Roads2HyCom

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Work Pack 3, Task 3.2 and 3.3

RESULTS FROM CALL FOR COMMUNITY REGISTRATION OF INTEREST:

MAPPING ANALYSIS OF POTENTIAL HYDROGEN COMMUNITIES IN EUROPE

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The European Commission is supporting the Coordination Action "HyLights" and the Integrated Project "Roads2HyCom" in the field of Hydrogen and Fuel Cells. The two projects support the Commission in the monitoring and coordination of ongoing activities of the HFP, and provide input to the HFP for the planning and preparation of future research and demonstration activities within an integrated EU strategy.

The two projects are complementary and are working in close coordination. HyLights focuses on the preparation of the large scale demonstration for transport applications, while Roads2HyCom focuses on identifying opportunities for research activities relative to the needs of industrial stakeholders and Hydrogen Communities that could contribute to the early adoption of hydrogen as a universal energy vector.

Further information on the projects and their partners is available on the project web-sites www.roads2hy.com and www.hylights.org

RESULTS FROM CALL FOR COMMUNITY REGISTRATION OF INTEREST: MAPPING ANALYSIS OF POTENTIAL HYDROGEN COMMUNITIES IN EUROPE

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Executive Summary

One objective of the Roads2HyCom project is to identify and map hydrogen sites/communities. Mapping involves gathering basic information on the location, stakeholders, technological applications, means of financing, drivers, and barriers for hydrogen communities/sites. This document presents the results of the **first mapping analysis** of the project on potential hydrogen community sites in Europe.

Following the publication of a Registration of Interest, the Roads2HyCom project has developed a database of existing and proposed hydrogen community projects. This database has been checked and validated with previous research results. Following interrogation of the database, a number of conclusions may be drawn with regards to the mapping of potential hydrogen communities/sites:

Basic Features

- Two types of projects were apparent:
  - *Policy Driven* (usually led by the local community or public authorities)
  - *Technology Driven* (usually promoted by industry)
- Public organizations are involved in a large number of the identified projects
- The majority of projects involve *hydrogen production*, especially from renewable energy sources

Application and community type

- A majority of potential hydrogen community projects are oriented towards multiple application types (stationary / transport / portable) and multiple end-use sectors
- Single-application type hydrogen communities display main orientation towards public / large-scale transport and residential / services end-use sectors

Barriers and financing structure

- Lack of funding, in particular public funding, has been identified as the main barrier to the development of hydrogen and fuel cell (H2FC) projects
- Public funds play an important role in the financing of H2FC projects, although the level at which these funds are available (whether from EU, national, or regional budgets), and critical for financing, vary from country to country
- Almost three-quarters of all projects receive some degree of funding from national budgets

1. Mapping Procedure

A database has been set up by the project for the purpose of compiling information needed for mapping, on projects that are 'potential or early adopter-communities of hydrogen and fuel cell technologies' in Europe (hereafter referred to as hydrogen communities). The database is a collection of existing and planned demonstration projects and other initiatives of 'hydrogen community potential'. 'Hydrogen community potential' projects have been identified on the basis of:

- A clear focus of the project on **deployment** and/or **directly meeting end-user energy needs** through integrated energy conversion systems and pathways
- The existence of **ongoing cooperation** between local authorities, local agencies, economic operators and other local stakeholders;
- The **project's visibility** or potential to become a **showcase** for hydrogen and fuel cell technologies for the community.

1.1 Overall Database

The database so far contains data on 96 potential hydrogen community projects/initiatives in Europe (EU27, EEA, and acceding and candidate countries). The projects/initiatives and related information have been collected for the database, using as resources: the IPHE (International Partnership for the Hydrogen Economy) database, public sources of information, and the results of an information-gathering exercise launched by the Roads2HyCom project, in the form of a Call for **Registration of Interest (ROI)** for potential hydrogen communities (see annex 3.1). The database is regularly updated as new information becomes available, and it is intended to integrate additional hydrogen community-type projects that may come out of the HFP Europe database.

From the overall database, a sample of projects is the subject of a detailed mapping analysis, presented in this document. The sample is essentially comprised of (40) potential hydrogen community projects gathered via the Call for ROI

1.2 Sample of projects from the Registration of Interest

The Call for ROI, launched in May 2006, has enabled the gathering of the information required for the mapping exercise, for e.g. information on funding, drivers, barriers etc. The Registration of Interest is a standardized questionnaire (see annex: 3.1: 'Online Registration of Interest') in which users can select from a number of pre-set options related to each category of information sought. There are also a few sections where (limited) textual input may be provided. The questionnaire was placed online on the Roads2Hycom webpage and thus accessible to the general public. It questioned the registering entity on the following aspects:

- Information on community and contact person
- Information on the projects, including:
  - Project type and technologies involved

- Primary resources
- End-users needs
- Total budget and financial resources split
- Involvement of local stakeholders

In some cases, when not all data was available, in particular for the analysis on the financial sources, a smaller sample has been used for which the data is available. When this has a substantial impact on the analysis, it has been indicated in the text.

Once the ROI data was collected, it was validated. Follow-up telephone calls and emails with the indicated contact person were done in cases where the ROI data seemed skewed or contradictory (see annex 3.1*)*.

As mentioned, there are currently 40 projects for which an ROI has been made. The geographic spread of the sample compared to that of the overall database is used as an indication of the accuracy of the ROI project sample.

