

Development of Business Cases for FCH Applications for Regions and Cities

An FCH2 JU Project



A new FCH2 JU initiative seeks to help regions/cities to develop FCH projects – and bring them together with the European industry

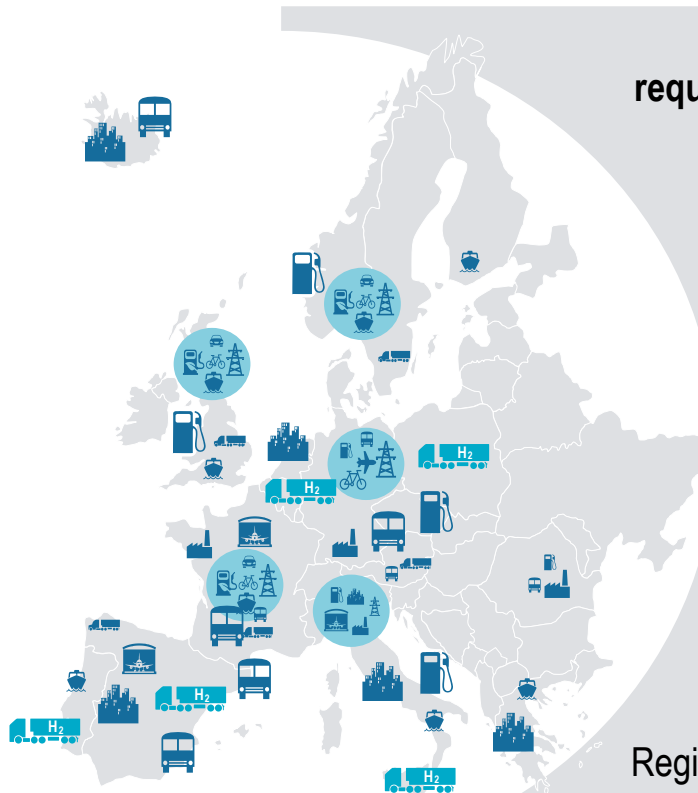
The project "Development of Business Cases for FCH Applications for Regions & Cities"¹

» **Support regions in assessing FCH applications** in business cases and evaluating their potential

» **Identify & maximize the use of different financing options**

» **Support regions/cities in the promotion** of the technology – e.g. in context of their "Smart Specialization Strategies"

» **Develop roadmaps & concepts** to prepare and implement deployment projects from 2018 onwards



FCH industry **understands requirements** of market (buyers) and refine/develop products

Industry can quantify **"willingness to pay"** for FCH applications

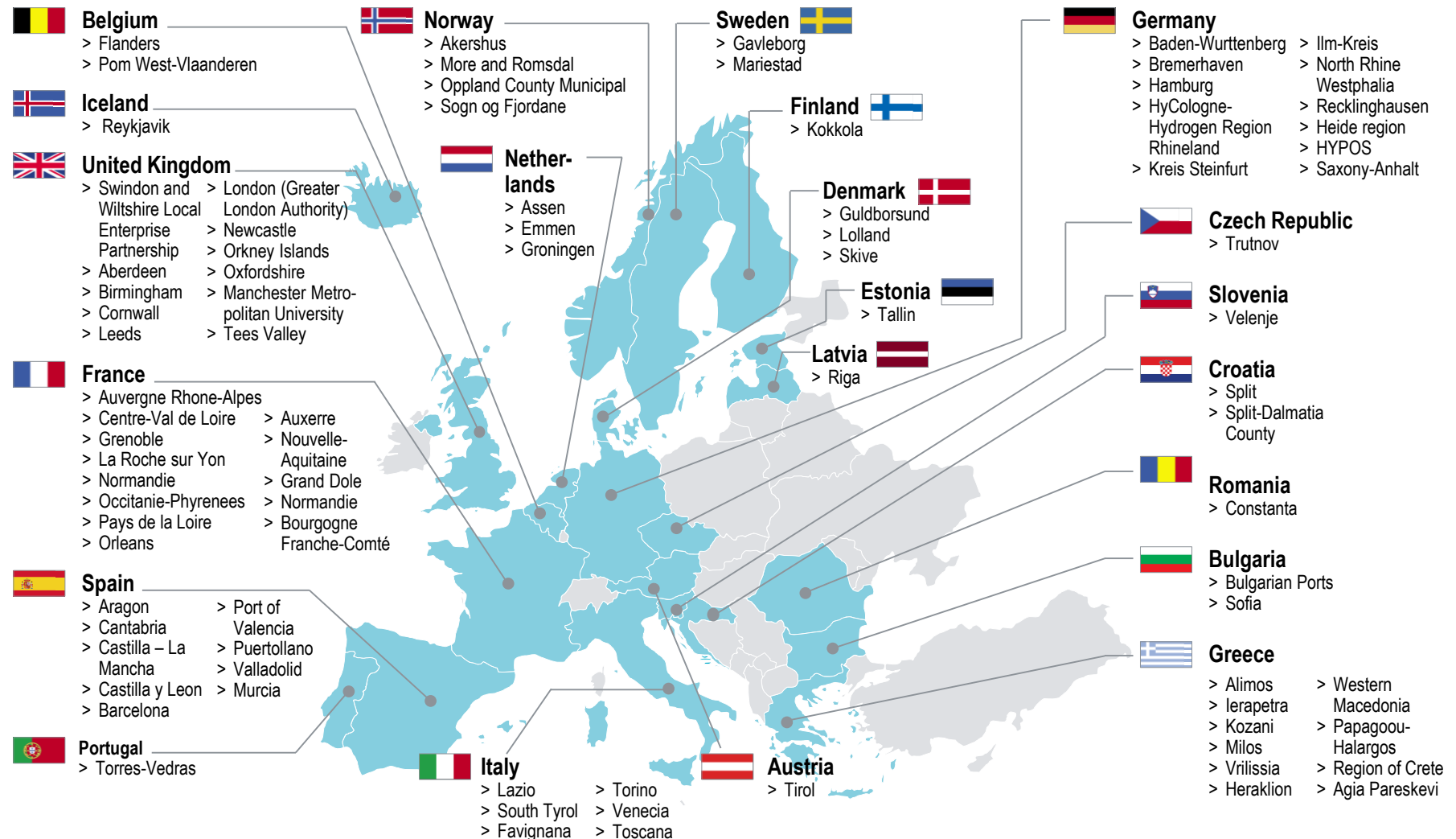
Industry can **size the EU market** for FCH applications –bottom up

