



research on fuel cells & hydrogen

Research and Universities are grouped

Paul Lucchese
N.ERGHY Chairman

Outline

- Added value of Research for H₂ and fuel Cell
- What is N.ERGHY ?
- N.ERGHY organisation: a governance model for Low Carbon Energy technologies in Research

**A continuous and significant
Research Effort is needed
for the next 10 years...**

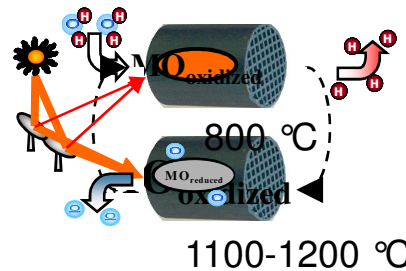
**To reach the JTI targets *and
beyond***

The value proposition of the Research Community

- ✕ Long-term and continuous research; large R&D capacities
- ✕ Broad range of Technologies providing valuable interface information for industry
- ✕ Next generation technologies
- ✕ Support of SMEs through Research Institutes: Technology Transfer
- ✕ Technology base for newcomers in the industry
- ✕ Education and training
- ✕ Cross-cutting research bridging between applications
- ✕ Strong and focused activities providing critical mass over long timelines
- ✕ Aligned and coordinated research activities and expertise of European Research Institutes

Some results from research

SAFETY



100kW



PRODUCTION

STORAGE



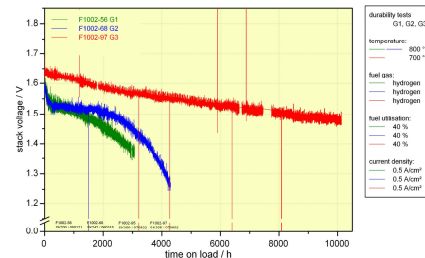
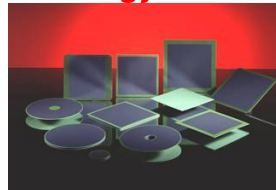
350 Bar



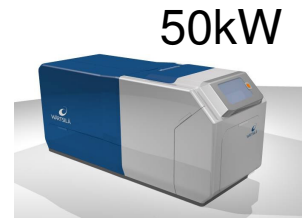
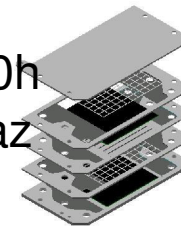
700 bars

