



Project note

Towards sustainable hydrogen in Europe



Creating a favourable environment for the fuel cell development

April 2008

More informations : <http://pac-ret.lir.be>



La SCIC les 7 Vents du Cotentin

Who we are

“Les 7 Vents du Cotentin” is a utility cooperative located in Lower Normandy, France.

- As a **public advice place for energy information** we provide technical advices to whom asks for it. This objective is financed by the Regional Council, the ADEME (national energy agency) and the County Council of la Manche;
- As a **design office** it produces studies dealing with renewable energy, demand side management and High Energy Performance / High Environmental Quality buildings;
- Our company is also a recognized as a **force of proposal** in these domains on our territory.

The cooperative gives supports to local public bodies, companies and projects bearers in their approaches and provides the counseling to architects as a prime contractor in its domains of competencies.

Activities

Demand side management, energy mastering:

- energy certificates;
- carbon balances;
- thermal solar heater diagnostics.

Renewable energy:

- Counseling – support to companies and local public bodies on the development and use of renewable energy systems: wood energy, thermal solar, photovoltaic, hydroelectricity, wind power, hydrogen.

High Energy Performance / High Environmental Quality Buildings:

- Counseling as a prime contractor on High Energy Performance / High Environmental Quality topics.

Trainings and pilot projects:

- development of the fuel cell field (owner of a demonstration fuel cell for demonstration and trainings);
- creation of a local energy agency for the County;
- European and innovative projects.

Public advice place for energy information

- Technical and financial information towards particulars (on sustainable development, renewable energy and demand side management technologies and methods).

Competencies and experience

Fond of renewable energies for a lot of time, the actors of this society have developed competencies in the preceding fields, which lean on their technical formation and their professional background. They managed to work within French and international networks.

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SARL-SCIC (Cooperative Society of Collective Interest – Utility Cooperative)

Award winner of the Cooperative Credit Foundation – Sustainable Initiative

Les 7 Vents du Cotentin



The SCIC “Les 7 Vents du Cotentin” is a utility cooperative specialized in the development of renewable energies. It inaugurated the first operational fuel cell in Basse-Normandie in 2006 with the support of the ADEME, the Region and the Manche County Council

The purchase of this fuel cell allowed the SCIC to carry out multiple educational actions in collaboration with the IUT Cherbourg - Manche. The first project with demonstrative vocation also contributed to the emergence of a network of local actors interested in this technology, both in its industrial application and in applied research prospects.

Today, the results of these actions show immediate opportunities for fuel cell growth in various applications. Accompanied and correlated with the regional potential of renewable resources, they make this technology an unavoidable asset for the sustainable development of territories.

The “towards sustainable hydrogen” project

The objective of the project is to create a favourable environment for the fuel cell deployment within the framework of a sustainable development of territories.

For that purpose, 3 working axes are anticipated:

- The evaluation and then the emergence of local fuels production fields for the hydrogen supply of the territories ;
- The implementation of a monitoring and technical assistance plan allowing companies the access to the technology fuel cell ;
- The pursuance and the intensification of the communication, awareness raising and training actions aiming at the creation of a transnational community of interest.

1. Development of sustainable local fields (resources)

Associated with fuel cells, hydrogen is often presented as "the" future energy solution

Hydrogen has many assets. It is a highly calorific gas, which could be used for either propulsion, heating or electricity storage. It is the most abounding element in the universe and its combustion produces water. The main problem is the absence on Earth of hydrogen under its simpler form, which forces it to have a role of energy vector and not of source, because it is necessary to produce it and to transport it up to the place of use.

So, the fuels production methods represent a crucial stake for the fuel cell field in general.

Today, the most common hydrogen production process is the hydrocarbon reforming. This source is not really compatible with sustainable development. Water electrolysis can constitute an alternative in term of production. Nevertheless the low energetic yield limits the interest of this process.

The most promising alternative seems to be the use of biomass via a pyrolysis reaction followed by reforming. It allows us to be free from hydrogen exploitation constraints, to limit risks, to facilitate the solutions of transport and manipulation of fuel. It represents especially a believable solution to struggle against global warming.

In Bretagne and in Basse-Normandie, the optimal development biogas resources, the potential of which are among the most important in Europe, could be one of the keys for the fuel cell sustainable development. Other ways such as seaweeds culture seem also promising.

The project "towards sustainable hydrogen" will try to estimate locally the most viable ways of fuel supply of the Fuel cell on the economic, social and environmental field according to sustainable development criteria.

In collaboration with all the local actors, the objective will consist in the buildings of a strategy of a sustainable exploitation of local resources and of reduction greenhouse gases emissions. The

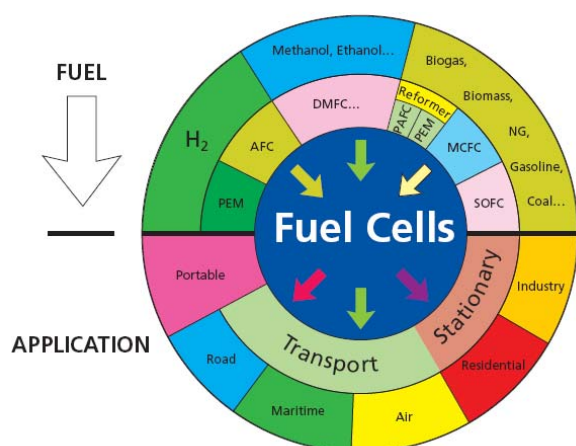
link with pre-existent value-enhancing fields such as wood energy will be particularly studied to ensure an optimal sustainable development of the territories.