Industry and regions/cities **establish a dialogue** on deploying applications

Regions/cities and industry jointly **pursue concrete project opportunities** (incl. funding)

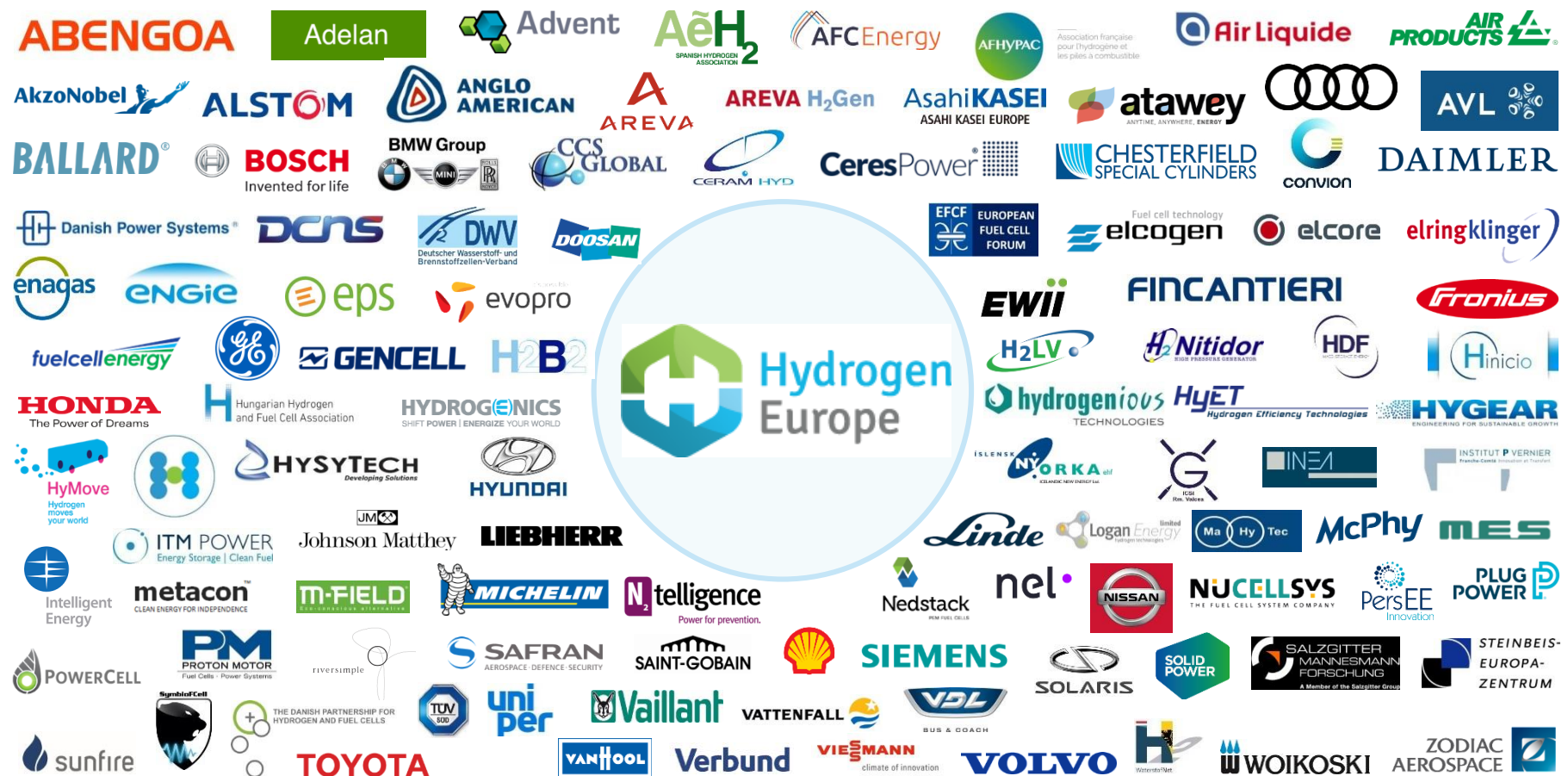
¹) Commissioned by the "Fuel Cells and Hydrogen Joint Undertaking" (FCH2 JU), supported by Roland Berger

