HyER

Hydrogen Fuel Cells and Electro-mobility in European Regions

Workshop “NL meets NRW”
NoAE Projects Days

Dr. Thomas Kattenstein, EnergieAgentur.NRW

April 18, 2012, Düsseldorf

Agenda

Introduction HyER

HyER members NL and NRW

Examples for collaboration

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HyER Introduction

Hydrogen Fuel Cells and Electro-mobility in European Regions:

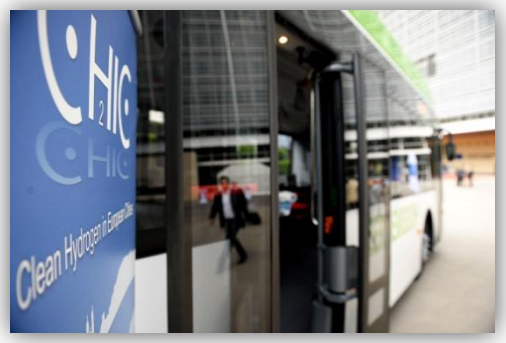
HyER members are local authorities involved in strategic energy and transport planning

Coordination between the European Regions

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

Towards EU

- Representation of the European regions towards the European organisations on FCH and battery topics
- Harmonisation of regional, national and European policy and funding




Pirkanmaa
Scandinavian Regions
Outer Hebrides
North East of England
British Midlands
London
Rotterdam
Hamburg
North Rhine Westphalia
Hessen
Flanders
Worclaw
Baden Wuerttemberg
Bretagne
Bolzano
Trento
Veneto
Poitou-Charentes
Rhones Alpes
Piemonte
Lombardy
Midi Pyrenées
Tuscany
Galicia
Abruzzo
Lazio
Aragon
Catalonia
Torres Vedras
Castilla-La Mancha
HyER
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Hydrogen Fuel Cells and Electromobility in European Regions

HyER's three Key Activities – Connecting the Dots …

Facilitate fact-based policy recommendations

Objective: Convince decision makers on technical feasibility of hydrogen, fuel cells and batteries

Develop EU support framework

Objective: Provide local authorities with stable and long-term European framework to support initial start and to facilitate interconnections

Support definition of concrete plans and tools for market introduction

Objective: Prepare sustainable market roll-out by establishing robust and local / regional "deployment channels" and customer base

Commercialisation of Fuel Cells, Hydrogen, BEV and FCEV

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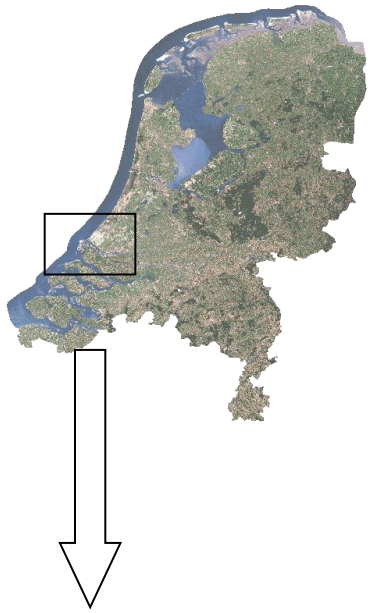
HyER member – City of Rotterdam



- **Population city 612,000, region 1.2 million**
- **250,000 passenger cars; region 550,000 (country 7 million)**
- **Main port of Europe, largely modern city**
- **Rotterdam Climate Initiative, 50 % CO_2 reduction in 2025**
- **Rotterdam Sustainability Program, approved May 2011, includes sustainable mobility, improving air and noise quality aiming at**
  - 40 % more public transport,
  - 30 % more cycling,
  - 10 % more walking,
  - 30 % less noise nuisance in 2025 and
  - no exceeding of local air quality limits in 2015

HyER member – City of Rotterdam (2)

- **Politically approved program "Rotterdam Electric“ aiming at acceleration in number of EVs**
  - 1,000 additional cars and
  - 4,000 additional mopeds/scooters in 2014
  - applicable infrastructure
- **Focus on necessary car-traffic, like public transport, taxis, shared cars, urban distribution vans and heavy duty vehicles (e.g. for port area)**
- **Concrete aims of city**
  - 25 % EV in own fleet in 2014 as example for other fleets
  - 100 % electric public transport in 2025

HyER member – South Netherlands

- **Hydrogen Coordinator: WaterstofNet**
- **Non-profit organisation (3 persons, started 1/7/2009)**
- **Coordinating a 14 million € regional cross border (Dutch/Flemish) hydrogen progam, focused on:**
  - non-fossil fuel based hydrogen
  - early market applications
  - education and training programs
- **Involved in European hydrogen projects**
- **Member of the board of HyER**

Interreg Vlaanderen Nederland
Europa investeert in uw regio

Europese Unie
Europees Fonds voor Regionale Ontwikkeling

Ministerie van Economische Zaken

Met steun van de Vlaamse overheid

HyER member – South Netherlands (2)