SOFC

Technology Transfer



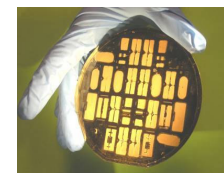
5kW, 7000h
Natural gas



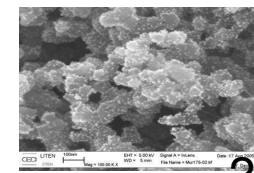
50kW

PEMFC

80kW



1W



0,3g/kW

2008

2000

N.ERGHY Today:
49 members, 7 candidates

56 participants Letter of intent

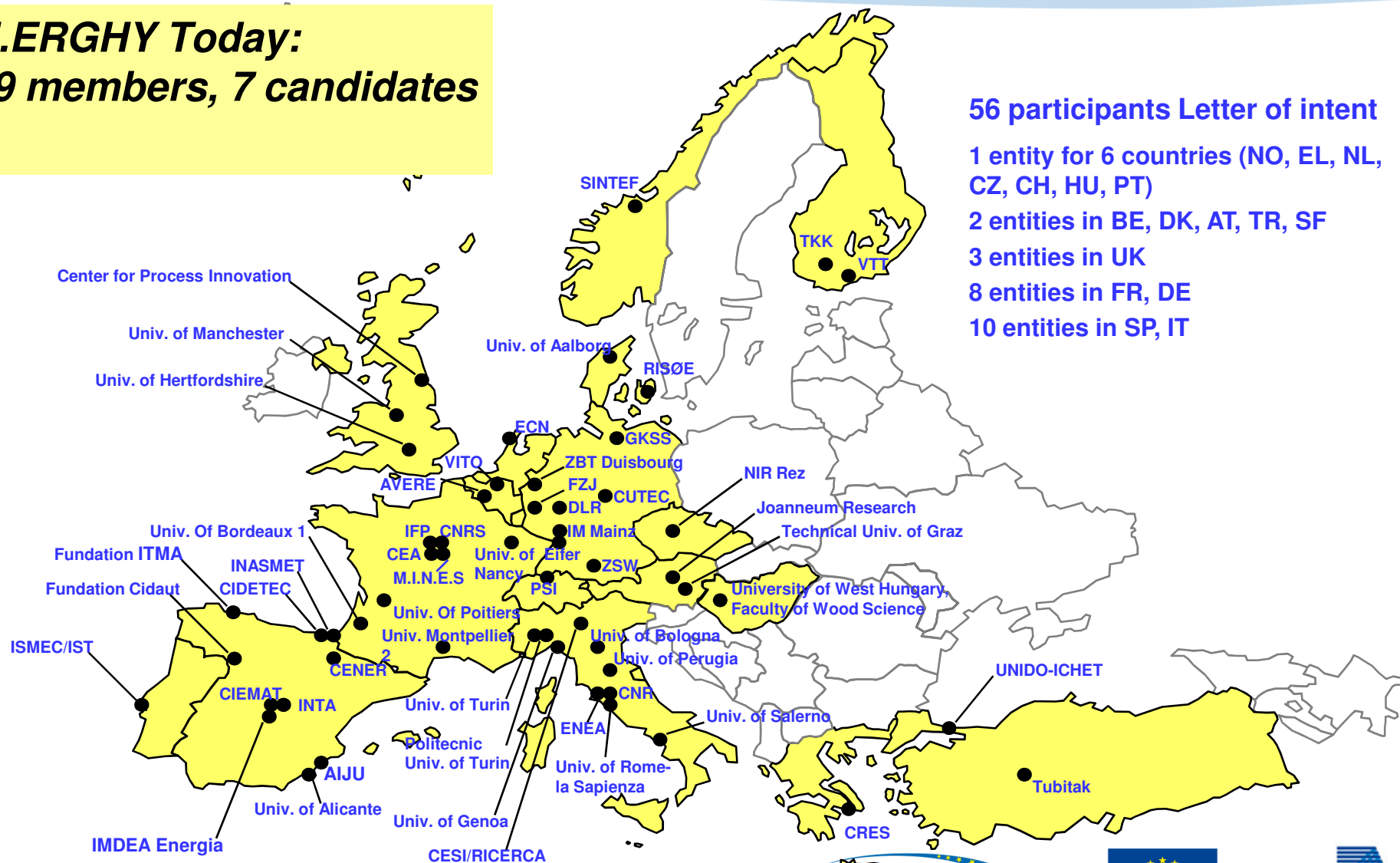
1 entity for 6 countries (NO, EL, NL, CZ, CH, HU, PT)

2 entities in BE, DK, AT, TR, SF

3 entities in UK

8 entities in FR, DE

10 entities in SP, IT



European Fuel Cell and Hydrogen Week • 13-15 October 2008



CENTRE NATIONAL
DE LA RECHERCHE
SCIENTIFIQUE



UNIVERSITÀ DEGLI STUDI
DI SALERNO

Total: 46 out of 56



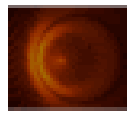
215.205 M€
(46 participants)



1801 persons
(45 participants)



Forschungszentrum Jülich
in der Helmholtz-Gemeinschaft



Fundación it ma



Universidad de Alicante



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



The Centre for
Process Innovation



CESI RICERCA



TEKNILLINEN KORKEAKOULU
TEKNISKA HÖGSKOLAN
HELSINKI UNIVERSITY OF TECHNOLOGY



EUROPÄISCHES INSTITUT FÜR ENERGIEFORSCHUNG
INSTITUT EUROPÉEN DE RECHERCHE SUR L'ÉNERGIE
EUROPEAN INSTITUTE FOR ENERGY RESEARCH

