Towards a regional electromobility partnership
Andreas Ziolek
Structure

HyRaMP Introduction ...

Recent Activities / Involvements ...

Defining Regions’s Role and Policy

Outlook: opportunities and challenges
Structure

HyRaMP Introduction ...

Recent Activities / Involvements ...

Defining Region’s Role and Policy ...

Outlook: opportunities and challenges
HyRaMP Introduction – Members (2011)

**France**
- Rhone Alpes
- Midi Pyrénées
- Bretagne

**Germany**
- Baden-Württemberg
- City of Hamburg
- Hessen
- North Rhine-Westphalia

**Italy**
- Abruzzo
- Province of Bolzano
- Lazio
- Lombardy
- Piemonte
- Province of Trento
- Tuscany
- Veneto

**Spain**
- Andalusia
- Aragon
- Castilla La Mancha
- Catalonia
- Galicia

**United Kingdom**
- British Midlands
- Outer Hybrides
- North East England
- City of London

**Scandinavian Regions (N, SE, DK), represented by Hydrogen Sweden**
- Flanders (Belgium)
- City of Ljubljana (Slovenia)
- City of Wroclaw (Poland)
- City of Torres Vedras (Portugal)
- DutchHy (Netherlands)
- Pirkanmaa (Finland)
HyRaMP Introduction

European Regions and Municipalities Partnership of hydrogen and fuel cells: HyRaMP members are local authorities involved in strategic energy and transport planning.

Coordination between the European Regions

- Harmonisation of regional activities across Europe
- Initiation of common inter-regional projects (actions)

Towards EU

- Representation of the European Hydrogen regions towards the European organisations on FCH topics
- Harmonisation of regional, national and European policy and funding.
Budget of the HyRaMP Regions for funding projects in the field of hydrogen and fuel cells per year

*With data from 27 of 28 members
Structure

HyRaMP Introduction ...

Recent Activities / Involvements ...

Defining Region’s Role and Policy ...

Outlook: opportunities and challenges
HyRaMP is involved in several projects of the EU Fuel Cell and Hydrogen Joint Undertaking (FCH JU), as partner/co-financer:

- **H2 moves Scandinavia (FC passenger cars)**
  HyRaMP facilitates European road shows across several European regions (dissemination through local events).

- **CHIC (FC hybride buses)**
  HyRaMP coordinates general and targeted dissemination in 19 regions in Europe.

- **3rd FCH JU Call (2010 under negotiation)**
  HyRaMP is a dissemination partner in two fuel cell vehicles demo projects: one for **buses** and one for **taxies**.

To support a long term approach for commercialisation and to motivate more local decision makers with concrete project results.
HyRaMP members’ next generation funding schemes

- NRW (> 25 buses) Berlin (4), Cologne (4) Hamburg (10/20), Karlsruhe (2),
- London (10 buses for 2012 Olympics)
- Amsterdam (4+)
- Flanders (5 buses)
- Oslo (5 buses)
- Lombardy (3 buses)

FCH JU projects

- Joint Activities of 5 European partners in the project (Bolzano, London, Milan, Switzerland, Oslo)
- Funding of 26 buses and refueling infrastructure up to 100 vehicles per day
- Partner-consortium for next bus project in formation

Large Scale Hydrogen Infrastructure Investment Program

- Preparation Technical Assistance proposal under EIB Elena Program
- Support FCH JU future bus powertrain study
### Infrastructure Information

