FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

FCH2 JU Appel à projets 2018

Lionel BOILLOT

31 Janvier 2018

EU Climate and Energy Framework

Making energy more secure, affordable and sustainable

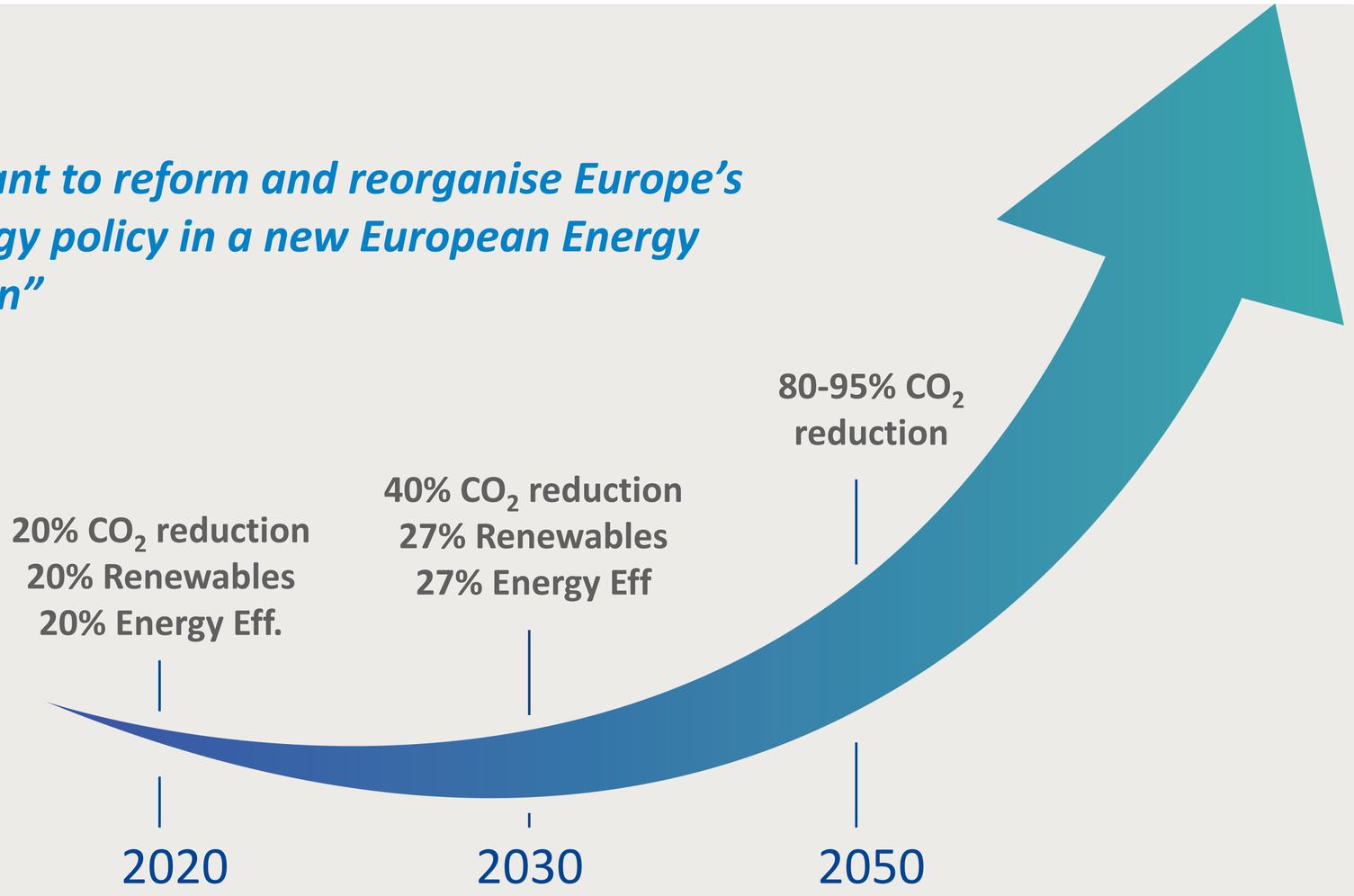
Jean-Claude Junker

President of the European Commission

"I want to reform and reorganise Europe's energy policy in a new European Energy Union"

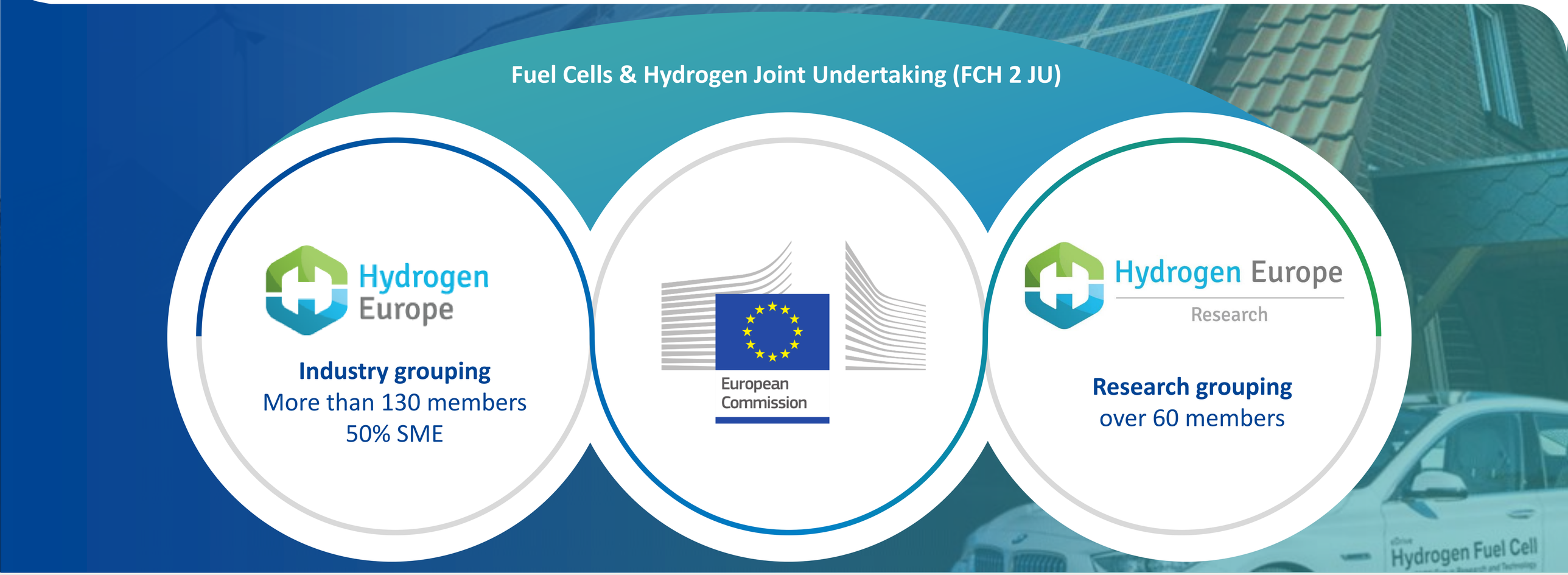
Energy Union dimensions

- *Security, solidarity and trust*
- *Fully-integrated Internal Energy Market*
- *Energy Efficiency*
- *Climate action - decarbonising the economy*
- *Research, innovation and competitiveness*



Strong public-private partnership with a focused objective

EU Institutional Public-Private Partnership (IPPP)



To implement an *optimal research and innovation programme* to bring FCH technologies to the point of market readiness by 2020

FCH 2 JU Objectives

Market readiness of a portfolio of clean, efficient and affordable solutions for our energy and transport systems

Clean Transport

Reduce fuel cell system costs for transport applications

Green hydrogen production

Increase efficiency and reduce costs of hydrogen production, mainly from water electrolysis and renewables

Heat & electricity production

Increase fuel cell efficiency and lifetime

H_2 storage for grid balancing

Demonstrate on a large-scale hydrogen's capacity to harness power from renewables and support its integration into the energy system

Minimal use of critical raw materials

Reduce platinum loading

FCH JU Programme structure

ENERGY

- Hydrogen production and distribution
- Hydrogen storage for renewable energy integration
- Fuel cells for power & combined heat & power generation

TRANSPORT

- Road vehicles
- Non-road vehicles and machinery
- Refuelling infrastructure
- Maritime, rail and aviation applications

CROSS-CUTTING

(e.g. standards, safety, education, consumer awareness, …)

FCH 2 JU:

Total Budget: 1.3 bn €

EC contribution: 646 m €

FCH JU programme implementation

Energy

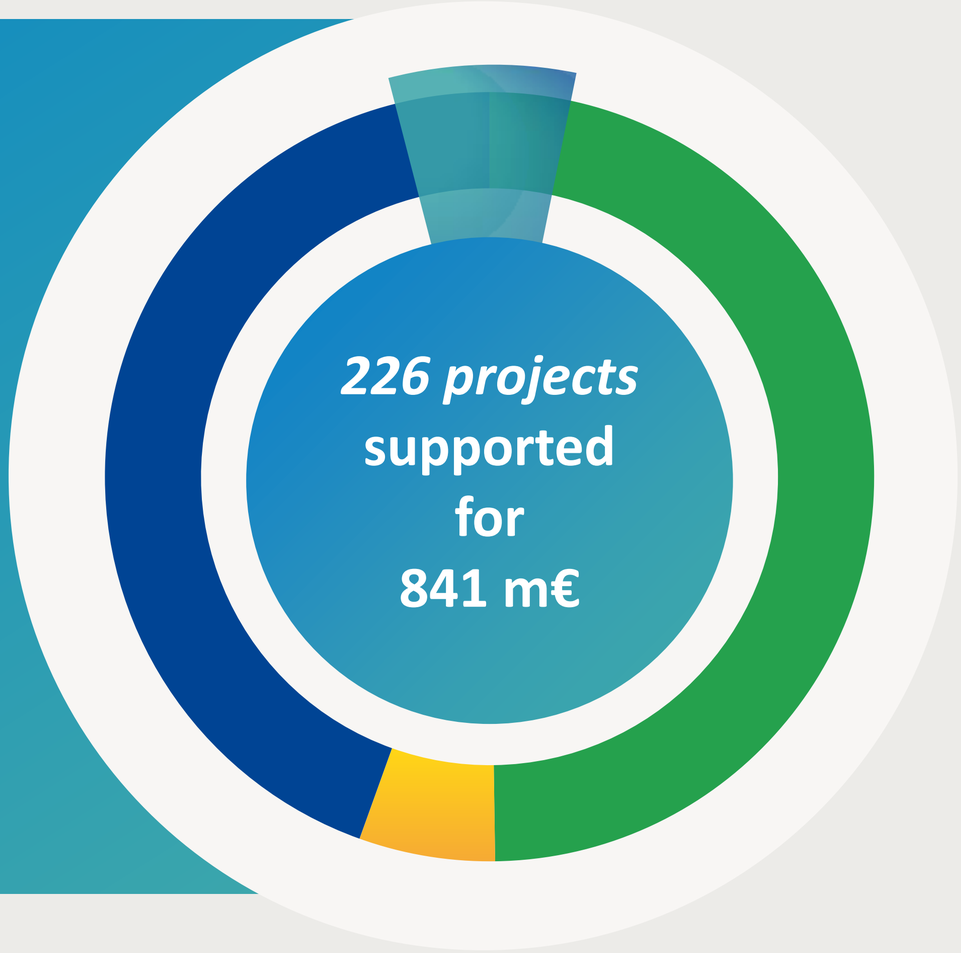
- Hydrogen production and distribution
- Hydrogen storage for renewable energy integration
- Fuel cells for power & combined heat & power generation