Fuel cells & hydrogen for sustainability



EUROPEAN COMMISSION



SEVENTH FRAMEWORK
PROGRAMME

European Fuel Cell and Hydrogen Week • 13-15 October 2008

N.ERGHY AISBL officialy created on 15 th may 2008

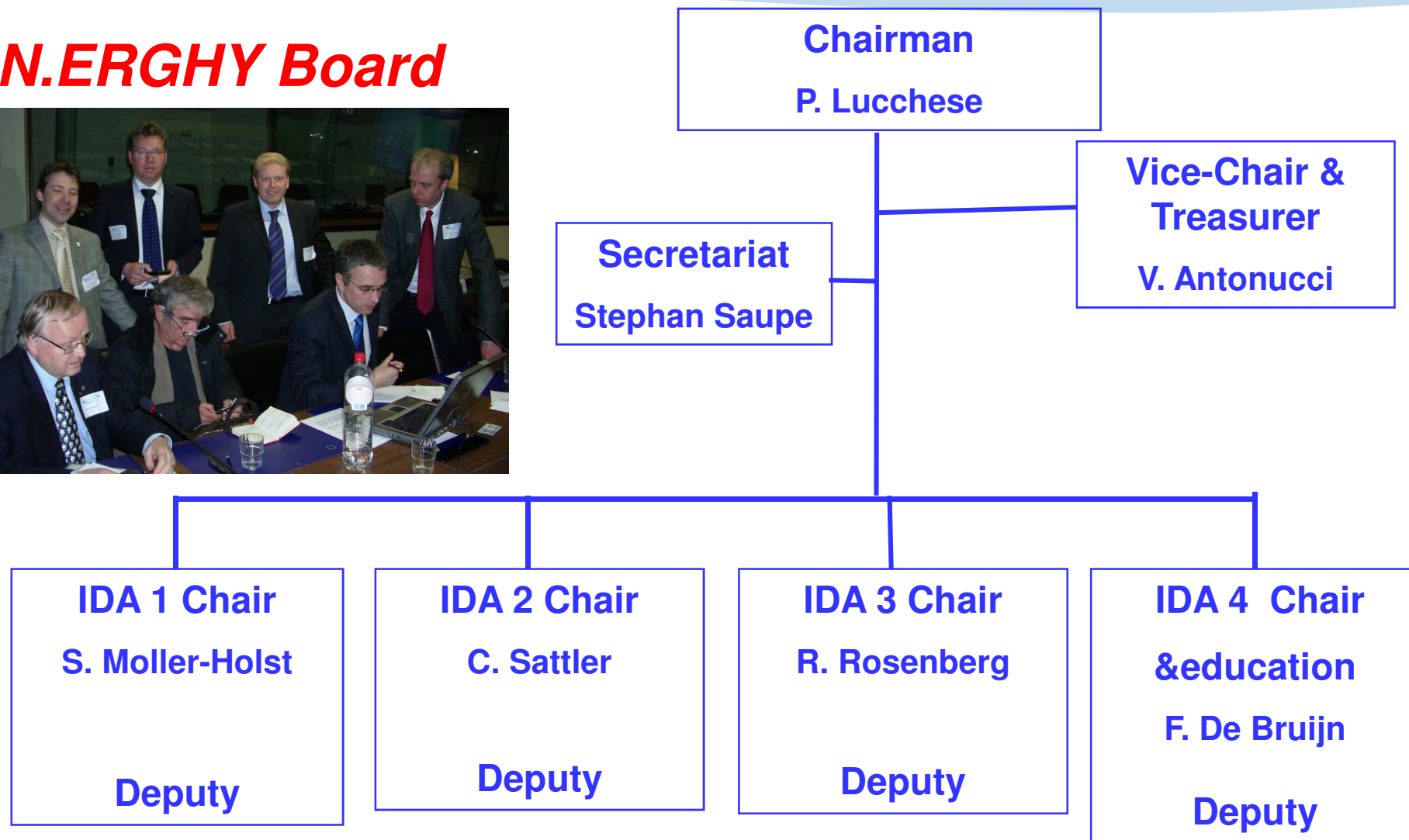
**2 General Assembly,
17th March and 16th September 2008**



