

# Activities of French Regions

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**French Atomic Energy Commission (CEA)**

Workshop

Supporting Regions to Integrate Hydrogen

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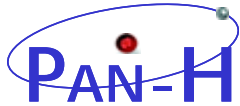
- **National framework to support R&D on H2&FC**
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# National Framework to Support R&D on H<sub>2</sub>&FC



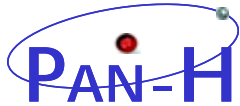
## Collective Involvement in the National Programme PAN-H



- PAN-H is the result of a **collective vision** of the French actors (public, private) involved in the R&D on H<sub>2</sub>&FC (Air Liquide, Hélium, CEA...).
- The ambition of PAN-H is to develop the key elements of an industrial and technological path including “clean” production, transport/distribution, storage of hydrogen and use preferably in a PEMFC.
- The privileged “long term” target is the automotive use, but the effort will be also undertaken for earlier markets (less restricting specifications).
- Up to now, only the R&D part of PAN-H is supported by public funding: the National Research Agency (ANR) was created in 2005 and has supported 25 projects in 2005 and will support a similar number in 2006.
- Necessity to support demonstration projects to progress on issues such as safety, regulation, social acceptance in regions.



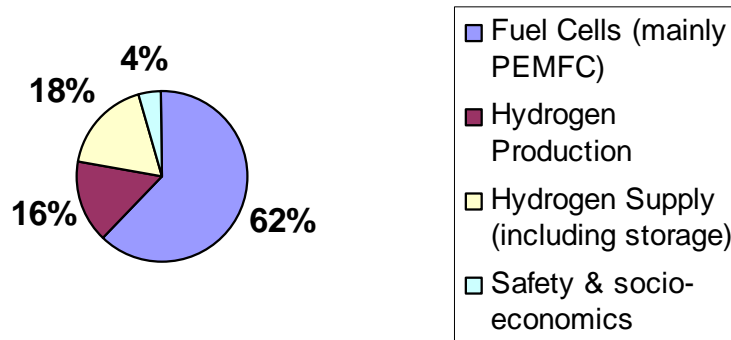
**Strong Public Support through the National Research Agency**



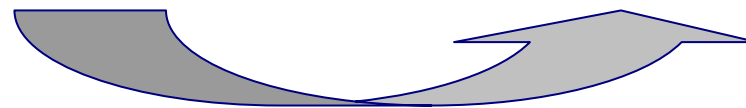
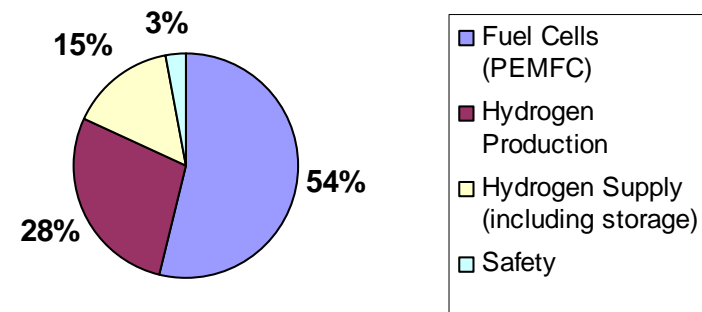
**30 M€ funded by ANR in 2005 for 3 years**