2. Results of Mapping: Analysis of ROI project sample

2.1 Overview of database

The database of overall demonstration projects indicates a concentration of potential hydrogen community projects in a few countries - Germany (DE), Italy (IT), United Kingdom (UK), and Spain (ES)- where private initiative is supported by strong national and regional policies (see Figure 1). An overview of the situation in these countries in this context is given in the following paragraphs.

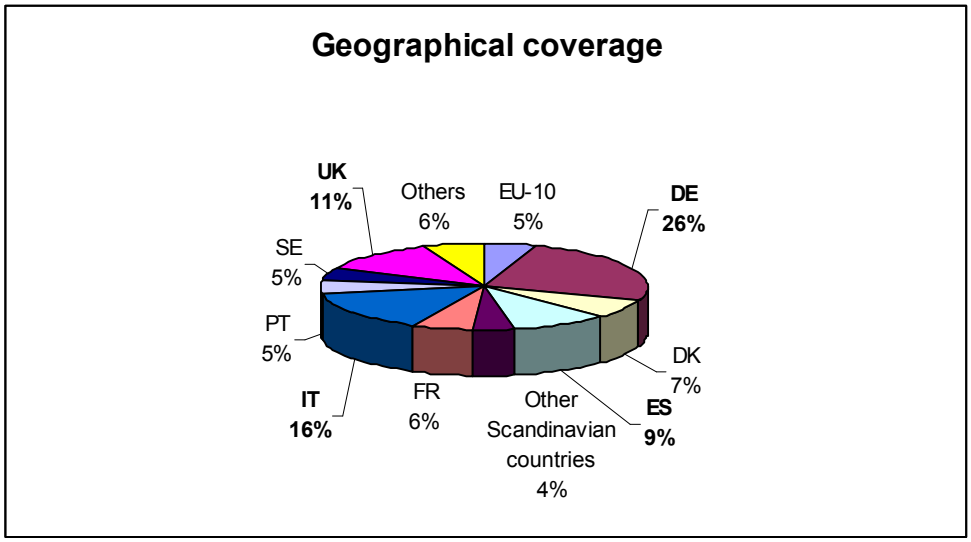

Figure 1: Share of potential hydrogen community projects per country- overall database

Germany is by far the country where the largest number of potential hydrogen community projects has been identified (more than one-fourth of the total). Germany is also the country with the largest number of hydrogen and fuel cells demonstration projects. This result is not surprising, since activities for the energetic use of hydrogen have been undertaken since the 1970s in Germany. Car manufacturers have been particularly active in this area, and their efforts have been supported by federal and local governments (e.g. Bavaria, North Rhein Westphalia and Hamburg). Together, they have invested more than 55 million euros in the period 2001-2003 for fuel cells projects. Germany continues supporting this type of technology. In the Fifth Energy Research program, the German government focuses its fuel cells R&D funding on those with the best chances of a quick market implementation (MCFC, SOFC, PEMFC, DMFC). New and innovative R&D on hydrogen technologies is focused on hydrogen storage and hydrogen production from renewables.

After Germany, Italy has the second highest share of potential hydrogen community projects. Although the database is not complete, the data indicate clearly that there is a gap between Germany and its closest followers in terms of preparedness towards the implementation of a hydrogen-inclusive economy.

Italy, for instance, is characterized by a growing interest for hydrogen and fuel cell related technologies. A lot of initiatives have started or are being launched by research institutes, industries and the academia, mainly supported by the Italian government (National R&D Programme on "Hydrogen and Fuel Cells" supported by the Ministry of Education, University and Research, and by the Ministry of Environment). Italy is mainly concentrating on the development of H_2 Technological Parks (e.g HyLab in Arezzo, Hydrogen System Laboratory in Piemonte and Hydrogen Park in Porto Marghera).

The UK follows Italy in third position, with an 11% share of potential hydrogen community projects. Spain follows closely, with a share of 9%.

The **UK** has only recently started implementing a strategy for hydrogen energy activities, and the existing initiatives are not yet properly coordinated. Moreover, the UK fuel cells industry is beginning to develop, while the German fuel cells industry development has been led by car manufacturers for quite some time. The UK hydrogen and fuel cells activities are now being developed thanks to a strong interest and support at regional level. This situation is well represented by the nine identified potential hydrogen communities, where regional and local authorities play an important role in supporting the project (e.g. the North East Region for the Tees Valley Hydrogen project; the Western Isles Council for the Hebridean Hydrogen Park project and the Shetland Islands Council for the PURE project).

The first hydrogen and fuel cell projects were initiated in **Spain** in the 1990s, and are mainly focused on transport applications. Spain has demonstrated a growing interest in investing in these technologies, through the organisation of a national technology platform for hydrogen and fuel cells. Moreover, some Spanish autonomous communities (e.g. Aragon, Valencia) are front runners in the adoption of overall strategies and concrete action plans with a view to easing the development of H2FC technologies.

Scandinavian countries also represent an important share of the potential hydrogen communities in Europe, collectively representing a 17% share of projects. This can be explained by the fact that these countries have a well established tradition of sustainable development policies, and are front runners in supporting renewable energy technologies.

Concerning EU-10, one project from Cyprus, two from the Hungary, one from Poland and the Czech Republic have so far been identified as being potential hydrogen communities.

Finally, it should be pointed out that no potential hydrogen community projects have yet been identified in the following EU-15 countries: Austria, Belgium and Ireland. However, some activities in this area are ongoing in Austria and Belgium, where R&D projects have been identified.