Hydrogen activities in Netherlands

- **Building a hydrogen fuelling station:**
  - location: Automotive campus Helmond
  - supplier: Ballast Nedam with Hydrogenics electrolyser
  - on site production of hydrogen (30 Nm^3/h)
  - storage: 350 bar, 60 kg
  - in operation in 2012

- **Early market applications to be developed in 2012/2013:**
  - forklift on hydrogen with fuel cells (Hoppecke)
  - garbage car on hydrogen with fuel cells (Beukers)
  - two vessels on hydrogen with fuel cells (Unitron)

- **Education and training program on university college level (2012):**
  - Avans, Fontys, Hogeschool Zeeland, Hogeschool Zuyd

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HyER member – North Rhine-Westphalia

- **Coordinator: EnergieAgentur.NRW / Fuel Cell and Hydrogen Network**
- **Member of the board of HyER (Chair)**
- **Coordinating "NRW Hydrogen Hyway" program for fuel cells and hydrogen with NRW funding of about 10 million € per year**
  - Hydrogen from renewables
  - Hydrogen refuelling stations
  - Vehicle development and deployment
  - Stationary projects
  - R&D and special market applications

- **Major project (NRW-Dutch cross-border co-operative project)**
  - Development and operation four hybrid buses (FC-Battery-SuperCap)
  - Total budget: 12 million €
  - All buses are in line operation in Cologne and Amsterdam

HyER member – North Rhine-Westphalia (2)

- **"Modellregion Elektromobilität Rhein-Ruhr" project on BEV (funded by Federal Ministry for Transport, BMVBS):**
  - Public transport
  - Commercial fleets
  - Interaction of living and mobility in urban areas
  - International co-operations
    (project with NL, waiting for LOI)

Phase I

- time frame: 06/2009 – 12/2011
- 8 projects (~ 43 mln € budget, ~ 21 mln € funding)
- 50 partners, 25 locations
- 201 vehicles
- 536 charging points
- Accumulated mileage: ~ 1.1 mln km

Phase II

- time frame: 01/2012 – 12/2014
- In total: 11 projects expected
  - currently 6 projects (2 started already, 4 waiting for LoI/administrative decision)
  - further 5 projects in preparation phase
- Plan: ~ 200 veh., ~ 300 charging points
- Funding expected to be as high as phase I

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Example – Electro Mobility Observatory (EEO)

- **Objective: Collection, evaluation and dissemination of relevant data with the aim to facilitate fact-based policy making at EU, national and local levels**
  - Vehicle and user behavior as well as recharging best practices, economical and environmental impact of incentives and regulations etc.

- **Focus battery electric vehicles (BEV) as well as plug-in hybrid electric vehicles (PHEV) and fuel cell electric vehicles (FCEV)**

- **Coordinated by a team of experts of TNO and ECN from the Netherlands and the Vrije Universiteit Brussel**

- **Funded by HyER and the Dutch Ministry of Economic Affairs, Agriculture and Innovation (ELI)**

- **Pilot project started with an intensive kick-off workshop with the participating regions on February 27 in Brussels:**
  - London, Milan, Rotterdam/Amsterdam, Hamburg, North-Rhine Westphalia, Oslo/Stockholm and Poitou Charentes

Example – Hydrogen Infrastructure Set Up

- **Objective: Setting up of hydrogen refueling stations in corridors between hydrogen hubs**
- **Project proposal submitted under the TEN-T call 2011: *P 2.a: Studies and preparation of deployment projects contributing to mitigation GHG emissions***
- **First proposer is Dutch Ministry of Economic Affairs, Agriculture and Innovation (ELI); coordination by Agentschap NL, HyER as project participant for supporting coordination and dissemination**
- **Content:**
  - Compilation of national hydrogen infrastructure roll out studies
  - Pilot installations of hydrogen refuelling stations
  - Alignment of planning / recommendations for European infrastructure
- **HyER started this initiative and organized work shops with industry, regions and EC and supported the proposal writing process**

Conclusion:

Membership in HyER offers favorable opportunities to take part in projects and to benefit from project results

Aiming HyER:

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Back up

HyER's Three Key Activities – Connecting the Dots …

Facilitate fact-based policy recommendations

Objective: Convince local/regional decision makers on technical feasibility of hydrogen, fuel cells and batteries based on latest achievements *(project involvement, dissemination, monitoring, …)*

1st Call

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

2nd Call

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

3rd Call

- **3rd FCH JU Call (FC hybrid buses, taxis and scooters)**
  HYER is a dissemination partner in two fuel cell vehicles demo projects: one for **buses** and one for **taxies.**

4 th Call

- **4th FCH JU Call (FC hybrid intercity buses, FC stationary)**
  HYER is a dissemination partner in a FC bus demo project and a micro FC demo project proposal

