cell Technology Platform

- × High Level Group H2 and FCs (2002-2003) - Vision report : "Hydrogen energy and Fuel Cells – A vision of our future" – June 2003
- × Launch of European Hydrogen and Fuel Cell Technology Platform (HFP) - January 2004 involving main stakeholders
- × Two key foundation documents: "Strategic Research Agenda" and "Deployment Strategy" – Endorsed in March 2005 at Platform General Assembly
- × Strategic Overview of the above 2 documents – June 2005
- × "Operations Review Days" - December 2005
- × Interim Implementation Plan - July 2006
- × HFP General Assembly – Adoption of Final Implementation Plan - October 2006





## Technology Platform recommendations on H2 safety and RCS (SRA, IP Interim Report)

- ✕ To establish a EU harmonised standardisation and regulatory framework for the safe operation of hydrogen & fuel cell systems- **target IP: 2020 (in place)**
- ✕ Development of handbooks/codes of best practice for the safe introduction of hydrogen (HYAPPROVAL, HYPER)
- ✕ Establish a formal process / EU reference centre for assessing due diligence as regards safe use of hydrogen in projects, especially demonstration actions
- ✕ Assimilate and structure knowledge from pre-normative research, safety dedicated projects and demonstration activities
- ✕ Enhance international (R&D) co-operation is vital to secure globally compatible infrastructure and equipment
- ✕ Development of RCS for aerospace, maritime and railway sector



EUROPEAN  
COMMISSION

Community research

# **Energy Research in the 7th EU Framework Programme (FP7)**

# FP7 Specific Programmes

*Cooperation* – Collaborative research

*Ideas* – Frontier Research

*People* – Human Potential

*Capacities* – Research Capacity



JRC (non-nuclear)

JRC (nuclear)

Euratom

# Budget for FP7

Budget of FP7 (2007-13) after Council Agreement in July 2006:

- ✓ **50.5 billion euro (current prices)**
- ✓ ~ 60% increase compared to FP6
- ✓ ~60% part of overall budget will be allocated to Cooperation specific programme (~ 32.3 b€)
- ✓ Allocations also to Specific Programmes on People (~ 4.7b€), Ideas (~ 7.4 b€), Capacities, (~ 4.2 b€), Commission Joint Research Centre (~1.7 b€)

Overall budget (including Euratom)

- ✓ **54 billion euro (current prices)**

## 'Cooperation' (collaborative research) budget breakdown

Theme	Budget Breakdown (M€)
1. Health	5,984
2. Food, agriculture and biotechnology,	1,935
3. Information and Communication Technologies	9,110
4. Nanosciences, Nanotechnologies, materials and new production technologies	3,467
5. Energy	2,265
6. Environment (including Climate change)	1,886
7. Transport (including Aeronautics)	4,180
8. Socio-economic sciences and the Humanities	607
9. Security and space	2,858
<b>TOTAL</b>	<b>32,292</b>

# FP7 – Proposed Priority Topics in Energy

**Hydrogen and fuel cells**

**Energy savings and energy efficiency**

**Renewable electricity generation**

**CO2 capture and storage technologies for zero emission power generation**

**Renewable fuel production**

**Clean coal technologies**

**Renewables for heating and cooling**

**Smart energy networks**

**Knowledge for energy policy making**

# NEW for FP7 - Joint Technology Initiatives (JTI)

---

- ✗ The JTI is a new management structure that will allow a more efficient organisation of the R&DD resources in Europe in fields of major European public interest and will have the necessary critical mass
- ✗ H2/FC is one of the 6 priority topics that the EC has identified for proposals on JTIs

# Joint Technology Initiatives

---

## Identification criteria include:

- ✖ Added value of European-level intervention
- ✖ Degree and clarity of definition of objective
- ✖ Strength of commitment from industry
- ✖ Scale of impact on industrial competitiveness and growth
- ✖ Importance of contribution to broader policy objectives
- ✖ Capacity to attract additional national support and leverage industry funding
- ✖ Inability of existing instruments to achieve objective



## Key Aspects of a possible JTI on hydrogen and Fuel cells

- ✓ *Legal basis* – Will require establishment of a dedicated legal structure – **Joint Undertaking** under Art. 171 of the Treaty (EU Council needs to adopt)
- ✓ *Scope* – JTI will address the industrial applied research, validation, demonstration and cross-cutting activities of the JTI Programme. The upstream research of the JTI Programme will be addressed in the FP7 specific programmes (e.g. “Cooperation”, “Ideas”).
- ✓ *Structure*
  - *New Governing Board and Programme Office to be established*

# Elements for RCS in FP7 (in progress)

- ✕ RCS-safety as a “topic” in FP7 H2/FC work programme (filling the knowledge-gaps to support standards/regulations)
- ✕ Assimilate and structure knowledge from pre-normative research, safety dedicated projects and demonstration activities
- ✕ Reinforce the feedback of research to standards/EU regulations development (through a formal process)
- ✕ Establishment of a European safety audit/technical audit framework with which projects will be requested to comply
- ✕ International cooperation to share research efforts and for future global harmonisation

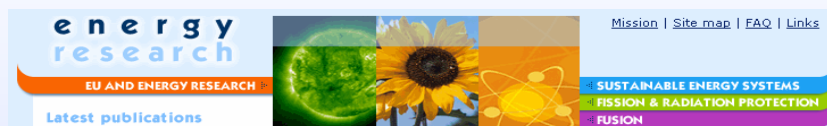
# FP7 timetable

## Next steps

- ✓ End 2006 Adoption of FP7 package
- ✓ End 2006 Definition of Workprogramme and opening for call for proposals
- ✓ Dec. 2006 First calls under FP7, closure call spring 2007
- ✓ Feb 2007 Launch conference (Brussels)

Energy Research web site and Energy Helpdesk:

[http://europa.eu.int/comm/research/energy/index\\_en.html](http://europa.eu.int/comm/research/energy/index_en.html)  
[rtd-energy@cec.eu.int](mailto:rtd-energy@cec.eu.int)



Energy Policy

[http://europa.eu.int/comm/energy/index\\_en.html](http://europa.eu.int/comm/energy/index_en.html)

Calls for proposals

<http://fp6.cordis.lu/fp6/calls.cfm>



Towards Seventh Framework Programme

[http://europa.eu.int/comm/research/future/index\\_en.html](http://europa.eu.int/comm/research/future/index_en.html)



Newsletter, Information days and similar events, conferences

<http://europa.eu.int/comm/research/energy/pdf/renews4.pdf>

[http://europa.eu.int/comm/research/energy/gp/gp\\_events/action/article\\_2790\\_en.htm](http://europa.eu.int/comm/research/energy/gp/gp_events/action/article_2790_en.htm)

European Hydrogen and Fuel Cell Technology Platform

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



Joint Research Centre

<http://www.jrc.cec.eu.int>