2.2 Geographic spread and accuracy of the sample

The data collected through the ROI indicate that potential hydrogen community projects are primarily concentrated in Germany, UK and Spain; a result which differs somewhat from the situation depicted from the overall database. Table 1 shows the comparison of the available data for the four main countries (DE, UK, ES, IT) as recorded in both the overall database and the ROI sample. The incompatibility of results stresses the need to get additional information through the ROI, and in particular data from Italy and Germany.

Table 1: Comparison of geographic spread of potential hydrogen community projects for four countries (DE, UK, ES, IT), shown for the overall database and the ROI project sample

Country	Overall database (96 entries)	ROI sample (40 entries)
DE	26%	20%
UK	11%	15%
ES	9%	15%
IT	16%	10%

Although more data are needed in order to have a representative sample upon which the detailed mapping analyses and conclusions can be based, some trends can already be deduced from the available information.

2.3 Basic features of potential hydrogen communities

Analysis of the ROI data points to two main types of projects:

- **Policy-driven**: *projects driven by the local authority/government*: The main driver is job creation, followed by climate change and local air quality concerns. Increased use of renewable energy sources and introduction of new energy technologies within the community also appear to be important factors. These projects are thought to have strong potential to evolve into a larger scale hydrogen community.

- **Technology-driven**: *projects mainly driven by industry*: The main drivers are development of hydrogen and/or fuel cell technologies and investigation of their feasibility (both through R&D and demonstration projects).

Other results emerging from the ROI analysis include:

- **35%** of the identified potential hydrogen communities are **existing projects,** while **65%** are **planned** (both in the proposal or initiation phase). This is in line with the status of technological development of the hydrogen field, which is just beginning to move from the development and demonstration phases to actual deployment

- Amongst stakeholders, **government office or regional/local authorities** are involved in almost 80% of the identified projects. The involvement from the

private sector, both large corporations and especially SMEs, is very important. Academic institutes are highly involved in potential hydrogen community projects; even if they are not the main promoters of this type of project (refer to Figure 2).

- The majority of projects (78%) involve **hydrogen production**; especially from renewable energy sources. Concerning **fuel cells,** the majority of projects (83%) make use of Proton Exchange Membrane technology; almost half of the identified projects (40%) make use of Hydrogen Internal Combustion Engines.

- Lack of funding, in particular public funding, was identified as the main barrier to development of hydrogen/fuel cell projects (refer to section 2.5)

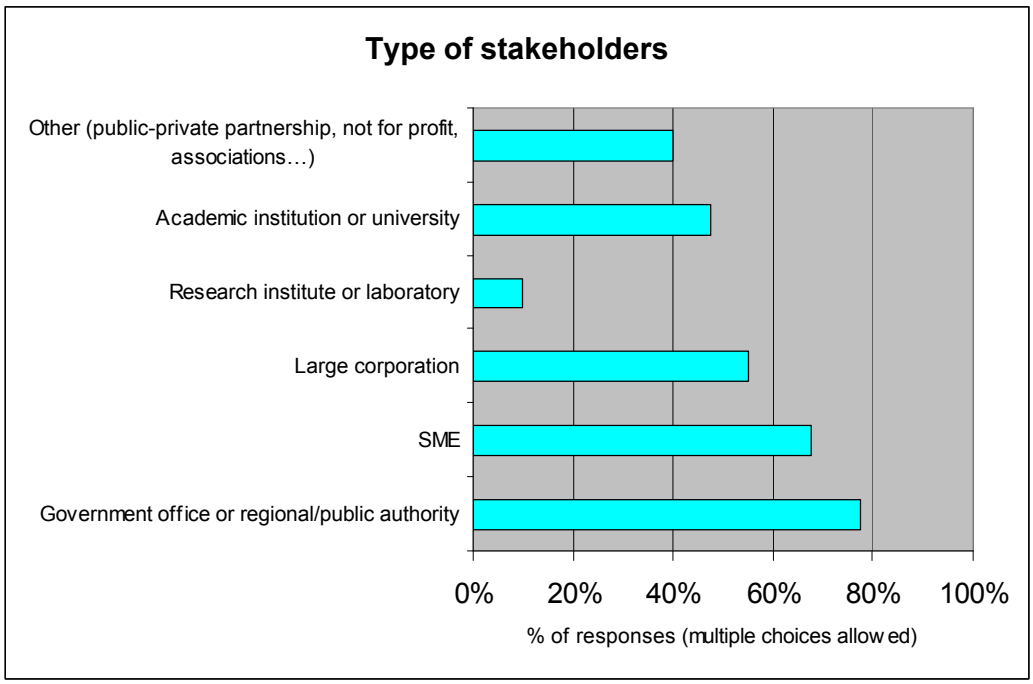

Figure 2: Types of stakeholders involved in hydrogen community-type projects

2.4 Application types and Community profiles

Information was also gathered on the main application types for potential hydrogen communities. The application categories considered in the analysis were stationary and transport; the portable application on its own is not considered to be relevant for community-scale initiatives, rather as an additional application, which in combination with stationary and/or transport, could form a community-scale project. Furthermore, the Roads2HyCom project has created typical hydrogen community profiles based on the dominant application type and the sectors of end-use. The application types, end-use sectors profiles chosen categories are illustrated in the table below (Table 2).