<table>
<thead>
<tr>
<th>Country</th>
<th>Region</th>
<th>Existing Sources of Hydrogen and Quantities</th>
<th>Planned Sources of Hydrogen and Quantities</th>
<th>Existing Infrastructure (Pipeline etc.)</th>
<th>Plans for Building Up of Infrastructure</th>
<th>Existing Refuelling Stations</th>
<th>Number of Planned Stations until 2015</th>
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<tbody>
<tr>
<td>France</td>
<td>Bretagne</td>
<td>20 Nm³/h</td>
<td>100 Nm³/h</td>
<td>Pipeline</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Rhône Alpes</td>
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<td></td>
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<td>Midi Pyrenees</td>
<td>Germany</td>
<td>2700 tons/a</td>
<td>Electroysis/Renewables</td>
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<td>Large Scale Electrolysis</td>
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<td>2</td>
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<td>Baden-Württemberg</td>
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<td>250 kg/d</td>
<td>Electrolysis/Renewables</td>
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<td>Pipeline</td>
<td>3</td>
<td>another 6 by 2012</td>
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<td></td>
<td></td>
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<tr>
<td>Hessen</td>
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<td>Germany</td>
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<td>30,000 t/a byproduct; 45-60,000 t/a from digester plants</td>
<td>byproduct</td>
<td>Pipeline</td>
<td>byproduct and other industry</td>
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<td>2012: 5 - 10; 2015: 30; 2020: up to 200</td>
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<td>British Midlands</td>
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<tr>
<td>others</td>
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<td>240 Nm³/h</td>
<td>Renewables/Electrolysis</td>
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<td>from renewables by electrolysis; 2 more production sites</td>
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<td>40 kg/d</td>
<td>Electrolysis</td>
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</tbody>
</table>

**Note:** The table provides a summary of existing and planned hydrogen infrastructure sources and quantities, along with plans for building up the infrastructure and the number of planned refuelling stations until 2015.
Conclusions status H2 refuelling infrastructure

- Constant realisation of refuelling stations
  - Already ~ 20 refuelling stations in operation in Europe
  - Another 60 – 80 stations in preparation until 2015

- Size of stations and level of realization is very different
  - Range from early test applications to semi-professional units
  - Installation of refuelling infrastructure mostly driven by automotive
  - Approximately more than 50% of the actual stations have no constant purchase of hydrogen
  - 90% of the actual stations deliver less than 50 kg hydrogen a day
  - Large variety of technology (production as well as storage)
  - No technically identical modular systems available
  - No standard safety and certification procedures yet
  - Already first plans for interlinking regional sites (Italy, Scandinavia, Germany)

- What are the drivers?
  - Refuelling stations for buses will increase demand for hydrogen eminently
  - Hydrogen production and logistics concepts for larger and constant demand not ready
  - Gas industry still limited to conventional production (fragmentation, reformer etc.) and smaller refuelling units
EU Hydrogen Production Facilities
H2 Production and TEN T
### HyRaMP data collection: European EV activities

<table>
<thead>
<tr>
<th>City/Region</th>
<th>Charging Points</th>
<th>Vehicles</th>
<th>Source</th>
<th>Year</th>
<th>Budget</th>
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<tbody>
<tr>
<td>Hamburg</td>
<td>300</td>
<td>502</td>
<td>National Program</td>
<td>2011</td>
<td>50 M €</td>
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<tr>
<td>North Rhine-Westphalia</td>
<td>109</td>
<td>133</td>
<td>National Program</td>
<td>2011</td>
<td>71 M €</td>
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<td>Berlin</td>
<td>600</td>
<td>100</td>
<td>National Program</td>
<td>2011</td>
<td>130 M € for all model regions</td>
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<tr>
<td></td>
<td>50</td>
<td>50</td>
<td>MINI e-Berlin</td>
<td>2010</td>
<td></td>
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<td></td>
<td>n/a</td>
<td>40</td>
<td>BE-mobility</td>
<td>2011</td>
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<td></td>
<td>n/a</td>
<td>n/a</td>
<td>Civitas Tellus</td>
<td>2006</td>
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<tr>
<td>Rhein-Ruhr</td>
<td>500</td>
<td>220</td>
<td>National Program</td>
<td>2011</td>
<td>130 M € for all model regions</td>
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<tr>
<td>Rhein-Main</td>
<td>115</td>
<td></td>
<td>National Program</td>
<td>2011</td>
<td>130 M € for all model regions</td>
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<tr>
<td>Saxony</td>
<td>65</td>
<td></td>
<td>National Program</td>
<td>2011</td>
<td>130 M € for all model regions</td>
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<tr>
<td>Stuttgart</td>
<td>630</td>
<td></td>
<td>National Program</td>
<td>2011</td>
<td>130 M € for all model regions</td>
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<tr>
<td>Baden-Wurttenberg</td>
<td>800</td>
<td>110</td>
<td>Regional Funding</td>
<td>Until 2013</td>
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<td>Bavaria-Muenchen</td>
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<td>20</td>
<td>National Program</td>
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<td>130 M € for all model regions</td>
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<td></td>
<td>68</td>
<td>40</td>
<td>Drive e-Charged</td>
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<td>Fleet Test</td>
<td>2010</td>
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<td>100</td>
<td>Project 4-s</td>
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<td>Harz</td>
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<td>Harz EE Mobility</td>
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<tr>
<td>Allgau</td>
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<td>EE Tour Allgau</td>
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<tr>
<td>Mannheim</td>
<td>15</td>
<td>30</td>
<td>Future Fleet</td>
<td>2011</td>
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<td></td>
<td>600</td>
<td>n/a</td>
<td>MeRegionMobil</td>
<td>2011</td>
<td>n/a</td>
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<td>Bremen</td>
<td>n/a</td>
<td>n/a</td>
<td>Civitas Vivaldi</td>
<td>2006</td>
<td>40 M € total</td>
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</table>
Germany’s Recharging infrastructure