Transport

- Road vehicles
- Non-road vehicles and machinery
- Refuelling infrastructure
- Maritime rail and aviation applications

Cross-cutting

- E.g. standards, safety, education, consumer awareness …



48%

401 million euros

128 projects

41%

351 million euros

58 projects

6%

47 million euros

37 projects

5%

42 million euros

3 projects

Similar leverage of other sources of funding: 886 m€

Appel à projet 2018 - Aperçu

Appel: H2020-JTI-FCH-2018-1

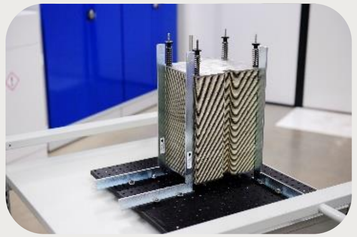
Total budget: 73.2 million EUR

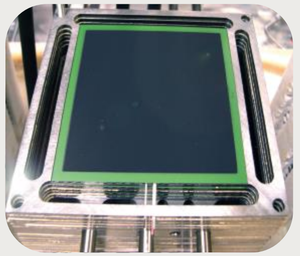
Ouverture: 16 Janvier 2018

Clôture: **24 Avril 2018**

Contenu = 20 sujets (topics):

- Transport: 2 IA et 5 RIA pour 33.45 million EUR
- Energy: 3 IA et 5 RIA pour 27 million EUR
- Overarching: 1 RIA pour 4 million EUR
- Cross-cutting: 3 RIA et 1 CSA pour 8.75 million EUR





Types of Actions – Annex D

RIA - Research and Innovation Actions

Actions primarily consisting of activities aiming to establish new knowledge and/or to explore the **feasibility of a new or improved technology**, product, process, service or solution. For this purpose they may include **basic and applied research**, technology development and integration, testing and validation on a **small-scale** prototype in a laboratory or simulated environment.

*funding rate max.**100%***

IA- Innovation Actions

Actions primarily consisting of activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose they may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication.

*funding rate max.70%**

*Funding 100% for non-profit legal entities

CSA - Coordination and Support Action

Actions consisting primarily of accompanying measures such as standardization, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogues and mutual learning exercises and studies, including design studies for new infrastructure and may also include complementary activities of strategic planning, networking and coordination between programs in different countries.

*funding rate max.**100%***

Technology readiness levels (TRL) – Annex G

TRL 1 – basic principles observed

RIA

TRL 2 – technology concept formulated

TRL 3 – experimental proof of concept

TRL 4 – technology validated in lab

TRL 5 – technology validated in relevant environment

TRL 6 – technology demonstrated in relevant environment

TRL 7 – system prototype demonstration in operational environment

IA

TRL 8 – system complete and qualified

TRL 9 – actual system proven in operational environment

Finding the 2018 FCH call

Find a Call → Find Partners → Register organisation → Submit a Proposal

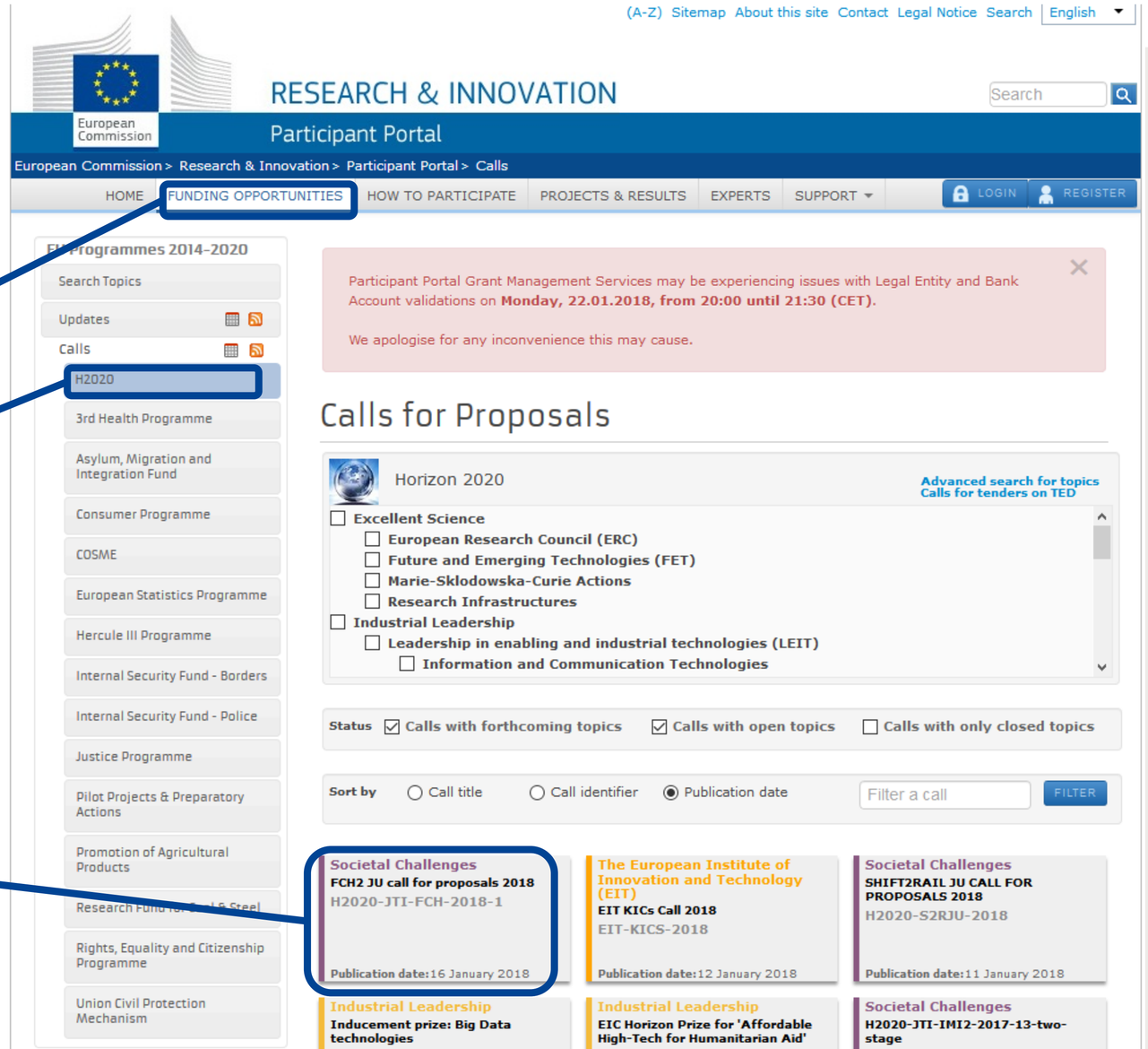
Participant Portal

http://ec.europa.eu/research/participants/portal/desktop/en/home.html

Funding Opportunities

H2020

FCH 2 JU – Call 2018



Topics details and partner search

Find a Call → Find Partners → Register organisation → Submit a Proposal

Topic description

Topic conditions and documents

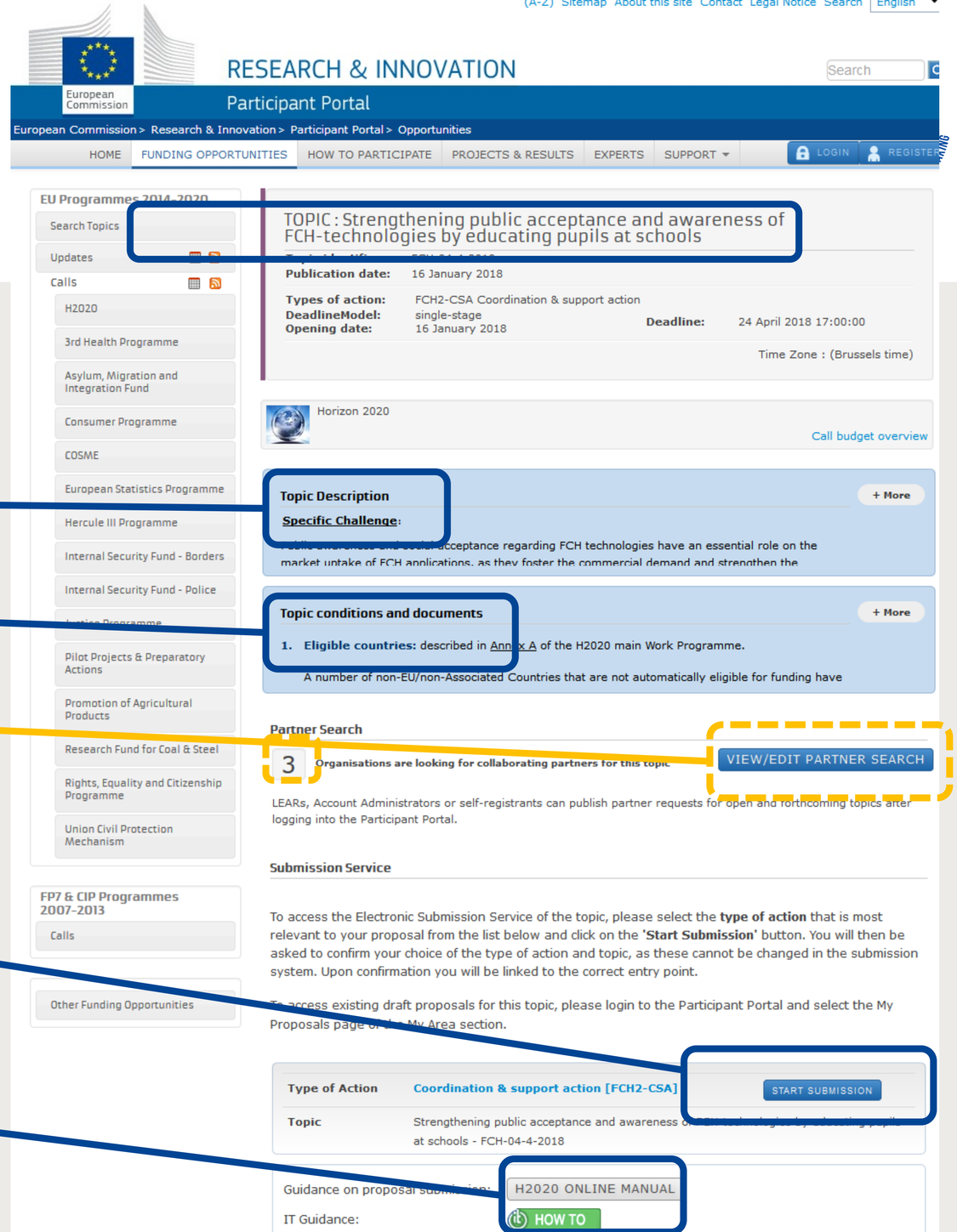
Partner search

Submission

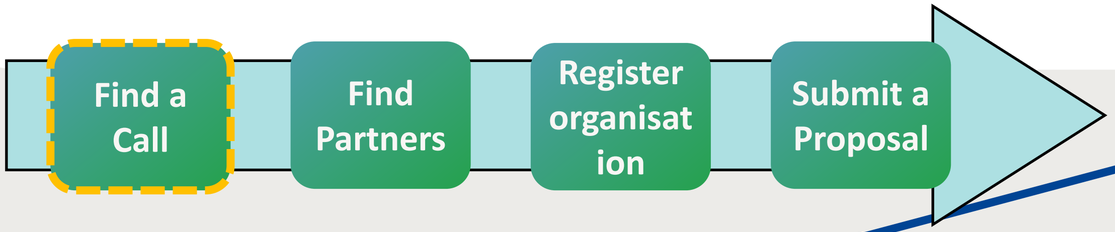
- Templates of proposals
- On-line tool for submission

Support and Guidance

- H2020 Online Manual
- HOW TO



Topic description



Specific Challenge

- Context of the topic

Scope

- Operational requirements and focus
- TRL
- Consortium composition
- Indicative budget
- Expected duration
- …

Out-of-scope proposals = ineligible

Expected Impact

- Technical targets
- Costs reduction
- Contribution to policies (env., indus., …)
- …

Topic Description - Less

Specific Challenge:

Compressed gas truck distribution will initially be the most common way to transport hydrogen from central production sites to consuming facilities. Significant introduction of hydrogen vehicles requires a scale up of two orders of magnitude hydrogen truck distribution. At the same time developing and deploying a high volume trailer is necessary to address both the H2 Mobility market but also the industrial market to increase the volume transported so as to decrease transportation cost and CO2 emissions in a context of increasing fuel cost; to increase customer autonomy and storage footprint and to reduce the HRS investments and ease the ramp up of first stations [1].