Table 2: Community profiles

Application Type	End-use sector	Examples
Stationary	Industrial	Base load power, Combined Heat and Power (CHP) for industrial processes or within industrial sites
	Residential & Services sector	Base load power, CHP for buildings e.g. homes, offices, hospitals, recreation centres
Transport	Public/private transport	Public transport e.g. H2/FC buses, large-scale private transportation e.g. H2/FC cars, cargo transportation e.g. ships, related infrastructure e.g. fuelling stations
	Private fleets	Private fleets, coordinated by a single commercial or private operator (delivery van fleet), or for internal (on-site) transport e.g. FC vehicles within airport
	Niche applications	Specialised forms of transport (wheelchairs), or specialized vehicles (forklifts)
Multiple	Combination of above	A combination of transport and/or stationary

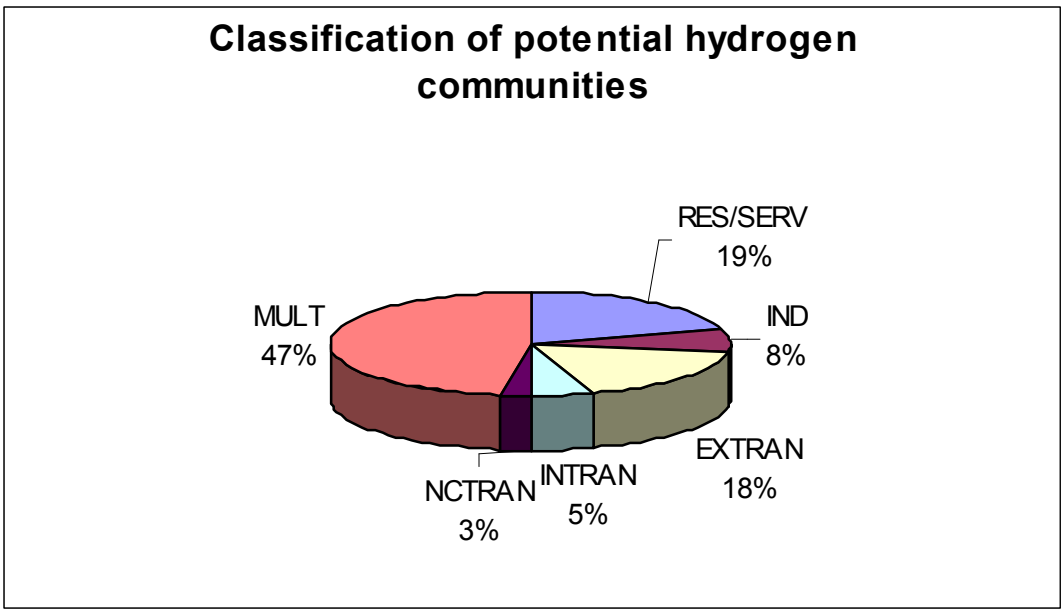

Figure 3: Classification of potential hydrogen communities according to Roads2HyCom profiles.

2.5 Barriers and financing of hydrogen community development

Of all the selected **barriers**, **lack of funding**, in particular **public funding,** has been identified as the main barrier to the development of hydrogen and fuel cell projects, followed by technology procurement obstacles. Local expertise (or lack thereof) and community acceptance do not seem to pose major barriers for the project development (see Figure 4).

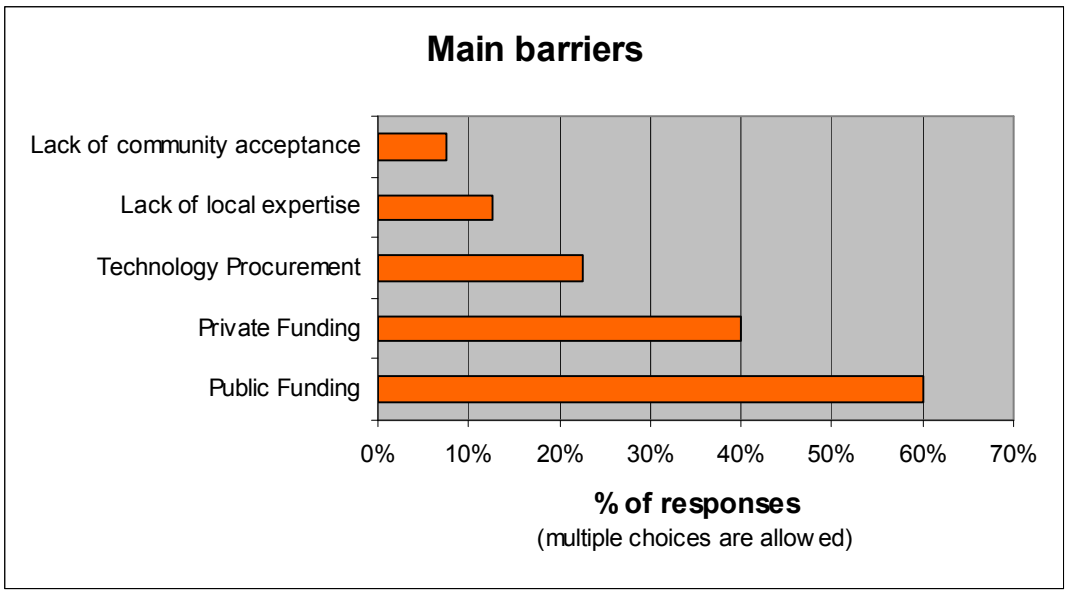

Figure 4: Main barriers to the development of hydrogen and fuel cell projects

Analysis of the available data (34 projects) on **financing sources** reveals that 85% of projects receive some degree of funding from the private sector (this result also includes what was called "corporate funding" in the previous version of this document). This result underlines the importance of the involvement from the private sector for the technology quick commercialisation.