70+ regions from 20+ countries participate in the project – A unique chance for the FCH industry to get to know its European market



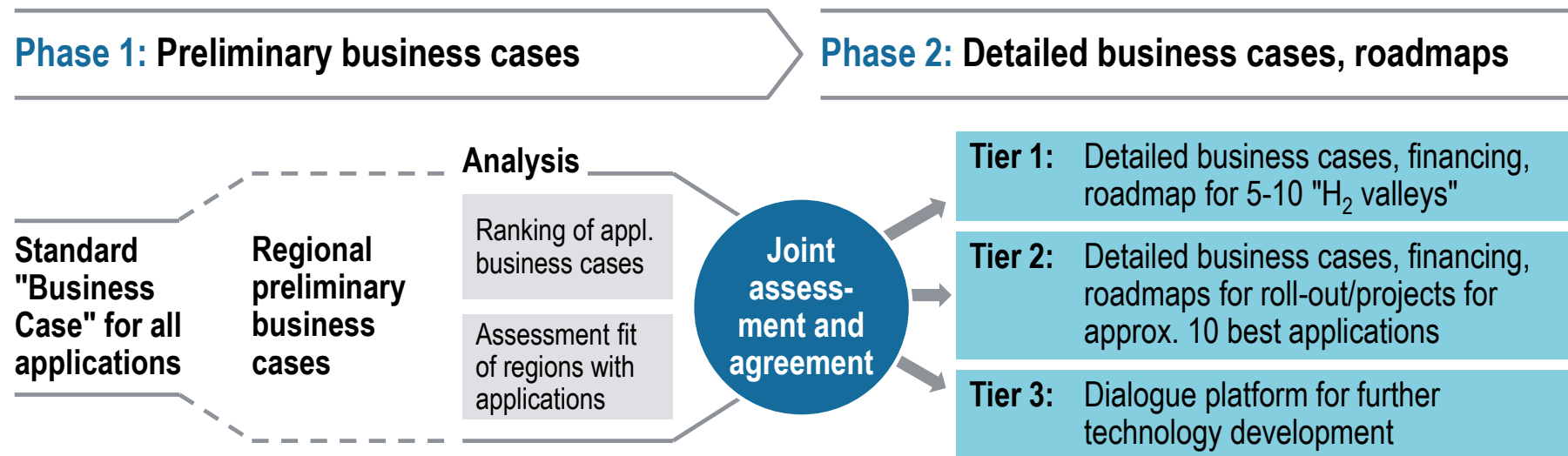
With the study, the FCH industry can to understand specific requirements & demand of the market *en route* to commercialization

Hydrogen Europe – mobilizing the leading FCH industry players



The project is divided in two main phases – Regions/cities and FCH industry should work together throughout

Project methodology



Collaboration in application – based working groups

- > Standard/generic business cases (techn. spec's/cost)
- > Supporting regions in identification of FCH use cases, by evaluation of business cases and regional fit

Focus

Collaboration in regional round tables

- > Constant engagement of all regional stakeholders
- > Tier-based cooperation, e.g. feep-dives into specification of business cases for H₂-valleys and regional roadmaps / demo-project concepts