2. Development of the technology of the fuel cell

The fuel cell is often considered as an unaccomplished product or as a “future” technology which would only concern the car sector.

The reality is quite different. Fuel cell markets cover every energy need of heat and electricity. They have to be assessed according to multiple parameters, technical and political hindrances deterrents or throttles. In fact, it is likely that the car market will be the last mass market penetrated by the technology. Conversely, other markets such as mobile applications (computers, phones, etc.) seem to take shape in the near future.

Technologies and supply fields (Source: "Hydrogen and Fuel cell: A vision for our future", European Commission)



The first results of the survey conducted by “Les 7 Vents du Cotentin” showed the interest of a certain number of users for fuel cell applications for instance as an electrical backup system or as a supplier for isolated sites.

The “sustainable hydrogen field project” aims at facilitating companies’ access to the technology so that the markets (or niche markets) are more easily penetrated.

It deals with companies’ assistance by the provision of a space of exchange and co-operation (collaborative website Tikiwiki). It is about helping

the emergence of application projects by the financial support of engineering studies of technical-economic type.

3. Network animation

Animation is the determining element to the project success. It allows good appropriation and understanding by all actors. It also allows the preservation of the dynamics throughout the project.

The information will be realized through written supports and by targeted meetings. A technological and strategic watch, a project database and a resource centre will be supplied through a collaborative working space.

Initiatives of training courses and awareness raising will be organized for the students and companies in continuity of those already realized.

A project of transborder cooperation

With the European councils of Lisbon (2000) and then of Göteborg (2001), the European Union settled political orientations to dynamize European competitiveness while insuring social cohesion and sustainable development.

The new 2007-2013 financial perspectives related to structural funds plan a focus of the politic cohesion on the following points:

- Investing more in knowledge and evaluation ;
- Better exploitation of the potential of companies, in particular of SMEs ;
- Increasing the possibilities of employment for having priority ;
- Promoting an energy policy, notably by looking for an environmental viability.

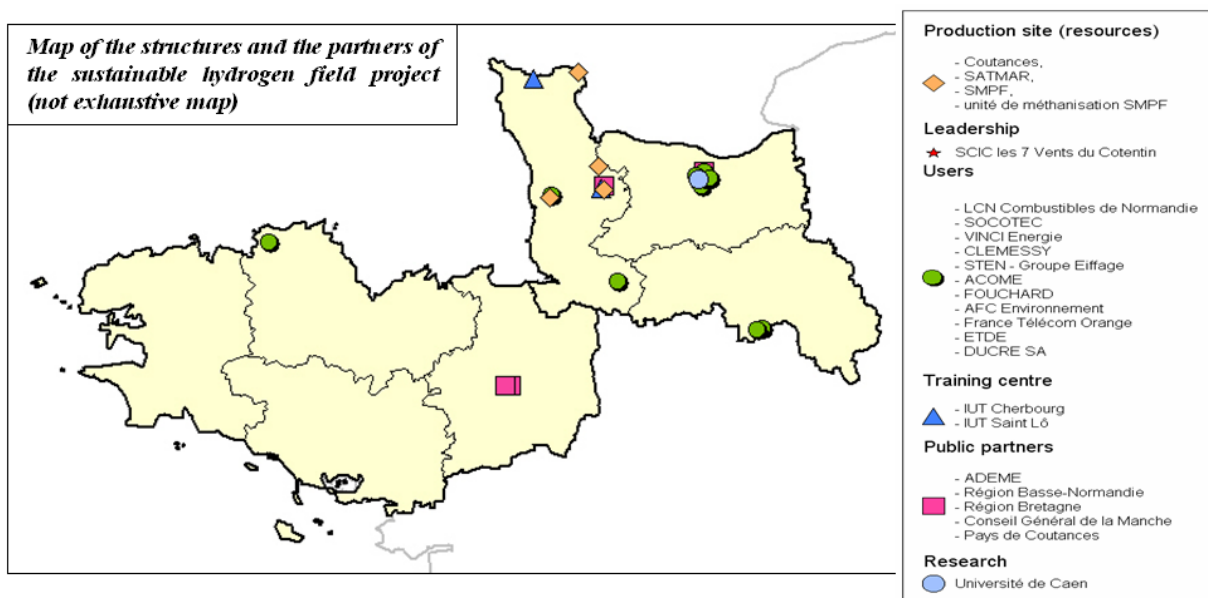
The action program concerning the “sustainable hydrogen field project” is perfectly integrated into the recommendations expressed by the European Commission.