It is also worth mentioning that 71% of projects receive some degree of funding from national budgets. This result underlines the **significant involvement of national governments** in supporting hydrogen and fuel cell projects. Regional and EU financial contributions also appear to be important in supporting hydrogen and fuel cell projects, with 47% of projects getting some degree of regional funding, and 35% getting EU funding (see Figure 5).

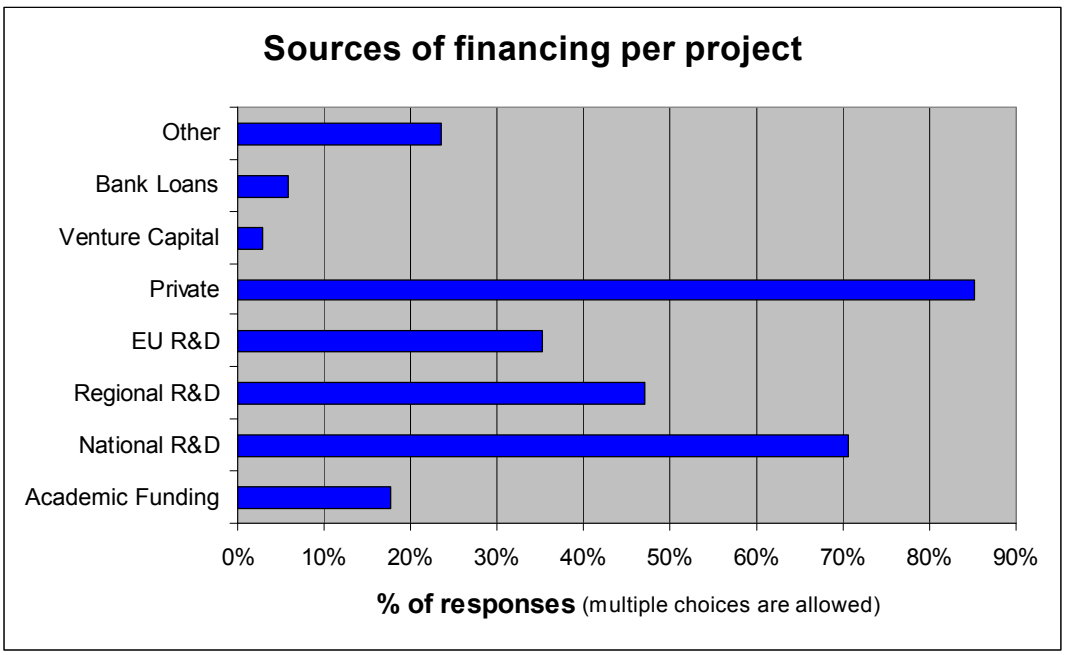

Figure 5: Proportion of projects that receive given types of funding

The average percentage of the national contribution has been calculated for (24) existing projects that have received some degree of financial support from national governments (Table 3). The table shows that the German government has financially supported these projects for more than 20%. However, the situation is different, when we consider all types of public funds (national, regional and EU). The contribution from public funds is more than 40% in all three countries. This result highlights the importance that public funds play in supporting projects on hydrogen and fuel cells. In the case of Spain, it underlines the fact that regional funds play a more important role than national funds in supporting hydrogen and fuel cell projects. In the case of the UK, EU funds seem to play a more important role in financing hydrogen and fuel cell projects than in the two other countries.

Table 3: Average percentage of public (national, regional and EU) R&D funds

Country	Average national R&D funds	Average national+ regional funds	Average public R&D funds
DE	26%	43%	48%
ES	13%	43%	57%
UK	17%	40%	57%

The data show that annual budget differs from project to project, according to its ambition, goal, and types of application. Figure 6 shows the existing projects' classification according to their annual budget. The majority of projects have a budget of less than 1 million € per year.

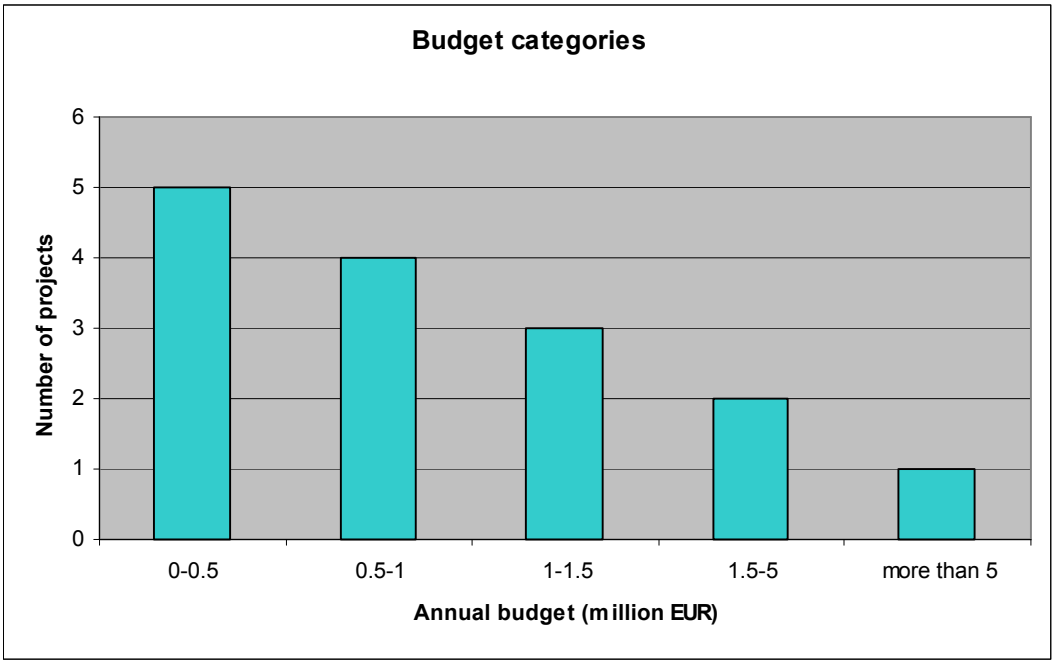

Figure 6: Budget categories for projects

3. Annexes

3.1 Online Registration of Interest

The following table presents the first version of the online Registration of Interest, as it was launched in May 2006. Some minor adjustments/clarifications (e.g.: clearer definitions in the financial resources area) have been integrated since then, and a new version is available, since October 2006, at the following Internet address: http://www.roads2hy.com/registrationForm.html