**Similar funding expected for 2006**

**Allocation of Funding**



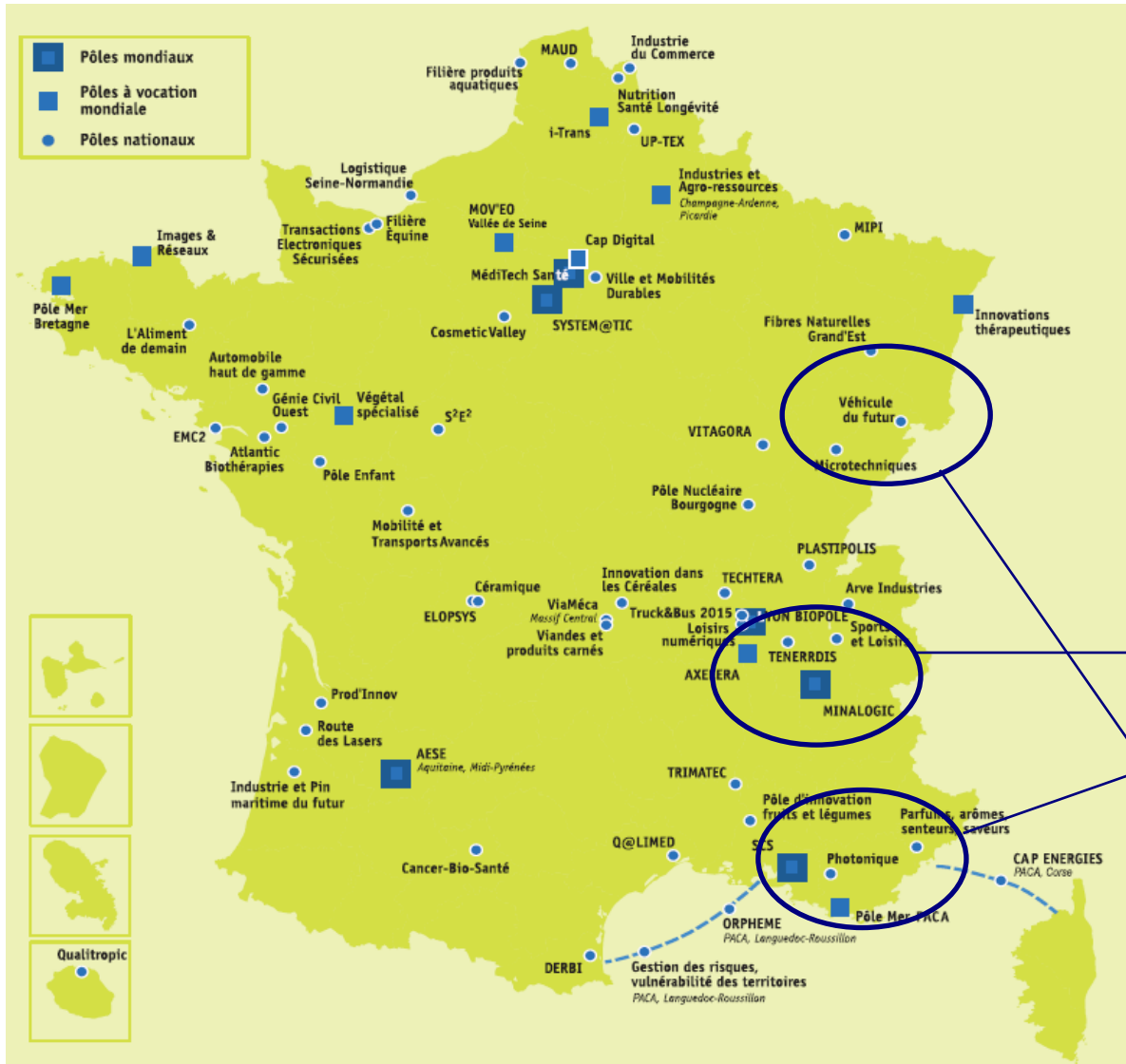
**Indicative Allocation of Funding**



**Reorientation of the programme towards “CO<sub>2</sub>-free” production**



## Competitiveness Clusters to Foster Industrial Innovation



- Public-Private Partnerships to develop innovative R&D projects
- Public Support through Government and Funding Agencies
- Open to international collaboration
- Some **specific clusters** deal with new energy technologies, including **hydrogen**, mainly:

- ✓ **Tenerdis** (Rhône-Alpes) [www.tenerdis.fr](http://www.tenerdis.fr)
- ✓ **Capenergies** (PACA) [www.capenergies.f](http://www.capenergies.f)
- ✓ **Vehicle of the future** (Alsace/Franche-Comté)



# Overview of the Main Initiatives in the French Regions



## Insight into the Region “PACA”



- **Three specificities**
  - Tourist position requiring an image of environmental friendliness and welfare.
  - Energy requirements but privileged field to increase the value of renewable energies (solar, wind, biomass).
  - Open to Mediterranean countries (need of decentralized energy).
- **Ambitious regional projects** are in preparation (R&D, demonstration), driven by **Capenergies** with a twofold strategy:
  - Connect renewable energy to H2&FC.
  - Demonstration of H2 technologies in public transport applications.



## Insight into the Region “Rhône-Alpes”



- **Strong regional actors**
  - Public research in Grenoble (CEA, INPG) and Lyon (IRC).
  - Air Liquide (including Axane) developing hydrogen FC systems and innovative logistics for hydrogen distribution (HyChain Project...).
- **Regional support to R&D** through **Tenerdis** and the cluster “**renewable energy and energy efficiency**” including platforms such as **Prédis** (network management) and **PACLAB** (development of PEMFC).
- **Regional strategy not finalized for demonstration and deployment.**



## Insight into the Region “Nord-Pas-de-Calais”



- **Some experimentations** on stationary applications of fuel cells.
- Partnership with **HEET platform** ([www.h2et.info](http://www.h2et.info)), with two innovative demonstration projects in transport
  - Ultim Car (H2 ICE).
  - Althytude (hythane buses), led by Gaz de France ([www.althytude.info](http://www.althytude.info)).
- Preference for the **conversion of ICE** and mobilization of regional and interregional R&D and demonstration capacities in energetics & combustion.



## Other Regional Initiatives

### ○ Various other regional initiatives, including:

- A project of economic development in region “Lorraine” (target: integration of SMEs in H2&FC economy).
- The creation of the platform “ALHyance Innovation” in region “Centre” (materials engineering and energy efficiency for H2&FC technologies), included in the regional strategy of economic development related to “energy efficiency”.
- The research laboratory “Fuel Cell Lab” in region “Franche-Comté” for the integration, reliability, durability of fuel cell systems in transport applications.
- The launching in region “Pays-de-la-Loire” of the “Mission Hydrogen” ([www.missionh2.org](http://www.missionh2.org)) focusing on marine and waterway transport applications.
- ...



## Some Barriers and Challenges in France

- A strong national support for R&D, but lack of demonstration and deployment projects at a significant scale and no associated national funding:
  - Will the regions give the signal for the changing?
  - The Competitiveness Clusters are good carriers to develop (inter)regional initiatives.
- No governmental impetus to adapt the national regulation to hydrogen energy: this could hamper the commitments of regions.
- The PAN-H programme is focused on PEMFC for hydrogen use in various applications: other options (e.g. ICE), considered as intermediate, could also be investigated.
- The presence of strong actors for regional demonstrations is important but other major criteria of attractiveness of the regions are:
  - The potential of industrial subcontracting to manufacture materials, components and systems (e.g. “Lorraine”).
  - The potential of end-use of H<sub>2</sub>&FC technologies (e.g. “Ile-de-France”).