A transborder dimension is envisaged so as to allow an optimal diffusion of the results to all the territories presenting similar socioeconomic characteristics. Besides it should put in prospect the work realized within the framework of common frame of reference as well on technical as on methodological criteria.

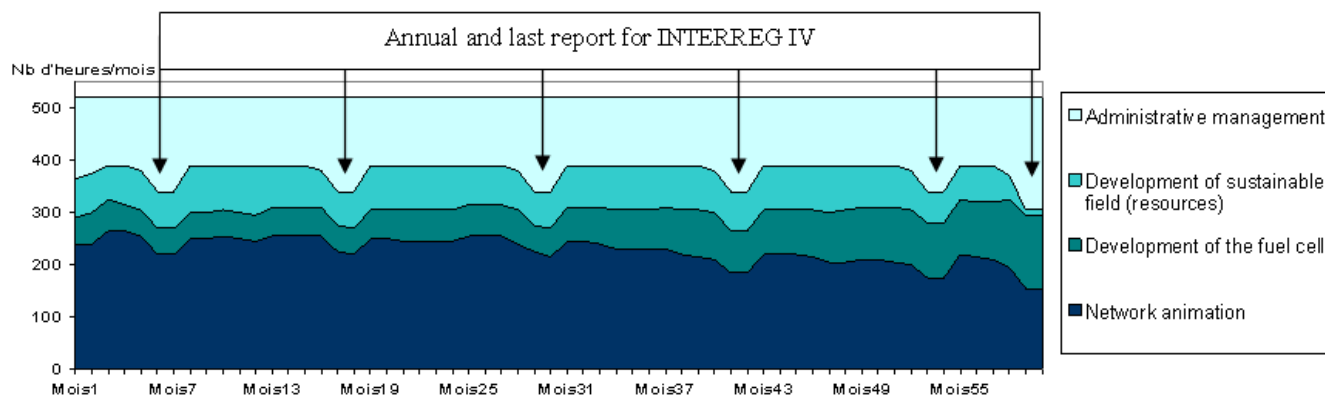
INTERREG IV program aims to promote an integrated regional development between regions, including in the case of the external borders and some maritime zones. The objective of the action is to facilitate the transborder cooperation to develop economic and social poles from common strategies of sustainable territorial development.

We are envisaging a development of this project with INTERREG IV on a period of 5 years.

The SCIC “Les 7 Vents du Cotentin” positions itself in this project as a leader. Mobilized actors’ network around the project includes users (companies, training centres), producers, researchers already mobilized within the framework of the first work widened in Bretagne and abroad.



Provisional Calendar:



Provisional budget for the « 7 Vents du Cotentin »

	in €	Year 1	Year 2	Year 3	Year 4	Year 5	Results (in number)
Fixed costs							
Expenses of structure		37 990	31 900	28 400	29 900	29 900	
Traveling costs		30 560	30 560	30 560	30 560	30 560	
<i>Sub-total of fixed costs</i>		68 550	62 460	58 960	60 460	60 460	
Costs in the realization							
Translation		500	500	500	500	500	
Editing							
Purchase of the demonstration fuel cell (except financing of INTERREG IV)		1 400	1 400	1 400	1 400	1 400	
<i>Sub-total of fixed costs</i>		1 900	1 900	1 900	1 900	1 900	
Human resources* (*on the basis of 4 full-time)							
1. Network animation		107 200	107 200	107 200	107 200	93 250	
1.1. Diffusing information							Interviews Brochures diffused to the public Web site Participation in events
1.2. Making the local actors play a part							Organized events Returns of participation reports
1.3. Strategic and technological watch							Taked projects and products inventory Diffusion of watch results
1.4. Training course							Met and mobilised training centre Interventions in training courses for the companies
1.5. Research							Met and involved actors of the research Research axis Local research projects
2. Development of the fuel cell		27 970	27 970	27 970	27 970	29 140	
2.1. The actors							Data bases of awareness raising and mobilised companies Fuel cells installed on the territory
2.2. Studies of presizing							Creation of data base including every studies
2.3. Sites of demonstration							
3. Development of sustainable field (resources)		27 970	27 970	27 970	27 970	29 140	
3.1. The actors							Data bases of companies Meetings
3.2. Resources							Study of resources On-site tests to estimate the prices
3.3. Relation between actors							Specifications Contracts of supply Quality criterias
4. Administrative management		69 930	69 930	69 930	69 930	81 600	
4.1. Organizing							Files Calendars
4.2. Following up							Dash-board
4.3. Presenting results							Annual reports Follow-up of budgets
<i>Sub-total of paychecks</i>		233 070	233 070	233 070	233 070	233 130	
Total		303 520	297 430	293 930	295 430	295 490	1 485 800
Part-financing of project (en €)							
Europe (INTERREG IV)		742 900 (50 %)				965 770 (65 %)	
Basse-Normandie and Bretagne Regions		307 740 (20,7%)				174 018 (11,7%)	
Other public structures		205 160 (13,9%)				116 012 (7,8%)	
SCIC les 7 Vents du Cotentin		100 000 (6,7%)				100 000 (6,7%)	
Private structures		130 000 (8,7%)				130 000 (8,8%)	