Current standards, regulations and safety codes have been developed for a relatively small market volume and deliveries mostly to industrial sites. These standards need to be reviewed, and adapted if needed, to ensure safe, efficient and low-cost hydrogen delivery at larger scales and in residential areas. These regulations and standards need to be harmonised across Europe.

[1] From Deliverhy – Recommendations to Industry (http://www.fch.europa.eu/project /optimisation-transport-solutions-compressed-hydrogen)

Scope:

The following specific issues should be addressed by the project:

- Identify and quantify the risks associated with compressed hydrogen delivery on a large scale, taking into account the whole chain from filling of trucks at a terminal, driving from supplier to customer and delivery of hydrogen at a retail station or other customers;
- Propose mitigation actions for the most critical risks;
- Provide a roadmap for standardisation of compressed hydrogen trucks and interfaces between the truck and the supply and customer sites that balance safety aspects with commercial, environmental and feasibility aspects. This includes a strategy for effective influence on:
  - ISO TC 58/SC3 Gas Cylinders Design;
  - WG 35 Refillable permanently mounted composite tubes for transportation: ISO 17519 CD;
  - WG 32 Refillable composite reinforced tubes of water capacity between 450 L and 3000 L – Design, construction and testing: ISO 11515;
  - WG 27 Gas cylinders of composite construction: ISO 11119-X;
  - ADR - Dangerous Goods Transport.
- Develop a position paper that, considering actually available European Regulations on max pressure and max quantity of hydrogen transported all over Europe, can propose a modification and derogation proposal to the ARD [2].

To address the issues basic experimentation or simulations may be required, for example to determine optimal flow rates and to optimise ways of equipment handling.

It is expected that the conclusions and results of the project are made public.

Any safety-related event that may occur during execution of the project shall be reported to the European Commission's Joint Research Centre (JRC), which manages the European hydrogen safety reference database, HIAD (dedicated mailbox JRC-PTT-H2SAFETY@ec.europa.eu).

The FCH 2 JU considers that proposals requesting a contribution from the EU of EUR 0.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

A maximum of 1 project may be funded under this topic.

Expected duration: 3 years

[2] ARD (ADR): European agreement on the international carriage of dangerous goods on road

Expected Impact:

The following impacts are expected as a result of the PNR activities:

- Deeper knowledge of the risks associated with compressed hydrogen delivery on a large scale and the mitigation actions for the most critical risks, ensuring that risks related to distribution during the hydrogen market development phase are minimised;
- Harmonization of hydrogen distribution with high pressure trucks in the current standards, regulations and safety codes, making possible by the end of the project the distribution of

Contact partners through the participant portal

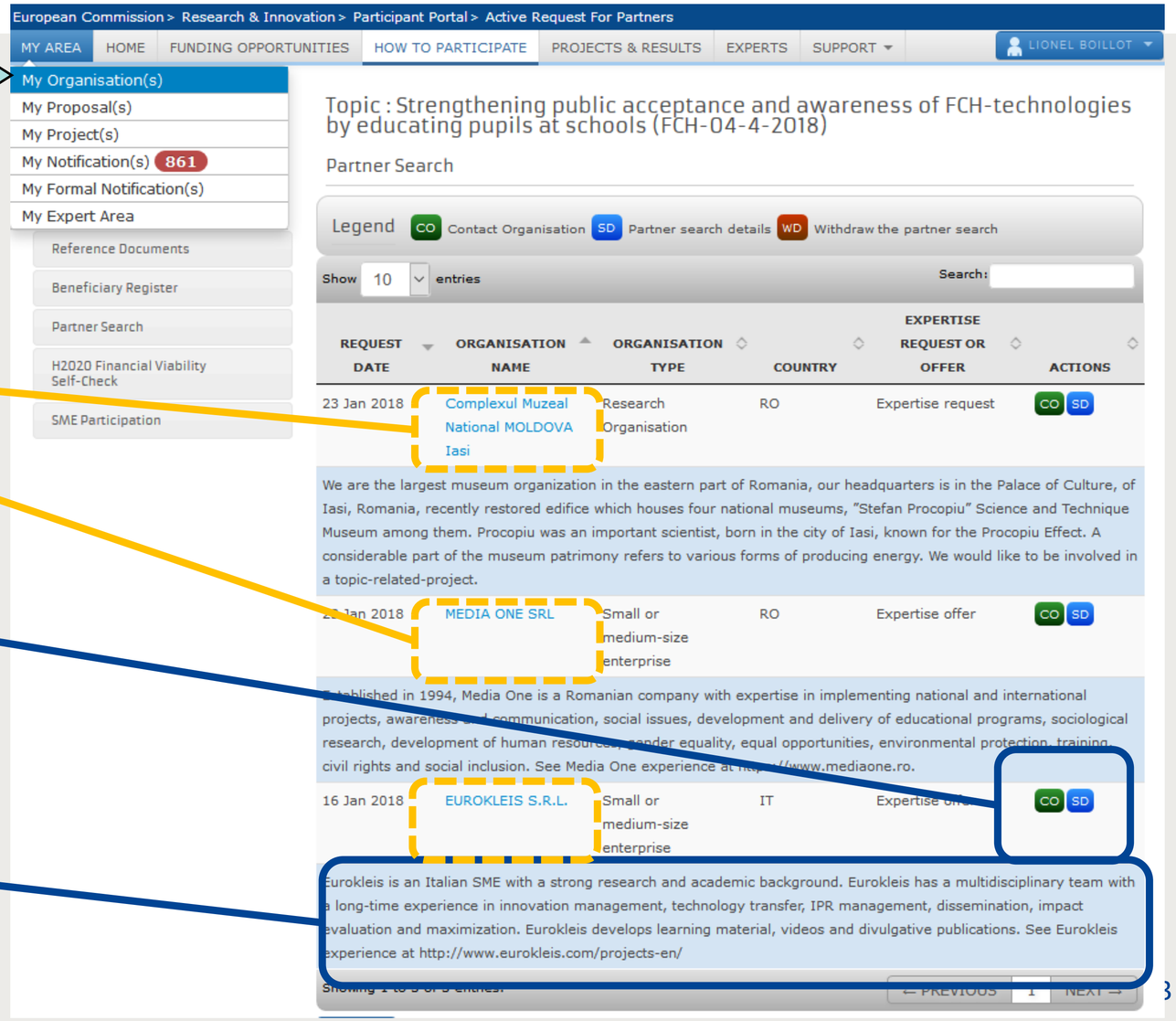
Find a Call → Find Partners → Register organisation → Submit a Proposal

Partner searches

Actions:

- Contact per email
- See details

Partner description



FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

Transport

EUR 33.45 million

2 IA and 5 RIA

Transport Pillar Overview

Decarbonizing the transport system

Main Focus

- Cost reduction and increased power density and durability of PEM fuel cells
- Strengthening of the European supply chain in compress hydrogen storage
- Validation of fuel cells in other transport means
- HRS technologies

What is new

- Heavy-duty trucks and mid-size passenger ships or inland freights
- Game changer fuel cell stack for automotive applications
- Fuel cell propulsion for aerial passenger vehicles

Transport Pillar

7 topics – 33.4 M€

Topic	Type of Action	Ind. FCH contribution (M€)
FCH-01-1-2018: Large Scale Demonstration of H2 fuelled HD Trucks with High Capacity Hydrogen Refuelling Stations (HRS)	IA	17
FCH-01-2-2018: Demonstration of Fuel Cell applications for mid-size passenger ships or inland freight	IA	
FCH-01-3-2018: Strengthening of the European supply chain for compressed storage systems for transport applications	RIA	2.7
FCH-01-4-2018: Fuel cell systems for the propulsion of aerial passenger vehicle	RIA	4
FCH-01-5-2018: Next generation automotive MEA development	RIA	4
FCH-01-6-2018: Game changer fuel cell stack for automotive applications	RIA	3
FCH-01-7-2018: Improvement of innovative compression concepts for large scale transport applications	RIA	2.75

Transport Pillar topics

Innovation Actions- IA

FCH-01-1-2018: Large Scale Demonstration of H2 fueled HD Trucks with High Capacity HRS

Demonstrate mid or heavy-duty (19+ tons) trucks used for long-haul traffic in interurban areas

- Minimum of 15 vehicles, minimum 80% >26 tons, minimum 3 sites, minimum 2 different countries, minimum 4 trucks/site
- Fuel cell system from 85 to 300 kW (net power)
- The maximum FCH 2 JU contribution that may be requested is EUR 12 million

Transport Pillar topics

Innovation Actions- IA

FCH-01-2-2018: Demonstration of Fuel Cell applications for mid-size passenger ships or inland freight

Develop and demonstrate > 2 mid-size ships with a FC power > than 400 kW each, for inland/coastal freight or >100 passengers

- Minimum nominal FC system power of 1MW installed, at 2 different locations, minimum of 50 % renewable based hydrogen
- Transfer of fuel cell technology developed and applied in previous FCH 2 JU projects
- Not eligible costs: Vessels' hull, superstructure and other FC unrelated components, and operational costs such as crew
- The maximum FCH 2 JU contribution that may be requested is EUR 5 million.

Transport Pillar topics

Research and Innovation Actions- RIA

FCH-01-3-2018: Strengthening of the European supply chain for compressed storage systems for transport applications

For all transport modes: achieve application specific performance and cost targets and improve manufacturing productivity of the COPV

- Storage density @ room temperature > 0.030kg/l for 700bar or 0.018kg/l for 350bar
- Target cost 400€/kg H2 or less assuming a production of 30,000 parts per year
- Expected consortium to have at least one vessel and/or material supplier, one research institute and an OEM and build on previous projects

Transport Pillar topics

Research and Innovation Actions- RIA

FCH-01-4-2018: Fuel cell systems for the propulsion of aerial passenger vehicle

Develop and demonstrate a fuel cell system dedicated to the propulsion of a 2 to 19 passengers regional aircraft

- Modular fuel cell system architecture adaptable to different aerial vehicles with 160 to 350 kg payload and 1 to 2 hour range
- Fuel cell system power output: 40 to 150 kW with >2kW/kg stacks, >5,5% mass efficiency storage, lifetime at least 4000 hours
- An in-flight demonstration of at least a single module in an existing plane.