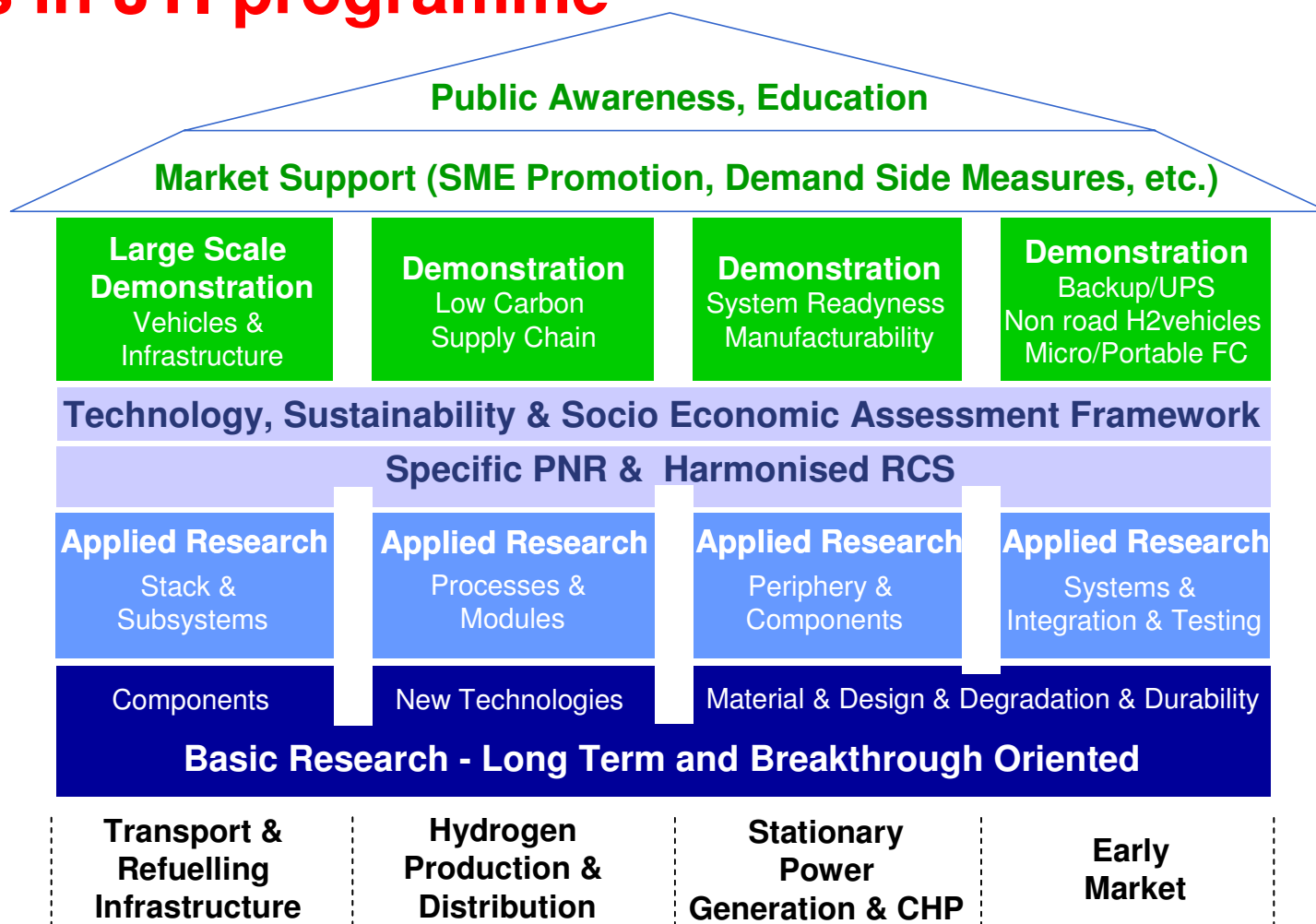
Constitutive Assembly, 17th March 2008, Paris



N.ERGHY Board



R&D is in JTI programme



IDAs Breakdown of the budget

FCH JU Funding	Basic Research	Applied Research	Demo	Support Actions	TOTAL €m %	
Transportation & Refuelling Infrastructure	20.0	27.0	107.8	(6.9)	154.8	35%
Hydrogen Production & Distribution	13.4	13.9	13.6	(3.0)	40.9	9%
Stationary Power Generation & CHP	24.5	78.4	64.8	(3.0)	167.7	37%
Early Market		12.8	45.5	(7.6)	58.3	13%
Cross-cutting Issues				28.3	28.3	6%
TOTAL	€m	57.9	132.1	231.7	28.3+(20.5)	450.0 100%
	in %	13%	29%	52%	6% + (5%)	100%