Community Site Name

Contact person:

Name

Organisation

Organisation Type

Org Other Please, specif

Telephone Code

Telephone Number

Email

Address 1

Address 2

Town

State / County

Postal / Zip Code

Country

Latitude

Longitude

GPS Data

Description of Activities:

Name of Project

Goal of Project

Project type:

Demonstration

Hydrogen Production

Hydrogen Storage

Fossil Fuels

Hydrogen Trans / Supply

Renewable Energy Source

Stationary Application

Transport Application

Portable Application

Other Please, specif

Technologies involved:

Hydrogen production:

Electrolysers - renewable

Electrolysers - non-renewable

Reformers

Biomass Gasification

Coal Gasification

Hydrogen storage:

Pressurised Cylinder/Tube

Liquefied storage

Membrane

Pipeline

Fuel cell technologies:

SOFC

PEM

MCFC

PAFC

DMFC

AFC

H2 Internal Combustion Engine

Technologies - Other Please, specif

Primary resources:

Where is the primary resource for the hydrogen obtained?

Import Country

End-user needs:

What end-user need is being met/will be met by the application?

End-User - Electricity

End-User - CHP

End-User - Transport

End-User - Other

State of described project:

Timetable From

Timetable To

Total Budget (€)

Actors involved:

Academic

Independent

Large Corporation

Private

Public

SME

Other Please, Specif

Financial resources:
Total should equal 100%

Academic Funding

Corporate funding

National R&D

Regional R&D

EU R&D

Private funding

Venture Capital

Bank Loans

Other Please, specif

How much do you spend per year on FC&H2?

FC&H2 spend per year

Local stakeholders activities:

Are there any activities aimed at engaging and grouping community stakeholders (e.g. local government, local authorities, local companies, citizens, environmental NGOs, other local associations) in hydrogen and fuel cell activities ?

Yes, already set up

Public Private Partnership

Other

In the process of setting up

Public Private Partnership

Other

Not yet, but interested

No

Are there any stakeholders in your community involved in:

Regional H2&FC Association

Stakeholders in - National H2&FC Association

Stakeholders in - European H2&FC Association

Main drivers and barriers for the community:

What are the main drivers (in order of ranking) for your community to implement a hydrogen-fuel cell project?

Please rank your answers from 1 - 5, with 1 being the Most important and 5 being the Least Important

Job creation 1

Local air quality 1

Climate change 1

Energy supply security 1

Other

Other Please, specif

What are the main barriers that you have encountered in setting up hydrogen-fuel cell projects or other sustainable energy projects?

Public Funding

Private Funding

Technology Procurement

Lack of local expertise

Lack of public support

Brief Info

Please, give additional relevant information on the project

Future Project Potential

Please describe the potential of this project to evolve into an integrated "hydrogen community" i.e. how this project can grow and evolve from

3.2 Sample of the received Registrations of Interest- potential hydrogen communities

(data available on 14 September 2007)

Community Name	Contact Person	Organisation Name	Town	Country	Project Name	Project Goal
Aragon	Luis Correas	Fundacion Hidrogeno Aragon	Huesca	ES	ITHER	Real scale test bench for electrolytic hydrogen production from PV arrays (100 kWs| 5 technologies) and wind turbines (635 kWs| 3 turbines)
H2PIA - world first hydrogen city	Mikael Sloth	H2 Logix	Herning	DK	H2PIA - worlds first hydrogen city	H2PIA is a complete urban community with residential houses| businesses| shops & cars| . The city is based on RE and hydrogen as energy carrier
Sonderborg region	Per Balslev	Danfoss A/S	Nordborg	DK	Demonstration of micro CHP based on Danish fuel cells.	I a 3 phase project 8 companies will build 100 microCHP demonstration units to be installed in private homes in the local region. The project is partly national public funded.
Arnhem	Mr. M.J. de Kroon	Arnhem Municipality	Arnhem	NL	1. HYdrive 2. Hytrolley 3. HYsustain 4. HYLiving	To demonstrate clean generation (nr 3) and use of H2 in fuel cells for city transport (nr2)| public fuelling of small fleets (nr1) and housing (nr4).
Äetsä	Mr. Erkki Välimäki	Prizztech Ltd.	Äetsä	FI	Äetsä Hydrogen Village	Establishment of a permanent platform with laboratory facilities and regional infrastructure for testing of the hydrogen technologies and economy.
Lolland	Ms Gunnhild Utknitne	Baltic Sea Solutions	DK - 4960 Holeby	DK	Nakskov Hydrogen CTF| Phase 1	Develop various hydrogen technologies comprising electrolyser Fuel cell CHP systems| low pressure storage of Hydrogen and Oxygen.