Transport Pillar topics

Research and Innovation Actions- RIA

FCH-01-5-2018: Next generation automotive MEA development

Reducing the total platinum loading while increasing current density

- New catalysts; Catalyst Support; Catalyst layer Design; Catalyst Layer ionomer; Membrane; GDL (including MPL); MEA Integration
- The required power density of the resulting MEA is 1.8 W/cm2 @ 0.6 V
- Manufacture (in high-volume-compatible manufacturing methods) enough MEAs to be tested in a (minimum) 10 cell short stack
- Development of bipolar plates, seals, frame/sub-gasket materials and designs **are not** within the scope of this topic.

Transport Pillar topics

Research and Innovation Actions- RIA

FCH-01-6-2018: Game changer fuel cell stack for automotive applications

New concepts considering the stack as a whole and not as the sum of individual components for automotive applications

- Focus on interface optimization between components: An integrated solution at the single cell level is highly recommended
- New stack architecture allowing a simplified BOP will be privileged for system cost reduction
- At least 1 short-stack (minimum 5 kW), to be tested with AST protocol for at least 6 month real operative conditions

Transport Pillar topics

Research and Innovation Actions- RIA

FCH-01-7-2018: Improvement of innovative compression concepts for large scale transport applications

Develop and test at pilot scale a large compressor either with a disruptive technology or hybridized but with a disruptive technology.

- Flow rates of 50 kg/h or more
- From low pressure (in the range of 20 bar or less) to 450 bar or 900 bar
- Long term tests (6 months) in a relevant environment: a HRS without public access or an outdoor test facility (>1/10 of real scale)
- Demonstrate the concept does not introduce additional contaminants in the hydrogen

Overarching projects Overview

Port/harbour ecosystems

Main Focus

- Decarbonizing ecosystems
- Port applications

What is new

- Full ecosystem
- Various new MHVs specific to ports

Topic	Type of Action	Ind. Budget
FCH-03-1-2018: Developing Fuel Cell applications for port/harbour ecosystems	**RIA**	**4**

Overarching topic

Research and Innovation Actions- RIA

FCH-03-1-2018: Developing Fuel Cell applications for port/harbour ecosystems

Develop, deploy and benchmark different industrial FC vehicle for port operations

- At least two of theses: gantry cranes, yard trucks and straddle carriers (or other special MHVs)
- R&D for new FC systems is not within the scope, only the integration of the FC system and trial of the vehicles
- A key objective is noise reduction: vehicle noise < 60 dBa and global operation noise reduction
- Total fuel cell system installed power of at least 250 kW
- Minimum demonstration of 5,000 h proving 20,000 h durability
- Hydrogen port infrastructure should be considered

FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

Energie

EUR 27 million

3 IA and 5 RIA

Energy Pillar Overview

Hydrogen Production

Main Focus

- Further increase in capacities of low & high temperature electrolysers to be demonstrated in new applications
- Concentrated solar energy for thermochemical hydrogen production
- Alternative H2 carriers for stationary storage

What is new

- MW-scale high-temperature electrolyser
- Robust materials for thermochemical H_2 production
- Hydrogen carriers for stationary H_2 storage

Energy Pillar

4 topics – 20 M€

Topic	Type of Action	Ind. FCH Cont. (M€)
FCH-02-1-2018: Demonstration of a large-scale (min. 20MW) electrolyser for converting renewable energy to hydrogen	IA	11
FCH-02-2-2018: Demonstration of large-scale steam electrolyser system in industrial market	IA	4
FCH-02-4-2018: Thermochemical Hydrogen Production from Concentrated Sunlight	RIA	3
FCH-02-5-2018: Hydrogen carriers for stationary storage of excess renewable energy	RIA	2

Energy Pillar Topics

Hydrogen Production – Innovation Action (IA)

FCH-02-1-2018: Demonstration of a large-scale (min. 20MW) electrolyser for converting renewable energy to hydrogen

Develop 20 MW rapid response electrolyser to convert RES e- to RES H_2 for use in end-market valorising renewable value of H_2

- Favourable economic conditions, e.g. upstream connection in wind park
- Minimise footprint, single BoP
- Steel, refining industrial sectors excluded

FCH-02-2-2018: Demonstration of large-scale steam electrolyser system in industrial market

Scale-up SOE to “megawatt class”, reducing CAPEX < 3M€/(t/d)

- 15kg/hr H_2 production using renewable electricity
- Two year operation without stack replacement, cumulated 50tons of renewable H_2
- <40kWhel/kg, <5min hot start, >90% availability

Energy Pillar Topics

Hydrogen Production – Research and Innovation Action (RIA)

FCH-02-4-2018: Thermochemical Hydrogen Production from Concentrated Sunlight

Improve performance of 500kW concentrated solar system for H_2 production

- Improve the stability, cyclability and performance of functional materials for high temperature water splitting aiming for 1,000 cycles or 5,000 hours of operation
- > 50% heat recovery rates, < 25% heat loses of flushing gas: design for 10% solar-to-fuel efficiency, 5% in the field

FCH-02-5-2018: Hydrogen carriers for stationary storage of excess renewable energy

Develop & demonstrate >50kg H_2 storage system

- 70% round trip efficiency
- Liquid organic carriers are not eligible for this call

Energy Pillar Topics

Stationary Fuel Cells for Heat and Power Generation

Main Focus

- Solid oxide fuel cells (component and system level)
- Waste/biomass-to-energy and (storage)
- Demonstrate and unlock new markets

What is new

- Dedicated topic on novel interconnects solutions
- Cost-optimisation of cogeneration with fuel cells using biogas
- Pathways for waste-to-energy concepts using solid oxide membrane reactors
- Demonstration of fuel cells for long term power supply in remote locations

Energy Pillar

4 Topics – 7 M€

Topic	Type of Action	Ind. FCH Contribution (M€)
FCH-02-3-2018: Robust, efficient long term remote power supply	IA	3
FCH-02-6-2018: Cost-effective novel architectures of interconnects	RIA	2
FCH-02-7-2018: Efficient and cost-optimised biogas-based co-generation by high-temperature fuel cells	RIA	1.5
FCH-02-8-2018: Waste-stream based power balancing plants with high efficiency, high flexibility and power-to-X capability	RIA	0.5

Energy Pillar Topics

Stationary Fuel Cells - Innovation Action (IA)

FCH-02-3-2018: Robust, efficient long term remote power supply

Develop and demonstrate **FCs for remote power supply** in gas and oil infrastructure and telecom towers to replace inefficient conventional solutions

- Create long-term **track record** in real **installations** (efficiency, harsh climate conditions, reliability, service lifetime, maintenance)
- No less than **15 units** in the power range of 0.5 to 5 kW_e with overall power capacity >**15kW_e**
- At least **3** stack **manufacturers** or fuel cell **integrators**
- Firm **commitment from end-users** should be demonstrated
- **Cost reduction** through value engineering and manufacturing readiness for serial production

Energy Pillar Topics

Stationary Fuel Cells - Research and Innovation Actions (RIA)

FCH-02-6-2018: Cost-effective novel architectures of interconnects

Development of **cost effective novel interconnects** for SOFCs and SOECs

- **demonstrate** solutions for >3000 hours and 50 cycles **in a 1 kW stack**
- demonstrate **low cost fabrication** solutions **adaptable** to any stack design and for mass-manufacturing processes
- **involve** (European) **actors across full value chain** (at least one component and stack manufacturer)
- expected **KPIs** for both fuel cell and electrolysis operation modes

FCH-02-7-2018: Efficient and cost-optimised biogas-based co-generation by high-temperature FCs

Design and engineer an **integrated biogas-fed fuel cell system architecture** with minimal gas pre-processing

- universal one-stop appliance to process **different types of biogas** for **HTFC systems**
- **efficient, low-cost** and **modular** solutions: η_e>53%, <3500 €/kW_e (FC and gas processing system)
- at least **2 HTFC manufacturers**
- address **design of a full-scale system**

Energy Pillar Topics

Stationary Fuel Cells - Research and Innovation Action (RIA)

FCH-02-8-2018: Waste-stream based power balancing plants with high efficiency, high flexibility and power-to-X capability

Using **Solid Oxide membrane reactors based plants** for **power generation and energy storage using** waste and biomass derived fuels

- **identify** long-term **low-grade waste streams** and **processes to transform** them
- develop concepts considering a **RES dominated power generation** landscape
- define requirements underpinning **viable business cases**
- develop a **pathway** for a gradual **integration** of Solid Oxide membrane reactors based plants
- focus on conceptual engineering work rather than experimental but **new technical concepts should be elaborated**

FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

Cross-Cutting

EUR 8.75 million

3 RIA and 1 CSA

Cross-cutting Activity Area Overview

Supporting and enabling activities, facilitating the transition to market

Main Focus

- Regulations, Codes and Standards through Pre-Normative Research (PNR)
  - 1 topic addressing safety—related aspects
  - 1 topic focus on hydrogen admixtures in the natural gas grid
  - 1 topic focus on performance and durability of fuel cells
- Public awareness and social acceptance through education and training

What is new

- PNR focused on traffic infrastructures
- PNR and techno-economic assessment to accelerate the EU-wide adoption of H2NG blends
- PNR to develop advanced AST protocols for Solid Oxide Cells
- Building networks to educate at schools and to raise public awareness and social acceptance

Cross-cutting Activity Area

4 Topics - 8.75 M€

Topic	Type of Action	Ind. FCH Contribution (M€)
FCH-04-1-2018: PNR for safety on hydrogen driven vehicles and transport through tunnels and similar confined spaces	RIA	8.75
FCH-04-2-2018: Hydrogen admixtures in natural gas grid	RIA	
FCH-04-3-2018: Accelerated Stress Testing (AST) protocols for Solid Oxide Cells (SOC)	RIA	
FCH-04-4-2018: Strengthening public acceptance and awareness of FCH-technologies by educating pupils at schools	CSA	

Cross-cutting Activity Area Topics Overview

Research and Innovation Action - RIA

FCH-04-1-2018: PNR for safety on hydrogen driven vehicles and transport through tunnels and similar confined spaces

Support improved safety assessments in traffic infrastructures

- Revision of the SoA, identification of knowledge gaps, experimental program, etc.
- Provide improved prevention and mitigation strategies and engineering tools, recommendations, etc.
- The results should contribute to related standards, leading to a more harmonized normative framework

FCH-04-2-2018: Hydrogen admixtures in natural gas grid

Assessment of H2NG blends and impact assessment

- PNR on critical issues related to end-users applications
- Techno-economic assessment and analysis of policy options/ regulatory barriers for a wide adoption
- Improved knowledge, recommendations to related standards – scientifically solid & sound!
- National regulations mapping / policies -> EU level roadmap to increase H2 concentration in the NG

Cross-cutting Activity Area Topics Overview

Research and Innovation Action – RIA
Coordination and Support Action - CSA

FCH-04-3-2018: Accelerated Stress Testing (AST) protocols for Solid Oxide Cells (SOC)

Develop ASTs protocols to shorten the development time of new materials

- Identification of degradation mechanisms, development of advanced characterization techniques, etc.
- Develop AST test methods, evaluation criteria and validation methodology
- The results should contribute to related standards

FCH-04-4-2018: Strengthening public acceptance and awareness of FCH-technologies by educating pupils at schools

Raise public acceptance and social awareness

- Develop a set of educational material targeting primary and secondary education, web-based platform, etc.
- Build local networks and novel channels to raise awareness and acceptance
- Create a long-lasting and replicable educational programme delivery model

Additional requirements across the entire call

JRC- Reporting to HIAD (JRC-PTT-H2SAFETY@ec.europa.eu)

- Any safety-related event that may occur during execution of the project shall be reported to JRC, which manages the European hydrogen safety reference database (HELLEN, formely known as HIAD)