Foundation Act

*N.ERGHY Board receives a
huge amount of trust and motivation
from a large part of the research
community*

The first step towards Joint programming: JTI

- **Preliminary Task 2008-Mid 2009: How to organize ourselves in a efficient way**
 - 9 executive board meetings, 2 General Assembly, Secretariat and financial establishment of N.ERGHY
 - Budget preparation, Logo and website name, Starting work on internal procedure
 - Communication Tools: **First NRGHY newsletter**
- **Active commitment in AIP 2008/MAIP/AIP2009: 2008**
 - IDA mirror group in N.ERGHY between 6 and 12 participants per group
 - Participation of IDA chair to discussion with IG and EC to first call discussion AIP 2008 and MAIP
 - Prioritization action and Workshop 5/6 may with IG
- **Participation in JTI Governing Board and defintion of all rules(Grant, IPR...), special attention to:**
 - **Scientific Committee**
 - **Upper funding rules: Disappointment of Research Communauty!!!**

JTI R&D programme

A catalyst and a Starting point
of a Larger and Integrated
R&D European Programme

**Total Public Funding
(Member States Programme plus Regions)**

250-300M€/year

JTI R&D:

30 M€/year

How to keep the momentum ?

How to improve the Research efficiency and avoid too much inefficient fragmented work

How to convince national authorities and others stakeholders?

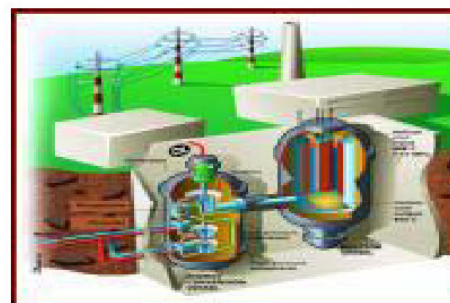
We start Now Next Steps towards Joint programming:

- How to gather Regions and R&D efforts:
 - Meetings with EC, Hyramap (regions), JRC
- Communication Plan
 - Member States communication (jointly with IG)
- Working group
 - Membranes
 - Solid State Storage
- Infrastructures initiatives
- Mobility; education
- Example of Hydrogen production Sushy Pro
- Long term Hydrogen production:
 - Biological pathways, Biomimetism
- Link with basic research: nanoscience etc...
- Link with Others R&D Platform: CCS Biofuels, Renewables Smart Grids
- International Cooperation



La Plateforme SushyPro - Objectifs

Propose to European H₂ community (research & industry) facilities to check systems or subsystems of High Temperature Processes for H₂ massive production with solar furnaces and simulated nuclear reactor (Helium loop)



H₂

- Plate form to welcome JTI projects, 1MW demo projects
- Links with CSP, geothermal, Nuclear
- International collaboration: Union for Mediterranean Countries



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European strategic planning on low carbon energy technologies (SET-Plan)