Community Name	Contact Person	Organisation Name	Town	Country	Project Name	Project Goal
Madeira	José Manuel Melim Mendes	AREAM	Funchal	PT	EDEN	Demonstration Project integrate Fuel cell with renewable energies| wind energy| in Porto Santo island (Madeira)
Pais Vasco	Oscar Miguel	EUROBULEGOA	bilbao	ES		Several demonstration projects are under way in the Basque Country| an Autonomous Region in Spain. These projects involve the concepts marked below.
Nord Pas de Calais	buquet	regional council of north pas de calais	LIlle	FR	hydrogen Energy environnement and transport platform	to position the region on the use of hydrogen in internal combustion engines as technology of transition toward future hydrogen economy 3 projects : demonstration of buses fuelled with natural gas and hydrogen (coord : gaz de france) conversion of a conventional gazoline to pure hydrogen (coord H2dev) studies of mixtures of natural gas and hydrogen or pure hydrogen in sparck ignition engines (coord : Lab PC2A - USTL CNRS)
Oldenburg	Andreas Ballhausen	EWE Aktiengesellschaft	Oldenburg	DE	Stationary fuel cell field test	EWE installed 40 small stationary FCs to gain experience in operation and maintenance. Further field tests are planned when new systems are available.
Outer Hebrides	Robin Goodhand	Comhairle nan Eilean Siar	Stornoway	UK	hebridean hydrogen park	H2 R&D teaching lab for skills base may2006. Detailed design:Anaerobic Digestor to H2 150kW| wireless network UPS| H2 vehicles| domestic CHP.
Munich airport	Mielert Judit	ET EnergieTechnologie	Brunnthal-Nord	DE	Innovative Energy & Hydrogen Services	- System-& Project Manag. of H2 pr. at Munich Airport – Service provider for innovative Energy& Hydrogen Technology - Hypressure H2gas-LiquidH Test
Tees Hydrogen Community	Dr Dermot Roddy	Renew Tees Valley Ltd	Middlesbrough	UK	Tees Valley Hydrogen Project	Extend a huge existing hydrogen system by adding large-scale green hydrogen from coal| wind and biomass. Use hydrogen in fuel cell and gas engines.

Community Name	Contact Person	Organisation Name	Town	Country	Project Name	Project Goal
Milos- H2 Hellenic Island	George Tsainis	Municipality of Milos	PLAKA	GR	Hydrogen production from wind energy for refuelling hydrogen/fuel cell vehicles - HYPROVE	The objective of the proposed Hy-PROVE project is the development of a hydrogen production unit and a filling station for fuel cell-propelled microvehicles| which will be driven by wind energy. On-board hydrogen refueling of the scooter and the micro-vehicle will take place
Berlin transport	Niemeyer	MVV Consulting	Berlin	DE	Clean Energy Partnership	Demonstration of integrated hydrogen filling infrastructure (LH2 and CGH2) at two sites in Berlin and demonstration of 17 vehicles (ICE and FC)
Berlin Bus	Niemeyer	MVV Consulting GmbH	Berlin	DE	Hydrogen Articulated bus with ICE| fuel cell and energy storage for Berlin	The Berlin public transport company BVG develops and implements an articulated hybrid bus with hydrogen ICE| fuel cell and energy storage system
Hammarby Sjostad	Markku Rissanen	ABB AB| Corporate Research	Västerås	SE	Renewable Energy System in GlashusEtt	Demonstrate and evaluate a renewable energy system.
Barcelona	Oscar Sbert Lozano	Asociación de Operadores Españoles	Barcelona and six other	ES		Operation of urban buses using hydrogen as fuel for internal combustion engines
Shetland	Sandy Macaulay	PURE Energy Centre Ltd.	Shetland	UK	PURE Project	To address local energy security through the delivery of an off-grid wind/hydrogen hybrid system| contributing to economic development in the process.
Amsterdam	ir. A.F. van Drunen	GVB	Amsterdam	UK	HyFLEET:CUTE	developing a hybid fuel cell bus and developing hydrogen ICE buses.
Hafen City Hamburg	Heinrich Klingenberg	hySolutions GmbH	Hamburg	DE	Different ones, Main projects at present (1) HyFLEET:CUTE and (2) Zero Emission Ship (ZEMSHIP)	

Community Name	Contact Person	Organisation Name	Town	Country	Project Name	Project Goal
Southwest Sweden Region	Sven Wolf	HyFuture	Nol	SE	VästCell	Demonstrate how energy from the sun can be stored in hydrogen to power the digital cinema in a Cultural Centre with a locally produced fuel cell
San Zeno	Emiliano Cecchini	La Fabbrica del Sole	Arezzo	IT	Progetto Idrogeno Arezzo	Integrate industrial and energy hydrogen needs with a pipeline serving the local goldsmiths and fuel cells CHP. The combined savings can be competitive
Village in Hungary	Dr. József Nagy	Nagy-ferenczi Kft.	Bükkaranyos Pf.1.	HU	Grid Independent Village	Our aim is to make the first village in Eastern and Middle Europe, which based on wind-hydrogen technology, and independent from the central grids, and attends 25 households.
Ergates Industrial Area	George Karagiorgis	Hystore Technologies Ltd	Ergates	CY		1. Distributed electricity generation with the use of H2/Fuel Cell and zero CO2 emissions (H2/KYPSELES, IPE/TEXNO/0603/03) 2. Promotion and consolidation of all RTD activities for renewable distributed generation technologies in the Mediterranean region (DISTRES, FP6-2004-INCO-MPC-3)
Deep	George Hardill MIEE	Fuelcell Solutions Ltd	Beverley	UK	The Deep Sustainable Energy Project	To supply 50% of The Deeps electrical energy using a combination of tidal flow, hydrogen generation and generation via fuel cell. All participating companies to be Yorkshire based.
Valencia Hydrogen Community	Carlos Martinez	Generalitat Valenciana (Regional Government of Valencia)	Valencia	ES	Valencia Hydrogen Community	Convert Valencia into one of the first European Hydrogen Communities