JRC - Harmonisation and validation activities

- Collaboration mechanisms need to be developed with JRC, in relation to the ongoing EU protocol harmonisation and validation activities

FCH 2 JU Knowledge Management - Technology monitoring

- All FCH 2 JU projects have the obligation to provide every year (April- May) technical information using structured parameter templates

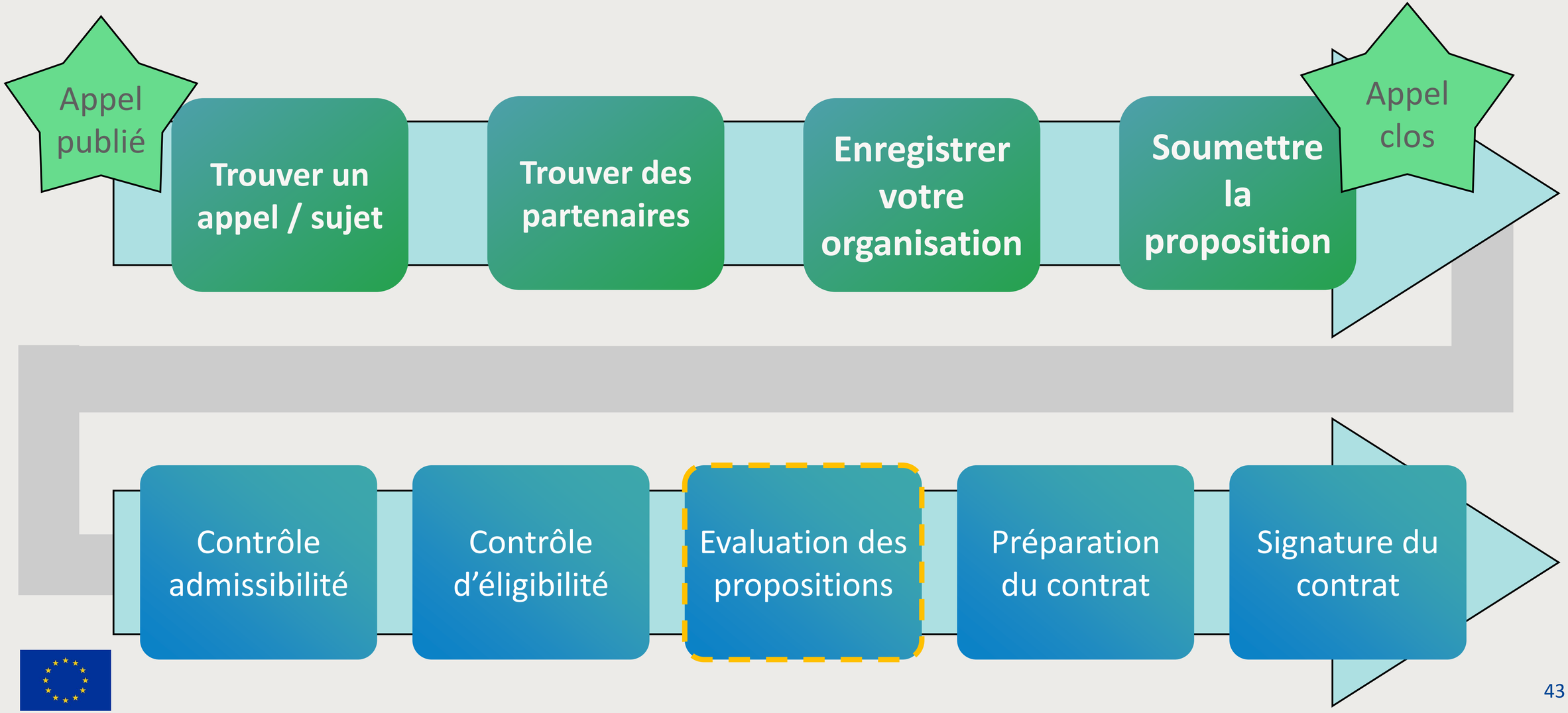
FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

FCH2 JU Appel à projets 2018

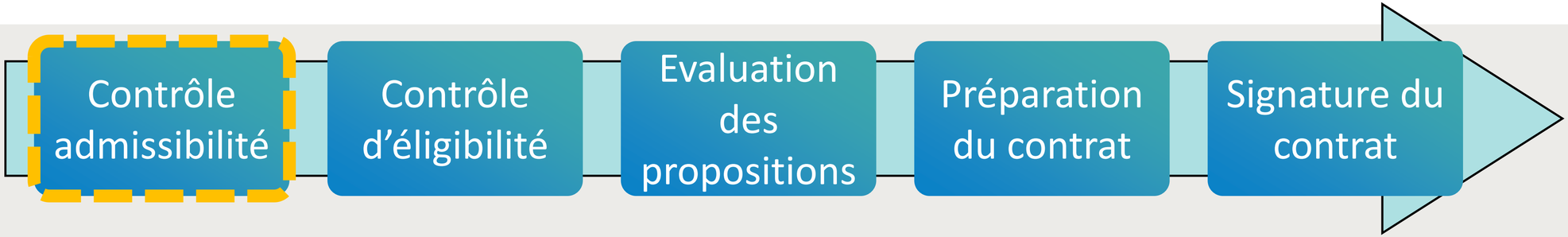
- Mode d'évaluation
- Conseils

31 Janvier 2018

Etapes de la publication à la signature du contrat



Admissibilité

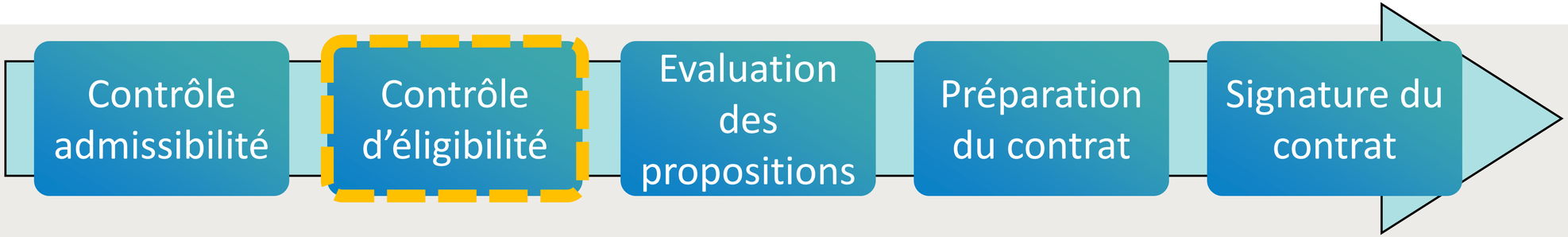


Une proposition est admissible lorsqu'elle est :

- **Soumise** dans l'outil informatique dédié via Participant Portal **à temps**
- **Lisible**, accessible et imprimable
- **Complète**:
  - Avec tous les formulaires admin et annexes en pdf
  - Preuve de la capacité opérationnelle
  - Plan préliminaire de l'exploitation et la diffusion des résultats

Respectez le format et les limitations de pages !

Eligibilité



Une proposition est éligible lorsqu'elle :

- Répond à un sujet (topic) de l'appel 2018 du FCH2
- Se conforme aux conditions d'éligibilité de l'appel FCH
- Satisfait aux exigences de partenariat

RIA and IA ➔	At least three legal entities each established in a different Member State or Associated Country. All three legal entities shall be independent of each other.
CSA ➔	At least one legal entity established in a Member State or in an Associated Country

Evaluations et prep. du contrat

Contrôle admissibilité

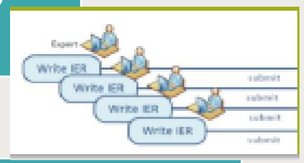
Contrôle d'éligibilité

Evaluation des propositions

Préparation du contrat

Signature du contrat

Au moins 3 experts



Etape 1: Evaluation Individuelle

Etape 2: Consensus

Etape 3: Panel

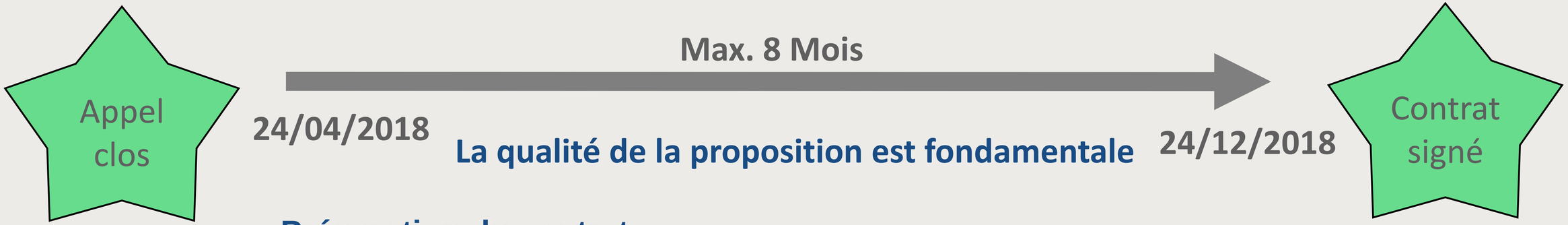
Liste des propositions classées par score

Préparation du contrat

Lettre des résultats d'évaluation

Liste des propositions éligibles au financement

8 months for Time-To-Grant



Préparation du contrat

- Interactions FCH JU et partenariat (coordinateur)
- Transformation proposition ➔ projet
- No négo
- Corrections des erreurs cléricales et prise en compte des commentaires des évaluateurs

8 mois pour un contrat, quelles implications?

What does “Max. 8months for grant signature” mean for the evaluation of proposal?

-**The experts evaluate each proposal as submitted** not on its potential if certain changes were to be made

-**The experts do not recommend substantial modifications**

such as change of partners, additional work packages, significant budget or resources cut, additional scientific activities to strengthen the concept, trans-disciplinary aspects not appropriately covered

-**If the experts identify significant shortcomings, they must reflect those in a lower score for the relevant criterion**

Proposals requiring substantial modifications are not expected to pass the relevant thresholds !

-**Any proposal with scores above the thresholds and where there is sufficient budget will be selected as submitted**

Is there a **margin for making some recommendations?**

-Minor and specific corrections to be implemented without negotiation, e.g. timing of work package…

-Obvious clerical errors

Principes fondamentaux des évaluations

Excellence

-Proposals must demonstrate **high quality** in relation to the topics and criteria set out in the calls

Transparency

-Funding decisions must be based on clearly described **rules and procedures**, and applicants should receive **adequate feedback** on the outcome of the evaluation

Fairness and impartiality

-All proposals submitted in response to a call are **treated equally and evaluated impartially** on their merits, irrespective of their origin or the identity of the applicants

Efficiency and speed

-Evaluation, award and grant preparation should be done **as quickly as possible** without compromising quality or neglecting the rules

Ethics and security

-Proposals must not contravene fundamental ethical principles or relevant security procedures

Evaluation by independent experts

How are the evaluators selected?

European Commission database of experts

Register through the Participant Portal

Selection of experts

- High level of skill, experience and knowledge
- Independence and absence of conflict of interest

And **a balance** in terms of:
- geographical diversity
- gender
- where appropriate, the private and public sectors, and
- an appropriate ‘rotation’ from year to year.

In principle, each proposal will be examined by **at least three experts**

Presence of **one or more independent observers**

Experts that have a **conflict of interests** will be excluded by us !