Charging Points in Germany
- < 100
- 100/200
- +200

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German Electromobility

Charging Points

Hamburg: 300
North Rhine-Westphalia: 109
Berlin: 650
Rhein-Ruhr: 500
Rhein-Main: 115
Saxony: 65
Stuttgart: 630
Baden-Württemberg: 800
Bavaria-München: 328
Harz: n/a
Allgau: 11
Mannheim: 615

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Italian Electromobility

- Charging Points
- Vehicles

Cities: Roma, Milan, Pisa, Bresola, Bari, Genova, Bologna, Catania, Naples, Monza

Charging Points range from 0 to 450, Vehicles range from 0 to 150.
Spain Electromobility

Charging Points | Vehicles
---|---
Madrid | 490 | 10
Barcelona | 891 | 500
Basque Pays | n/a | 15
Sevilla | n/a | 75
Malaga | 50 | 30
## UK Electromobility

<table>
<thead>
<tr>
<th>City/Region</th>
<th>Charging Points</th>
<th>Vehicles</th>
<th>Source</th>
<th>Year</th>
<th>Budget</th>
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<tbody>
<tr>
<td>London</td>
<td>36000</td>
<td>1000</td>
<td>National Program Smart Electric Drive</td>
<td>2015</td>
<td>60 M £</td>
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<td></td>
<td></td>
<td></td>
<td>2014</td>
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<tr>
<td>Bristol</td>
<td>n/a</td>
<td>n/a</td>
<td>Civitas Vivaldi</td>
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<td>40 M £</td>
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<td>Winchester</td>
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<td>North East England</td>
<td>1222</td>
<td>5060</td>
<td>National Government, Local Authorities, private business</td>
<td>n/a</td>
<td>71 M £</td>
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## French Electromobility

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<th>Charging Points</th>
<th>Vehicles</th>
<th>Source</th>
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</thead>
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<td>50</td>
<td>Vert</td>
<td>2010</td>
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<tr>
<td>Paris</td>
<td>1000</td>
<td>3000</td>
<td>Auto-Lib</td>
<td>2011</td>
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<td>Nantes</td>
<td>n/a</td>
<td>n/a</td>
<td>Civitas Vivaldi</td>
<td>2006</td>
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<td>Lille</td>
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<td>Civitas Success</td>
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<td>Nice</td>
<td>70</td>
<td>210</td>
<td>National Program</td>
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</table>
HyRaMP Survey Preliminary Results 1

**Total Budget In Millions**

- Baden-Württemberg
- Hamburg
- NRW
- Rotterdam
- North East England
- Lombardy
- Veneto
- Bozen/Bolzano
- Midi - Pyrenees
- Torres Vedras
- Scandinavia

[Bar chart showing the total budget in millions for each region.]
HyRaMP Survey Preliminary Results 2

- Charging Points
- Vehicles

Regions:
- Baden-Württemberg
- Hamburg
- NRW
- Rotterdam
- North East England
- Lombardy
- Veneto
- Bozen/Bolzano
- Midi - Pyrenees
- Torres Vedras
- Scandinavia
HyRaMP Infrastructure Surveys: first conclusions

• Need for interregional coordination to move from individual demonstration projects to strategic roll out.