Community Name	Contact Person	Organisation Name	Town	Country	Project Name	Project Goal
Wales Hydrogen Project	Jon Maddy	University of Glamorgan	Pontypridd	UK	CymruH2Wales	A range of H2FC RD&D, business development and community activities in Wales aimed at transition to H2 energy in Wales, promoting many specific projects
Scandinavian Hydrogen Hyway Partnership- Swedish West Coast	Sven Wolf	ETC Battery and FuelCells Sweden AB	Nol	SE	Scandinavian Hydrogen Hyway Partnership	The Scandinavian Hydrogen Highway Partnership is a collaboration between the national network bodies of Norway (HyNor), Denmark (Hydrogen Link) and Sweden (HyFuture). The aim is to accelerate the introduction of hydrogen as a vehicle fuel in particular, and as an energy carrier in general. The partnership is guided by the common vision of making the Scandinavian region one of the first regions in Europe where hydrogen is commercially available and used in a network of refueling stations.
HyCologne	Boris Jermer	IGH2	Hürth	DE	1MW Fuel Cell Power Plant	Starting up and running a 1MW Fuel Cell Power Plant in the area of cologne - based on the existing hydrogen pipeline infrastructure - CHP Plant
Islay Hydrogen	Gilbert Stevenson	Islay Energy Trust	Port Ellen	UK	Project identification	Investigations are on-going into the potential opportunities for hydrogen / fuel cell systems. One specific option is to establish small-scale transport system using hydrogen produced from wave or wind power.
Sorsele kommun	Göran Vesterberg	SWTR(Swedish Winter Test Region)	Sorsele	SE	EcoStopp	The goal of the project is to provide hydrogen fuel to the vehicle test industry in northerly Sweden.Present in this area all the worlds car manufacturer

Community Name	Contact Person	Organisation Name	Town	Country	Project Name	Project Goal
Hessen	Rainer Dippel	Viessmann Werke GmbH&Co. KG	Allendorf	DE	PEMFC HEVA III	Development of 2 kW el. PEMFC residential CHP appliance for detached and two-family houses based on natural gas. Demonstration of 15 prototypes.
Torino	Gianmichele Orsello	TurboCare SpA	Torino	IT	EOS - Energy from Solid Oxyde	TurboCare SpA is carrying on a research activity on Stationary Fuel Cells based on the Solid Oxide technology (SOFC) developed by Siemens to create in Torino (Italy) a center of excellence for the SOFC Generators. Purpose of the EOS Project (Energy from Solid Oxide): to design, erect, test and operate a pilot plant for Combined Heat and Power, located in the TurboCare SpA workshop, a real industrial environment, using Solid Oxide Fuel Cell Units as Generators. First phase 2004-2009: Installation of the Unit CHP100 (100 kWe and 65 kWth) running in the TurboCare SpA test facility for more than 9,700 hours; system fuelled with natural gas, it supplies part of the electricity, thermal, air conditioning and heating demand of the offices. Second phase 2007-2009: Installation of the Generator SFC200A (150 kWe and 115 kWth). October 2006: installation in TurboCare SpA¿s new canteen of a small Solid Oxide Fuel Cell (SOFC) Generator, the EBE Project (Low Emission Energy) 4 kWe and 3 kWt fuelled with natural gas furnished by the municipal grid. SOFC technology: electrical efficiency of about 46%, cogeneration efficiency of 80%, significant lower greenhouse gas emission and very low noise emission.
Abruzzo	Iris Flacco	Regione Abruzzo/ARAEN	Pescara	IT	methane-hydrogen for sustainable mobility	Installation of fuel station to distribute a hydrogen methane pool on the regional territory. Fleet of cars hydrogen-methane for public bodies' use.
Lochem	T. de la Court	Municipality of Lochem	Lochem	NL	hydrogen from biomass	The municipality of Lochem, a township in the east of the Netherlands, intends to convert biomass into methane and hydrogen.

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Porto Marghera	Dott. Giovanni Artico	Regione del Veneto	VENEZIA MESTRE	IT	IDROGENO IN AZIENDA	UTILIZZO DI H2 DISPONIBILE E REALIZZAZIONE DI FORKLIFT A PEM,MICROGENERATORI E.E. MINIMPIANTI RIFORNIMENTO PER MEZZI TRASPORTO MERCI/PERSONE IN AZIENDA
Basse Normandie	Florian Guillotte	Les 7 Vents du Cotentin	Coutances	FR	A sustainable hydrogen in Basse Normandie	Create the suitable backgrounds to develop sustainable activities in the field of fuel cells and hydrogen, from production to use.
Messe Dusseldorf	Thomas Kattenstein	Fuel Cell and Hydrogen Network NRW	Düsseldorf	DE	Midi Buses with Fuel Cell Hybrid Drive	The demonstration of 2 midi buses under real life conditions delivers crucial findings on the reliability in order to further improve the technology.
Soria	Juan de Blas	BESEL, S.A	Madrid		HYCHAIN	Demonstration project for niche markets, focusing on small urban transport and deploying a fleet of 158 vehicles in four European regions (FR, DE, IT, ES)