FCH2 JU – Call 2018

Applicable rules

H2020

General Annexes to H2020

- List of countries eligible and rules for funding (Annex A)
- Admissibility and eligibility conditions (Annexes B and C)
- Types of action and funding rates (Annex D)
- Technology readiness level (TRL) (Annex G)
- Evaluation rules (Annex H)
- Open Access to research data (Annex L)

H2020-JTI-FCH-2018-1
Total budget: 73.2 M€

Publication date:
16 January 2018

Deadline:
24 April 2018

AWP

Annual Work Plan *"AWP 2018"*

AWP may introduce additional eligibility criteria

- Budget limit

List of countries and rules for funding – Annex A

Participation “Open to the World”

- Open for all legal entities established in third countries and for international organisations

Funding is provided for legal entities established in:

- Member States and countries associated to H2020
- A list of countries: Afghanistan, Algeria, … , Zambia, Zimbabwe
- Any other country:
  - **If** funding for that third country is explicitly foreseen in the Annual Work Plan
  - **Or if** provided under a bilateral scientific and technological agreement
  - **Or if** participation deemed by the FCH2 JU essential in the action

Assessed by experts during evaluation !

International cooperation

Evaluation rules – Annex H

Selection criteria

Financial Capacity:

Coordinator completes a self-assessment at the proposal stage

Operational Capacity:

Indicated by the experts, based on partners information:

- CV
- Previous publications/products
- Previous projects/activities
- Infrastructure and equipment
- Third parties contribution

Each individual participant has, or will have in due time, a sufficient operational capacity to carry out its tasks in the proposed work plan?

➔ If No, please list the concerned partner(s), the reasons for the rejection, and the requested amount

Evaluation rules – Annex H

Award criteria, scores and weighting

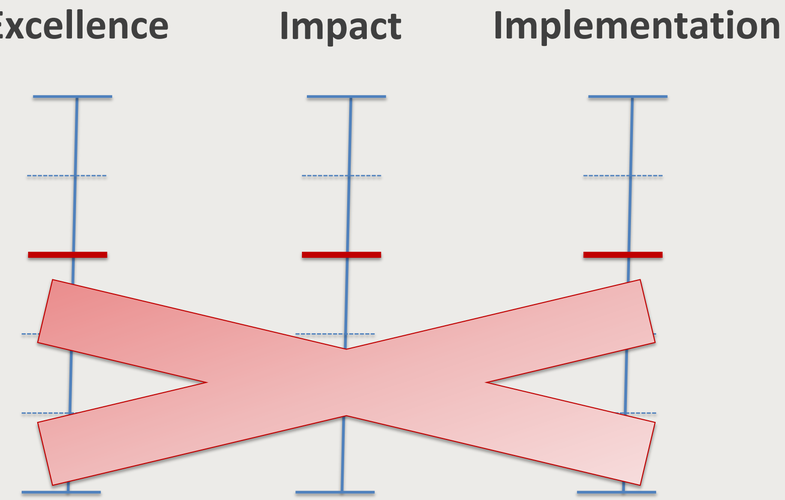
The proposals will be evaluated against the following **award criteria**:

- **Excellence**
- **Impact**
- Quality and efficiency of the **implementation**

Evaluation grid available in Annexe H

Scores, weighting and **thresholds**

Excellent	-	5
Very good	-	4
Good	-	3
Fair	-	2
Poor	-	1
		0



Thresholds apply to:

- Individual criterion, score must be ≥ 3
- Overall score must be ≥ 10

Interpretation of the scores

0 **The proposal fails to address the criterion or cannot be judged due to missing or incomplete information**

1 **Poor.** The criterion is inadequately addressed, or there are **serious inherent weaknesses.**

2 **Fair.** While the proposal broadly addresses the criterion, there are **significant weaknesses.**

3 **Good.** The proposal addresses the criterion well, although **a number of shortcomings** are present.

4 **Very Good.** The proposal addresses the criterion very well, **although a small number of shortcomings** are present.

5 **Excellent.** The proposal successfully addresses all relevant aspects of the criterion. Any **shortcomings are minor.**

Elements to be reflected in the evaluation

If a proposal

- is only **marginally relevant** in terms of its scientific, technological or innovation content relating to the [call/topic] addressed, the experts must reflect this in a **lower score for the Excellence criterion**
  - **No matter how excellent the science!**

- does **not significantly contribute to the expected impacts** as specified in the AWP for that [call/topic], the experts must reflect this in a **lower score for the Impact criterion**

- would **require substantial modifications in terms of implementation** (i.e. change of partners, additional work packages, significant budget or resources cut…), the experts must reflect this in a **lower score for the "Quality and efficiency of the implementation" criterion**

- *If cross-cutting issues are explicitly mentioned in the scope of the [call/topic], and not properly addressed (or their non-relevance justified), the experts must reflect this in a lower score for the relevant criterion*
  - *Proposals addressing cross-cutting issues which are not explicitly mentioned in the scope of the [call/topic] can also be evaluated positively*

Open Access to research data – Annex L

Open Access

Beneficiaries must ensure that any user can access, mine, exploit, reproduce and disseminate, free of charge :

- Underlying data
- Other data, as specified in Data Management Plan, which provides:
  - Data the research will generate
  - How to ensure its curation, preservation and sustainability
  - What parts of that data will be open (and how)

Costs covered by the grant

“Opt-out” possible

- Before or after GA signature
- Only if justified

Does not influence the scores given by the evaluators

As open as possible, as closed as necessary

FAIR Data:

- **F**indable
- **A**ccessible
- **I**nteroperable
- **R**e-usable

FCH2 JU – Call 2018

Applicable rules

H2020

General Annexes to H2020

There is no derogation from the H2020 Rules for Participation !

H2020-JTI-FCH-2018-1
Total budget: 73.2 M€

Publication date:
16 January 2018

Deadline:
24 April 2018

AWP

Annual Work Plan
"AWP 2018"

Additional eligibility criteria

<u>Max. Funding (relevant for 5 topics)</u>
"The maximum FCH 2 JU contribution …. proposals requesting FCH 2 JU contribution above this amount will not be evaluated"

Excellence

A éviter

- **Objectives** are general and not quantifiable;
- Not credible, lacking technical details on the proposed **approach**;
- Project is overly ambitious and the **approach** is not convincing;
- Insufficient evidence that the adopted approach takes into account the **state of the art** knowledge or the know-how acquired from past and currently running projects by some of the consortium members;
- **Clarity and relevance** of the proposal are weak;
- Low level of **innovation**, no **progress beyond SoA**;
- **SoA** and existing know-how is not fully described, and it is **not clear the current TRL**;

Excellence - Recommandations

Recommandations

- Vérifiez que la proposition est en lien direct avec le sujet
- Expliquez l'état de l'art et comment la proposition va au-delà de celui-ci (spécialement si la proposition continue de précédents projets toujours en cours)
- Définissez des KPI clairs, quantifiez-les et montrez comment vous allez les atteindre
- Déclarez clairement quelle est la science supportant le projet
- Expliquez le potentiel novateur et ce que votre proposition apporte de neuf par rapport aux projets / activités existants
- Donnez les détails d'éventuelles tâches déjà réalisées par les membres du partenariat – le projet ne commence pas par une feuille blanche !
- Montrez que le risque est limité (ou mesurez le degré de risque)

Impact

A éviter

- Impact **not adequately outlined**; The overall impact of this project **is expected to be low**;
- Expected impact **is not credible**, **no convincing plan is presented** to show how this will be achieved;
- Fail to explain **how the project would build on SoA to provide significant potential impacts** either technologically or academically;
- It is not clear **how the project will impact the industry;**
- **No gap analysis is provided** for the proposed technology;
- **Exploitation plan** is not provided/convincing/ lacks credible engagement of several partners;
- **Dissemination plan, IPR management** not addressed/not adequately reasoned out;
- **Targeted audience** and how, where and when a targeted audience will be engaged is not specified;

Impact - recommandations

Lien avec FCH2 JU

- Répondez aux impacts attendus listés dans l'appel à projets FCH 2018
- Comment le projet permet d'atteindre les objectifs du AWP/MAWP du FCH2 JU?

Au-delà…

- Mesurez l'impact ~~de la technologie~~ du projet spécifiquement, et précisez quelles seront les mesures/activités prises pour réaliser cet impact
- Quantifiez les impacts
- Incorporez les aspects socio-économiques (création d'emploi, investissements, etc.)
- Annoncez clairement les aboutissants du projet et comment ils seront utilisés
- Présentez dans le détail le plan d'exploitation des résultats, et la viabilité à long terme
- Détaillez le modèle économique (Innovation Action)

Plan de diffusion

- Identifiez ce que vous souhaitez communiquer, à qui, pourquoi, et comment
- Utilisez aussi les nouveaux moyens/méthodes de dissémination
- Décrivez l'open access aux données de recherche
- Incluez suffisamment de **livrables publics**
- Traitez les questions de propriété intellectuelle – IPR

Implementation

A éviter

- **Work-plan is poor and does not have an adequate structure**; **Details are missing**; Information about the overall governance and project management scheme is lacking;
- **No risk analysis** as well as **no flow chart** are provided;
- **Resource allocation** is not justified and is unbalanced; **Breakdown** of resources/cost categories is missing;
- **Limited number of milestones** that remain general and not appropriate;
- **Unbalanced consortium** towards Academia/Research - demonstrating **poor industrial support**;
- **Key expertise is missing in the consortium**, e.g. end users not included in the consortium;
- A clear **management structure and risk analysis plan** is not provided;
- Does not show **convincing mitigation or contingency plans**;

Implementation - recommandations

Le **plan de travail** doit être crédible et cohérent avec le type d'action, les défis et la méthodologie
- Liez tâches, responsabilités, livrables et ressources

Calendrier
- Les **jalons** (milestones) permettent un suivi du projet: mesurables et points de décision
- Vérifiez le timing des demonstrateurs (IA), les interdépendances entre tâches

Analyse des risques et plan de mitigation doivent être complets et crédibles. Pensez aussi aux risques techniques / administratifs

Budget: justifiez et détaillez les postes principaux, spécialement le recours à la sous-traitance
- Surestimation du budget / personnel = échec de la proposition
- Détaillez les postes budgétaires (équipement, voyages, etc.) ≥15% coûts de personnel
- Annoncez clairement la dépréciation et l'utilisation des équipements

Implementation - recommandations

Le **partenariat** doit répondre aux exigences de H2020 et de l ’appel à projets FCH 2018.