• Start needs to be made now with integration of local electromobility infrastructure planning for battery and fuel cell cars with EU energy and transport network planning is crucial.

• Leveraging of funding at all levels could accelerate roll out.

• Consistent and comprehensive monitoring of key data is necessary to develop effective policies and make educated investment decisions.
HyRaMP Infrastructure Activities at EU level

- **HyRaMP Infrastructure Workshops with EC participation**
  - March 23, 2010 Running out of time! (Electro mobility infrastructure needs.
  - April 30, 2010 FCH Bus integration needs: preparation EIB Elena proposal
  - October 20, 2010 Large Hydrogen Infrastructure Issues and EU Policy

- **EU: enlarge scope HyRaMP to electro mobility (DG MOVE/DG ENTR)**
  - EU Clean and Energy efficient vehicle strategy indicates EC commitment to work with MS and regional local governments on electric infrastructure development
  - Concept paper send to over 70 regions:
    - Workshop February 16, 2011 Concept paper was finalized
    - Launch March 16 during EU e Mobility project Green eMotion
    - Opportunity to work closer together with large infrastructure companies
    - Participation in EC policy preparation working groups (TEN T, SET Plan, Smart Cities, Cars 21, relevant European Innovation Partnerships, Structural Funds Review

- **Other Activities**
  - Building strategic alliances with other European organisations: Fedarene, Covenant of the Mayors, European Association for Energy Storage, ERTRAC, URBACT, UITP
  - Dialogue EU Parliament political groups, intergroups
  - International collaboration: IPHE, PATH

Alde Seminar March 15, 2011
1. There is general agreement on the way forward and the scope of a broadened HyRAMP;

2. The Concept Paper will be adapted to include the main comments and suggestions;

3. HyRaMP will proceed with the formal requirements to broaden the scope of the organisation; a proposal to adapt the Statutes, name change as well as new Board structure will be presented at the General Assembly in October.

4. HyRaMP has been invited to the launch of the Green eMotion project, an EU project supported by the EU Green Car Initiative, focusing on connecting national / regional projects, EV performance, interoperability, standards and customer acceptance on March 16, 2011 Brussels.
Structure

HyRaMP Introduction ...

Recent Activities / Involvements ...

Defining Region’s Role and Policy ...

Outlook ...

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Application of Support Tools for Electromobility

- Budget
- Legislation
- Public Procurement
- Market Incentives
- Commercialisation
- R&D Phase
- R&D Programs
- Commercialisation

Year

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Local / Regional vs. National Jurisdiction

- National Jurisdiction
  - Legislation
  - R&D Programs
  - Market Incentives
  - Public Procurement

- Local / Regional Jurisdiction

Aide Seminar March 15, 2011
Regions’ role in electromobility deployment as...

- **Planning and transport authorities** influencing urban and regional development and infrastructure decisions at local level (i.e. general city planning, environmental zones, congestion charge etc);

- **Purchasers and specifiers** of vehicles as early adopters (i.e. procurement of public fleets) in order to support demand and market viability of vehicles and infrastructure;

- **Enabler to integrate electric infrastructure into local energy planning** decisions as part of wider energy security concepts;

- **Promoters of usage locally as exemplars of vehicle usage** working with business and technology/innovation providers.
Structure

HyRaMP Introduction ...

Recent Activities / Involvements ...

Defining Region’s Role and Policy ...

Outlook: opportunities and challenges
Outlook: opportunities and challenges

Opportunities:

1. Enforce regions’ role in decarbonisation of EU transport system;
2. Actively participate in EU energy and transport policy development;
3. Engage local industry in creating strong value chains and new jobs;
4. Involve more stakeholders to increase public awareness;
5. Increase EU regions visibility at global level through joint promotion.

Challenges:

1. Establish effective strategic collaborations with key industrial stakeholders that support local economic and environmental needs;
2. Support EU standardisation efforts;
3. Set up effective monitoring structure to support policy measures;
4. Develop coordinated public awareness activity.

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Ready to roll:

HyRaMP Secretariat
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