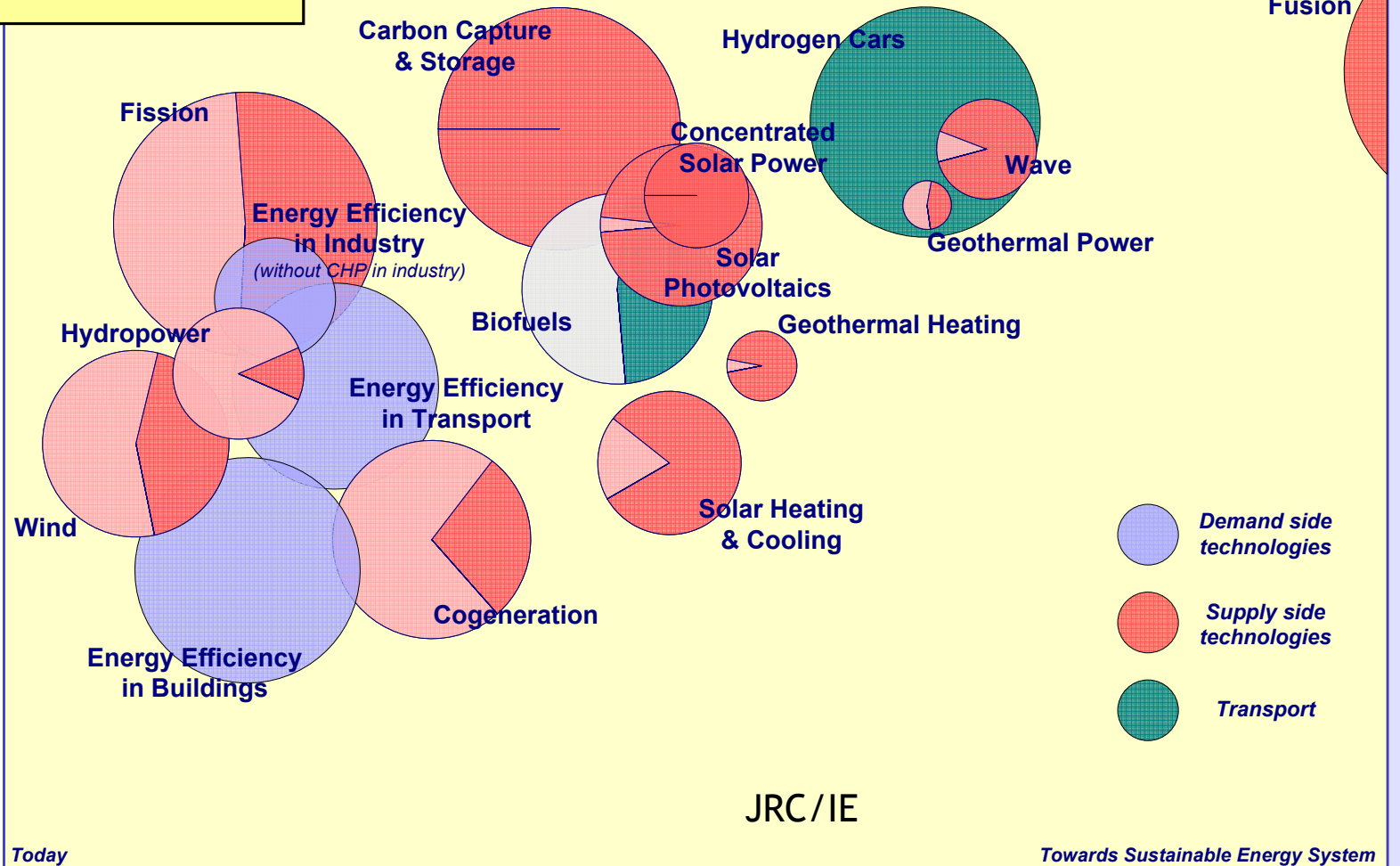
- **Joint programming of R&D on low carbon energy**
- **Implementation:**
 - European Industrial initiatives, based on fuel cells & hydrogen model
 - Alliance of European R&D centres and universities on Energy R&D
 - TransEuropean Energy Networks and transition programmes
- **Today challenge: increase human resources and funding at EU level**
- **Low carbon Conference SET Plan, 28th October 2008, Paris**

**ALLIANCE Initiative:
how to gather european R&D force on Energy:
Nuclear, Renewables, fossil, Conversion and storage technologies**

- Starting in May 2008:
- A core group Chairmen of
 - CEA, HGm (Jülich), VTT, ECN, CIEMAT, ENEA, INETI, CEA
 - CRES, UKERC, Risoe
 - Eurohorcs, EUA
 - JRC
- Elaborate a common vision
 - Joint programming
- Gouvernance
- Propositions to be presented at Paris Low carbon Conference 9TH october with a meeting 27th October

Do we need R&D now ?

Challenge for Implementation



SETIS

JRC / IE

Time Horizon



Conclusions

- European R&D Community: motivated and grouped
- Proven Added value
- Industries help in focusing R&D of Research Institutes, in providing the technical specifications, selecting the right applications and inspiration
- Clear and strong message in AIP 2009 and beyond: and applied research must be present at sufficient level !
- Unique opportunity to use the R&D part of JTI as a catalyst to start the coordination of the global research programme
- European Research Community ready to contribute

The R & D at Research Institutes can only have an impact when their technology is implemented in products by Industry and bought by Happy Customers!

Thank you !



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R&D contribute to the JTI Targets