- Prenez en compte la **coopération internationale**, sujets avec IPHE.
- Veillez à la **dimension européenne** du projet: si le focus est trop déplacé sur un pays/une entreprise, alors une autre source de financement doit être trouvée.
- Construisez un **partenariat équilibré** (secteur et géographie) en lien avec la nature/taille/complexité du projet; et complémentaire, en évitant les partenaires fantômes/cosmétiques

Structure de gestion

- Soyez simple et efficace
- Identifiez les rôles, la composition, les interactions entre les différents comités
- Définissez la gestion de la qualité et suivi des performances

Structure of proposal

Part A

- General information
  - Abstract, panel and fixed keyword (if relevant),
  - **Declarations**, checklist questions
- Participants and contact persons: **data is read-only** from the Organisation Registry/PIC Validation database (URF/PDM)
- **Budget table** – specific per action types
- Ethics Issues Table: structured, reference to Part B

Part B and Annex

- Templates per calls/topics – **downloadable from the submission system!**
- Page limit will apply per attachments **(65+5 pages or 45+5)** - The check is based on pages of the PDF documents
- **Pages above the limits are made invisible**
- General constraints: 10 MB, PDF
- The complete proposal package receives an **e-receipt upon submission**
- **Annex:** Separate template for the **'Draft Plan for dissemination and exploitation of results'!**

Capacity and appropriate resources

The beneficiaries must have the appropriate resources to implement the action

If it is necessary to implement the action, they may however:

- **Purchase** goods, works and services – best value for money basis
- Use **subcontracting** to implement action tasks – best value for money basis
- Call upon "**Linked Third Parties**" to implement action tasks
- Use **in-kind contributions** (resources) provided by third parties against payment or free of charge

All major costs, third party involvement and subcontracting must be indicated in the proposal

Ethics

Background

"***A proposal which contravenes ethical principles*** *or any applicable legislation […]* ***may be excluded from the evaluation****, selection and award procedures at any time*." Art. 13 – H2020 RfP

Ethics Self-Assessment

- All proposals must describe ethical issues raised & how they will be addressed
- Each applicant is responsible for:
  - identifying any potential ethical issues
  - handling ethical aspects of their proposal
  - detailing how they plan to address them in detail

Think of:
- Personal data
- Third countries
- Environment & Health and Safety
- Dual use
- …

Guidelines

How to complete your ethics self-assessment guide

Intellectual Property Rights, IPR

- **Open access to research data**

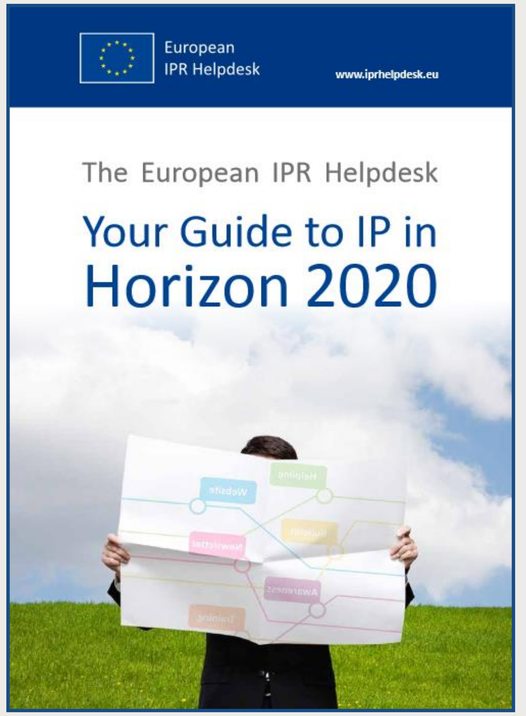
Obligation to provide open access to scientific publication and open data. Possibility to opt-out when justified

- **Access rights**
  - **Access rights of <u>affiliates</u>**

For *background* (art. 25.4) and for *results* (art. 31.4)
Under ‘fair and reasonable conditions’

  - **Access rights of the <u>EU institutions</u>**

For r*esults* (art. 31.5)
For developing or implementing EU policies/programmes
Royalty-free, non exclusive, limited to non-commercial / non-competitive use



‘Draft Plan for Dissemination and Exploitation of project results’

Measures to maximise impact of the project!

- **Compulsory part of the initial proposal (max 5 pages) – assessment within the Impact criteria!**

a) Dissemination and exploitation of results

- the ***area*** in which you expect to make an impact and ***who*** are the potential users of your results;
- ***how*** you intend to use the appropriate channels of dissemination and interaction with potential users;
- consideration to the possible follow-up of your project, once it is finished (including necessary additional investments);
- ***business plan*** where relevant, including possible additional activities (e.g. private funding in addition to the project);
- how the participants will manage the ***research data*** (IPR issues etc);
- strategy for ***knowledge management and protection*** (including open-access);

b) Communication activities

- proposed communication measures for ***promoting the project and its findings*** during the period of the grant;

Resources

- Research Enquiry Service
http://ec.europa.eu/research/index.cfm?pg=enquiries

- H2020 documents in Participant Portal
http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html

- Ethics in Participant Portal
http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/ethics_en.htm

- IPR in Participant Portal
http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/intellectual-property_en.htm

- European IPR Helpdesk
https://www.iprhelpdesk.eu/

Fact Sheet
IP Management in Horizon 2020:
at the proposal stage

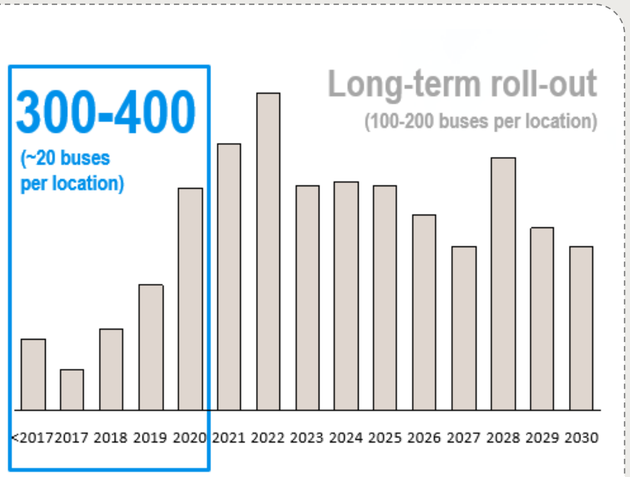
FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

Régions et villes hydrogène

Etude RolandBerger

Buses: Users and suppliers agree on the need for action

5 leading bus suppliers and 30 cities/operators have made clear public statements of their commitment to support commercialisation of FC buses



Overview FC bus deployment potential

Letter of Understanding of Bus Suppliers

Brussels, 12 November 2014

Letter of Understanding of Transport Operators and Public Authorities

Riga, 23 June, 2015

Objectives of the H2 regions and city study

Support regions in assessing various FCH applications

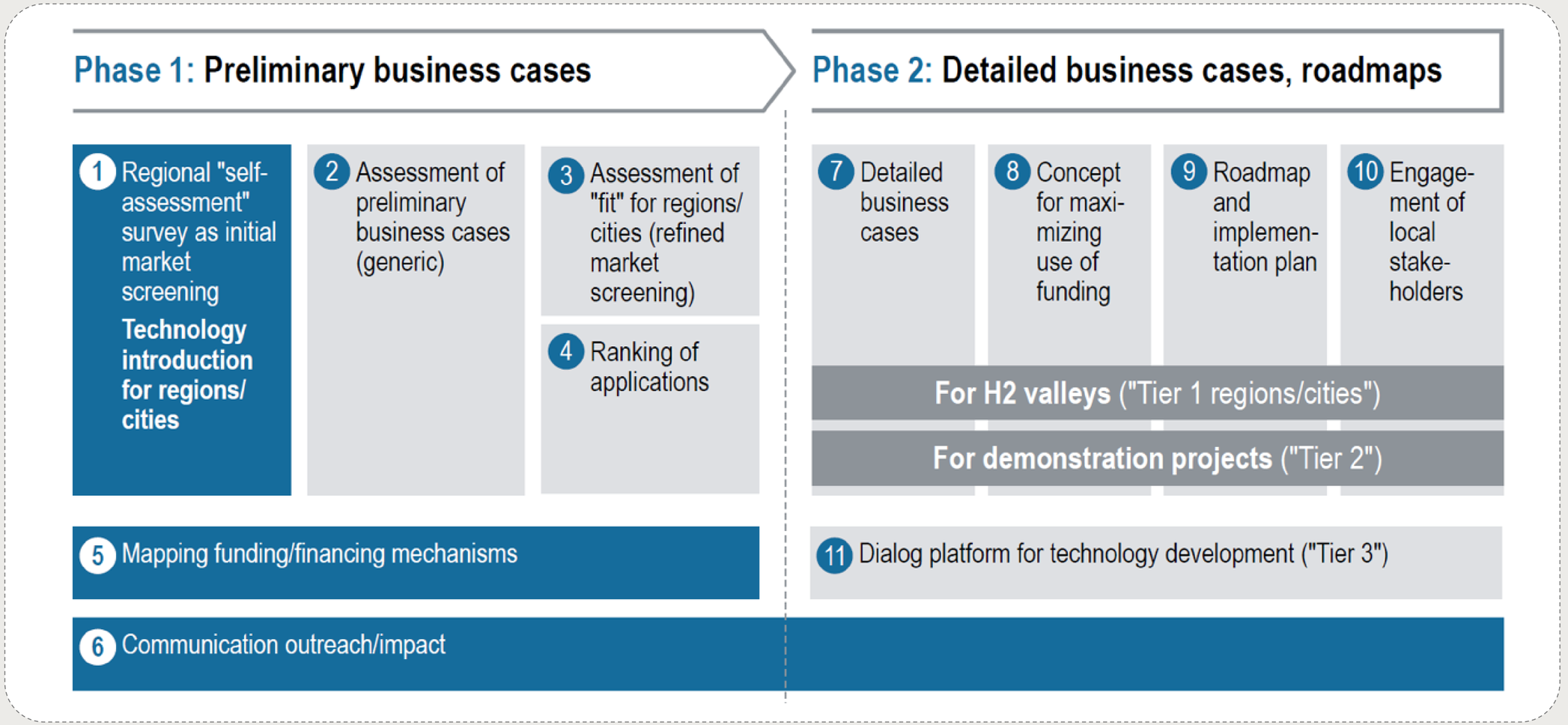
MoU Regions
Nov. 2016

Identify and maximize the use of regional and Europe-wide funding/financing options

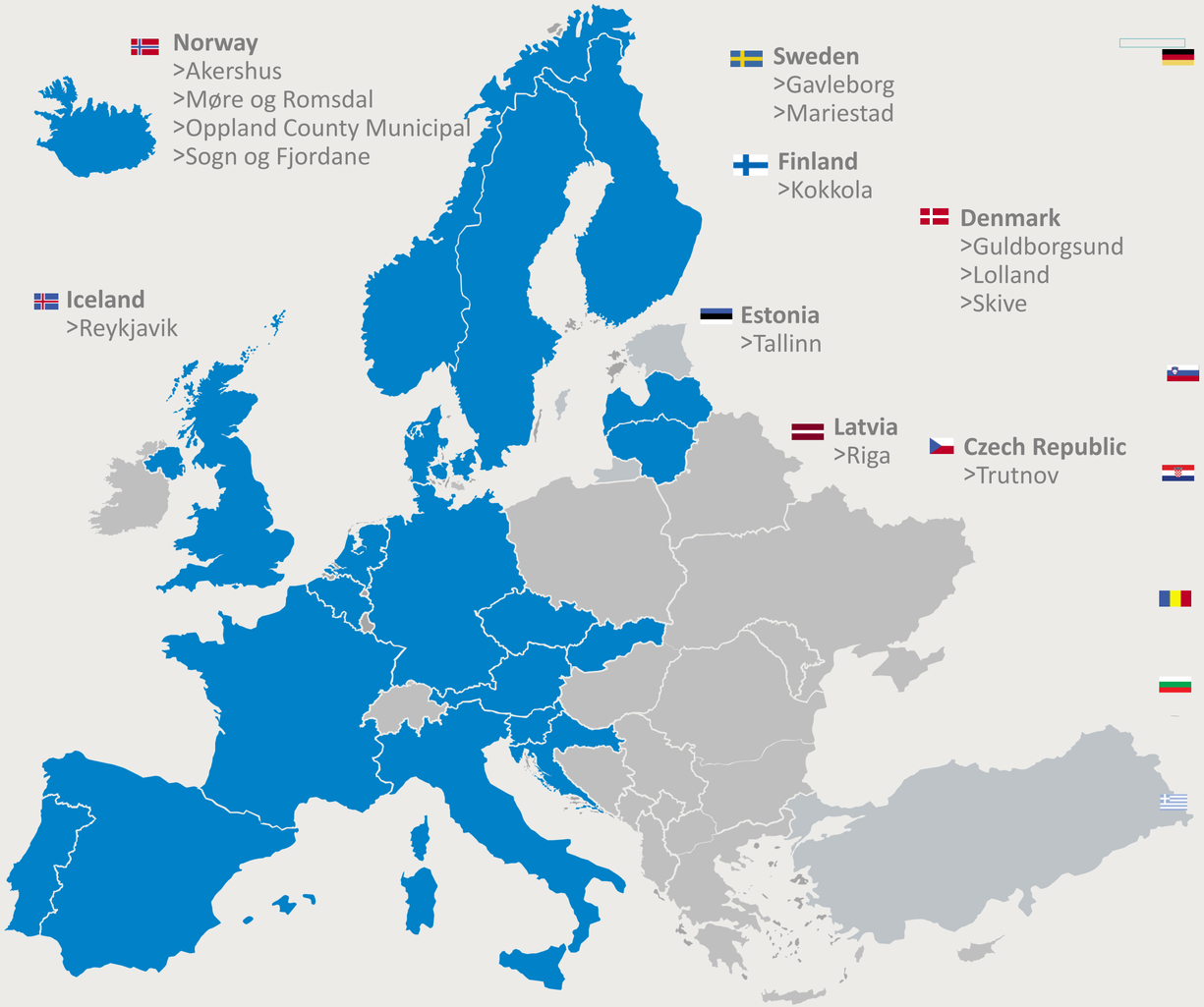
Develop roadmaps and concepts for the months after the study, prepeare and implement deployment projects from 2018