Focus

In the Phase 1, we develop and evaluate preliminary business cases – Most viable applications to be focused on in Phase 2

Detailed project approach: two phases and eleven modules

Phase 1: Preliminary business cases

1 Regional "self-assessment" survey as initial market screening
Technology introduction for regions/cities

2 Assessment of preliminary business cases (generic)

3 Assessment of "fit" for regions/cities (refined market screening)

4 Ranking of applications

5 Mapping funding/financing mechanisms

6 Communication outreach/impact

Phase 2: Detailed business cases, roadmaps

7 Detailed business cases

8 Concept for maximizing use of funding

9 Roadmap and implementation plan

10 Engagement of local stakeholders

For H2 valleys ("Tier 1 regions/cities")

For demonstration projects ("Tier 2")

11 Dialog platform for technology development ("Tier 3")

Modules already under way

30+ FCH applications are in the project scope which are clustered and analyzed in five joint Working Groups

FCH applications in scope and application-based joint Working Groups (Phase 1)

1

Heavy duty transportation applications



- > Heavy-duty trucks, lorries
- > Buses (coaches, long-distance services)
- > Buses (urban buses, city services)¹⁾
- > Railway

2

Light & medium duty transp. applications



- > Cars, i.e. FCEVs
- > Delivery vans
- > Refuse garbage trucks
- > Sweepers
- > Construction mobile equipment
- > Material handling (e.g. forklifts)
- > Bikes
- > Scooters

3

Demo transport applications



- > Boats
- > Ships
- > Ferries
- > Port operations
- > Aircrafts
- > Airport ground operations

4

Stationary applications



- > Gen-sets
- > Back-up power
- > Off-grid power
- > Residential mCHPs¹⁾
- > Commercial buildings
- > Industrial use cases
- > District heating
- > Biogas in FCs
- > H₂ in refineries

5

Energy-to-hydrogen



- > Grid services
- > Energy storage
- > Demand management
- > Frequency response
- > Injection of hydrogen into the gas grid
- > Biogas conversion to hydrogen

> Joint Working Groups are the primary forum for application-specific interaction between regions/cities and the FCH industry

> Representatives of regions/cities will participate in one or more Working Groups depending on their interest

> Working Groups will hold weekly or bi-weekly conference calls as the project proceeds through Phase 1

> Every ca. 2 months, all project participants convene in Brussels for a General Assembly Meeting

¹⁾ The coverage of these applications will be closely aligned with other ongoing FCH2 JU initiatives, studies and projects.

Source: Roland Berger, trucks.com, worldsweeper.com, ship-technology.com, altenergymag.com, itm-power.com

For example, the project will also provide you with information on funding/financing options for public-private FCH projects

Public funding/ financing options

European funding, e.g.

- > The Fuel Cells and Hydrogen Joint Undertaking **FCH2 JU**
- > European Investment Bank **EIB**
- > European Fund for Strategic Investments **EFSI**
- > European Investment Fund **EIF**
- > EU Structural Funds, i.e. European Regional Development Fund **ERDF**

National funding, e.g.

- > National development banks, e.g. Groupe Caisses des Dépôts (FRA)
- > National grant facilities, e.g. National Innovation Program for Hydrogen and Fuel Cell Technology NIP II (GER)

Regional funding, e.g.

- > Regional development banks
- > Regional grant facilities or subsidy programs

Private funding/ financing options

- > **Industrial self-financing**, jointly financed by users and manufacturers or other industrial stakeholders
- > **Private financiers** for equity and/or debt parts of project finance, e.g.
 - Commercial banks
 - Private equity players
 - Venture capital funds
 - High-tech funds

Industry participation in the FCH2 JU Initiative for Regions & Cities will yield great benefits: understanding your market from bottom up

Your expected input



Expression of basic commitment to contribute to the project



Participation in **conference calls** of working groups (depending on the applications you want to promote)



Participation in the **General Assembly** meetings of all study participants



If necessary – **bilateral interview(s)** to discuss FCH application and provide industry input (e.g. technical performance, basic economics)



Total project duration of 1 year

Benefits from your participation

- > Showcasing **FCH applications and their benefits** to potential customers – e.g. at an FCH "technology fair" at a General Assembly Meeting
- > Establishing a **dialogue with regions and cities** on deploying FCH applications
- > Understanding further **customer requirements** to refine products
- > Quantifying regions' and cities' "**willingness to pay**" (premiums) for FCH applications
- > **Sizing the EU market** for FCH applications – in a bottom-up manner
- > Identifying and pursuing **concrete project opportunities** (incl. funding) in Phase 2

Please do not hesitate to get in touch with us

Contact information



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