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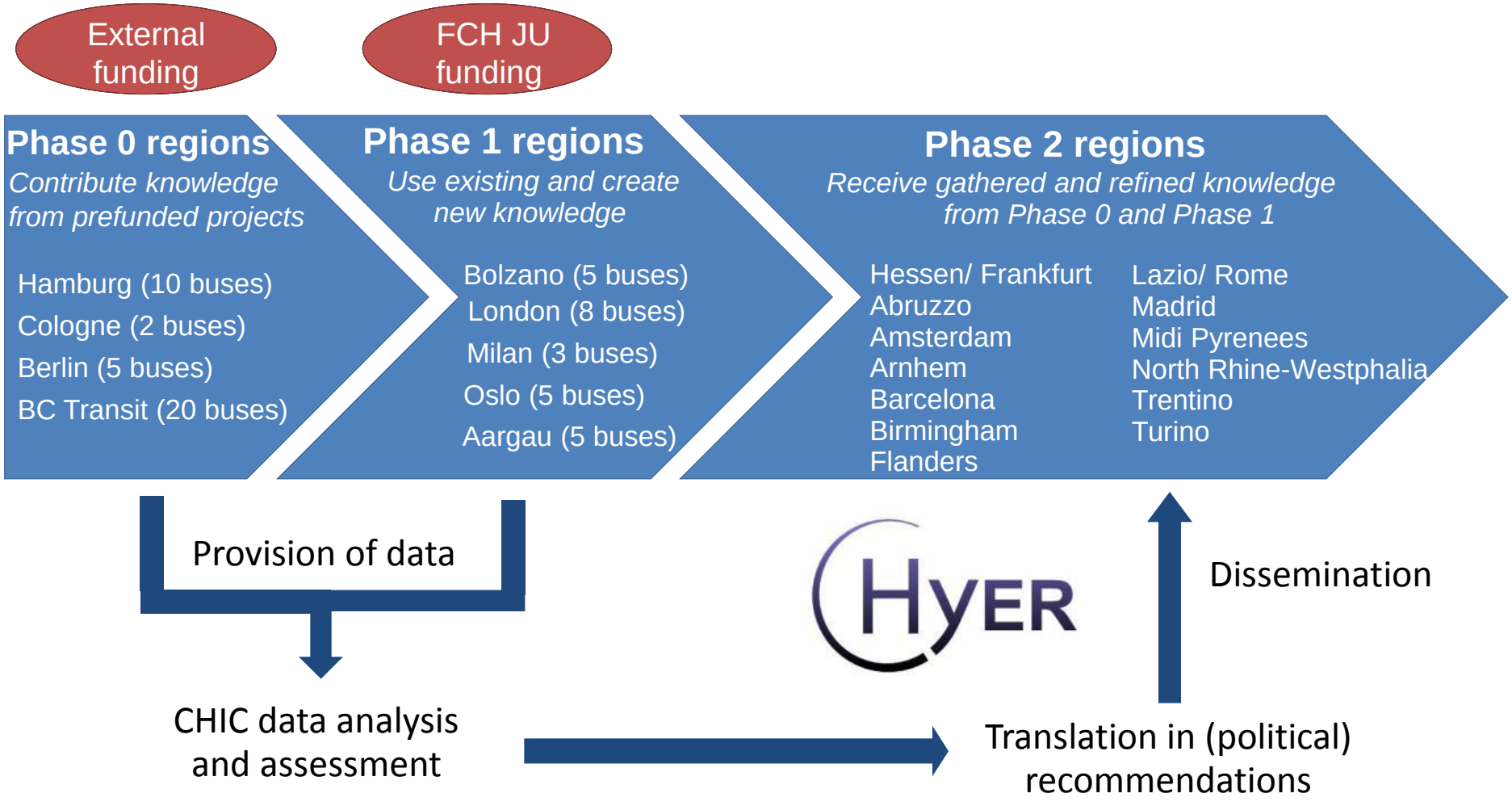
  project pr

HyER members do significantly co-finance European and National funding programs like e.g. the FCH JU already today …

Example – FC Bus Demonstration Project



→ **Long-term strategy instead of unaligned project sequence**

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(investigation of funding programs schemes, liaise with EC, …)

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(local strategy findings beyond "project-to-project" approach)

Commercialisation of Fuel Cells, Hydrogen, BEV and FCEV

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- **Input to actions identified in recent EU Transport White Paper:**
  - Strategic Transport Technology Plan
  - Clean Transport System Strategy
  - Mobility Plans and Scoreboard/potential use structural funds
  - TEN T
- **Collaboration towards different European Industrial Initiatives**
  (EII's as described in the SET Plan, Smart cities and communities initiative)
- **Establish intensive communications / collaborations with relevant DG's of EC**
  (e.g. DG Regio, DG Enterprise, Committee of the regions, …)

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- **Define relevant applications in relation to local conditions**
  (private and public fleets, public transport, telecom, distributed energy, …)
- **Develop advanced local / regional energy supply strategies**
  (e.g. integration of RES, energy storage, grid operations, …)
- **Identify appropriate procurement strategies for these applications**
  (pre-commercial procurement, incentives, …)
- **Establish required infrastructure to operate applications**
  (e.g. recharging / refilling infrastructure, connect hot spots e.g. along TEN-T corridors)
- **Set-up supporting framework on local / regional level**
  (regulatory support, congestion zones, taxes, …

Commercialisation of Fuel Cells, Hydrogen, BEV and FCEV