Support the participating regions/cities to engage their stakeholders

Methodology



90+ Regions from 20+ countries representing ca. one quarter of Europe participate in a study to develop business cases and lay the groundwork for future projects



Belgium
>Flanders
>Pom West-Vlaanderen

United Kingdom
>Swindon and Wiltshire
>Aberdeen
>Birmingham
>Cornwall
>Dundee
>Fife
>Leeds
>London (Greater London Authority)
>Newcastle
>Orkney Islands
>Oxfordshire
>Perth and Kinross
>Manchester
>Tees Valley

Norway
>Akershus
>Møre og Romsdal
>Oppland County Municipal
>Sogn og Fjordane

Sweden
>Gavleborg
>Mariestad

Finland
>Kokkola

Denmark
>Guldborgsund
>Lolland
>Skive

Germany
>Baden-Württemberg
>Bremerhaven
>Hamburg
>HyCologne-Hydrogen Region Rhineland
>Kreis Steinfurt
>Ilm-Kreis
>North Rhine-Westphalia
>Northern Ruhr area
>Heide region
>HYPOS (East Germany)
>Saxony-Anhalt

Iceland
>Reykjavik

Estonia
>Tallinn

Latvia
>Riga

Czech Republic
>Trutnov

Slovenia
>Velenje

France
>Auvergne Rhone-Alpes
>Auxerre
>Bourgogne-Franche-Comté
>Centre-Val de Loire
>Grenoble
>Grand Dole
>La Roche sur Yon
>Normandie
>Nouvelle-Aquitaine
>Occitanie-Phyrenees
>Orléans
>Pays de la Loire

Spain
>Aragon
>Barcelona
>Cantabria
>Cartagena
>Castilla – La Mancha
>Murcia
>Port of Valencia
>Puertollano
>Valladolid
>Castilla y Leon

Italy
>Lazio
>South Tyrol
>Favignana
>Torino
>Venice
>Toscana

Croatia
>Split
>Split-Dalmatia County

Romania
>Constanta

Bulgaria
>Bulgarian Ports
>Sofia

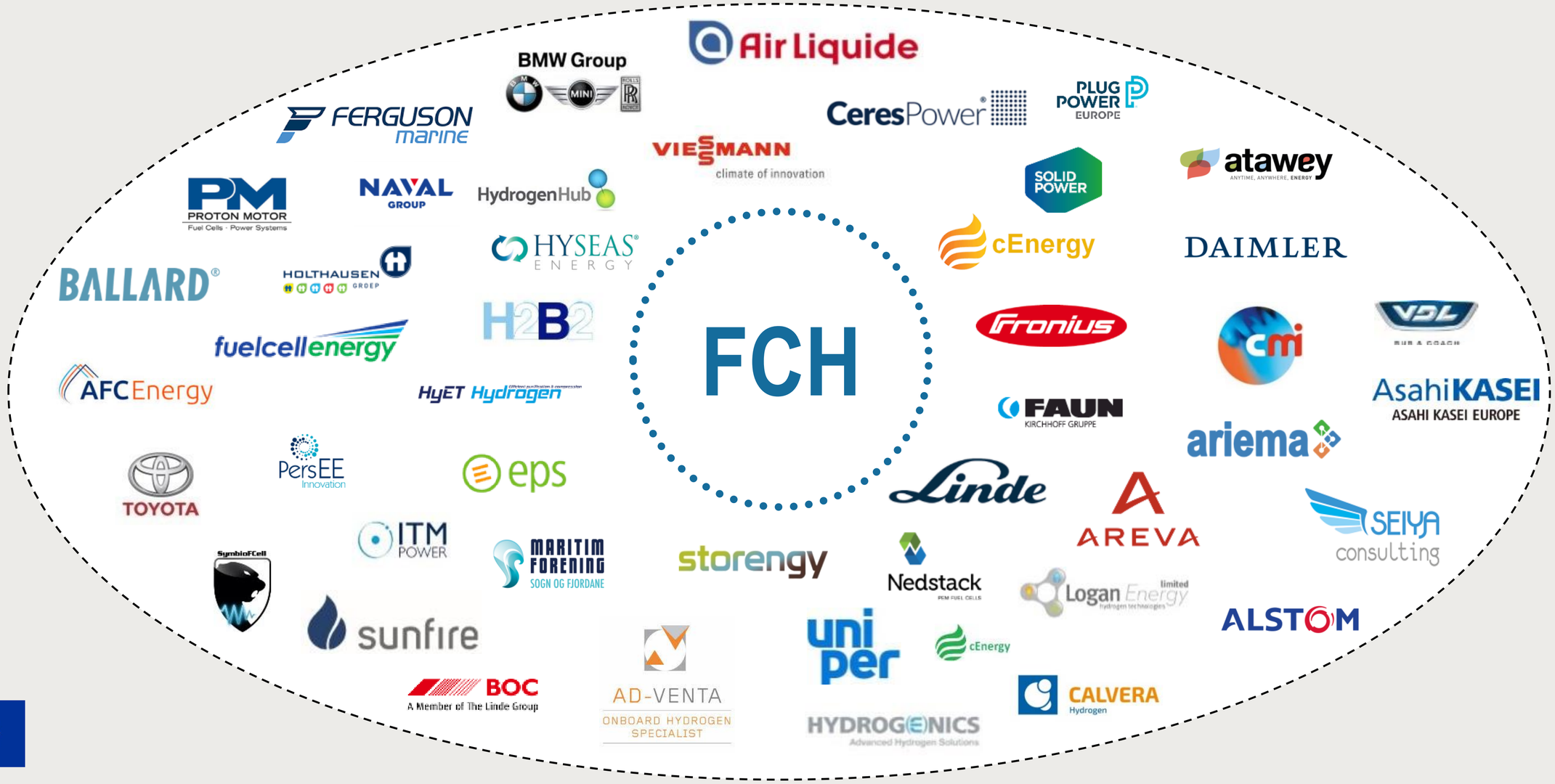
Portugal
>Torres Vedras
>Médio Tejo

Netherlands
>Assen
>Emmen
>Groningen

Austria
>Tirol

Greece
>Alimos
>Agia Paraskevi
>Ierapetra
>Kozani
>Milos
>Vrilissia
>Heraklion
>Western Macedonia
>Papagoou-Halargos
>Region of Crete

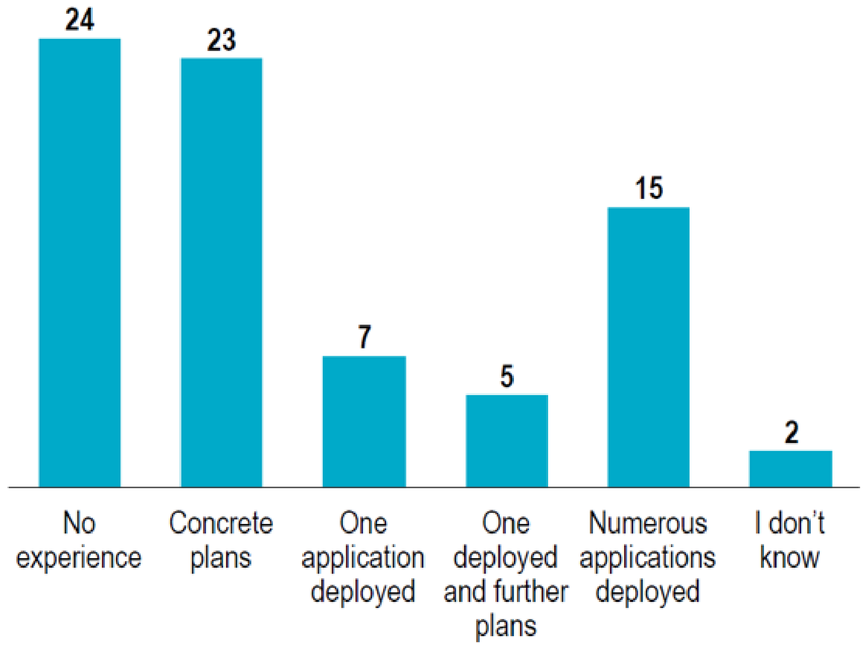
Over 50 FCH industry players at present



Limited experience with FCH applications within regions/cities

General Experience

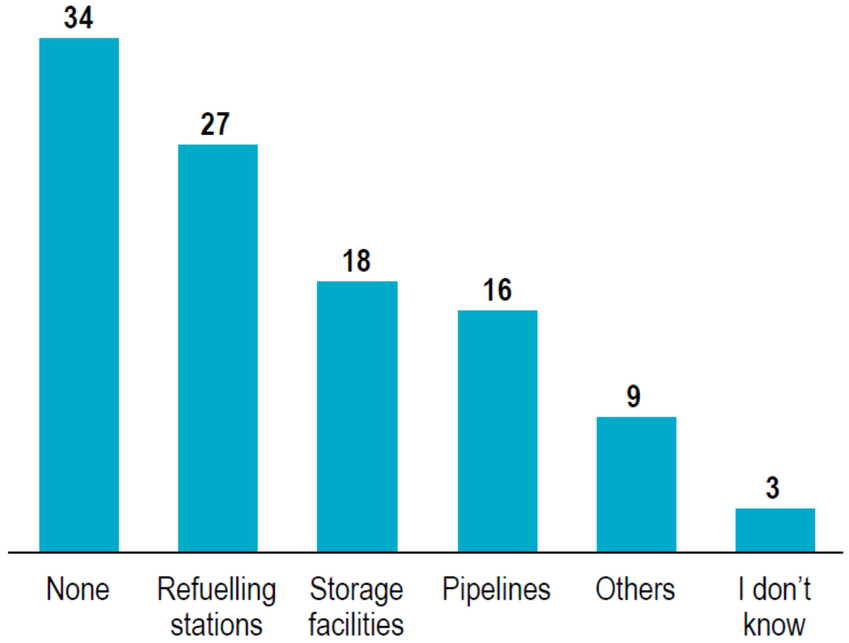
Question: "What is the experience of your region/city regarding the deployment of FCH applications?" (n=76)



1) Averaged value on a 5-point Likert scale (n=74)

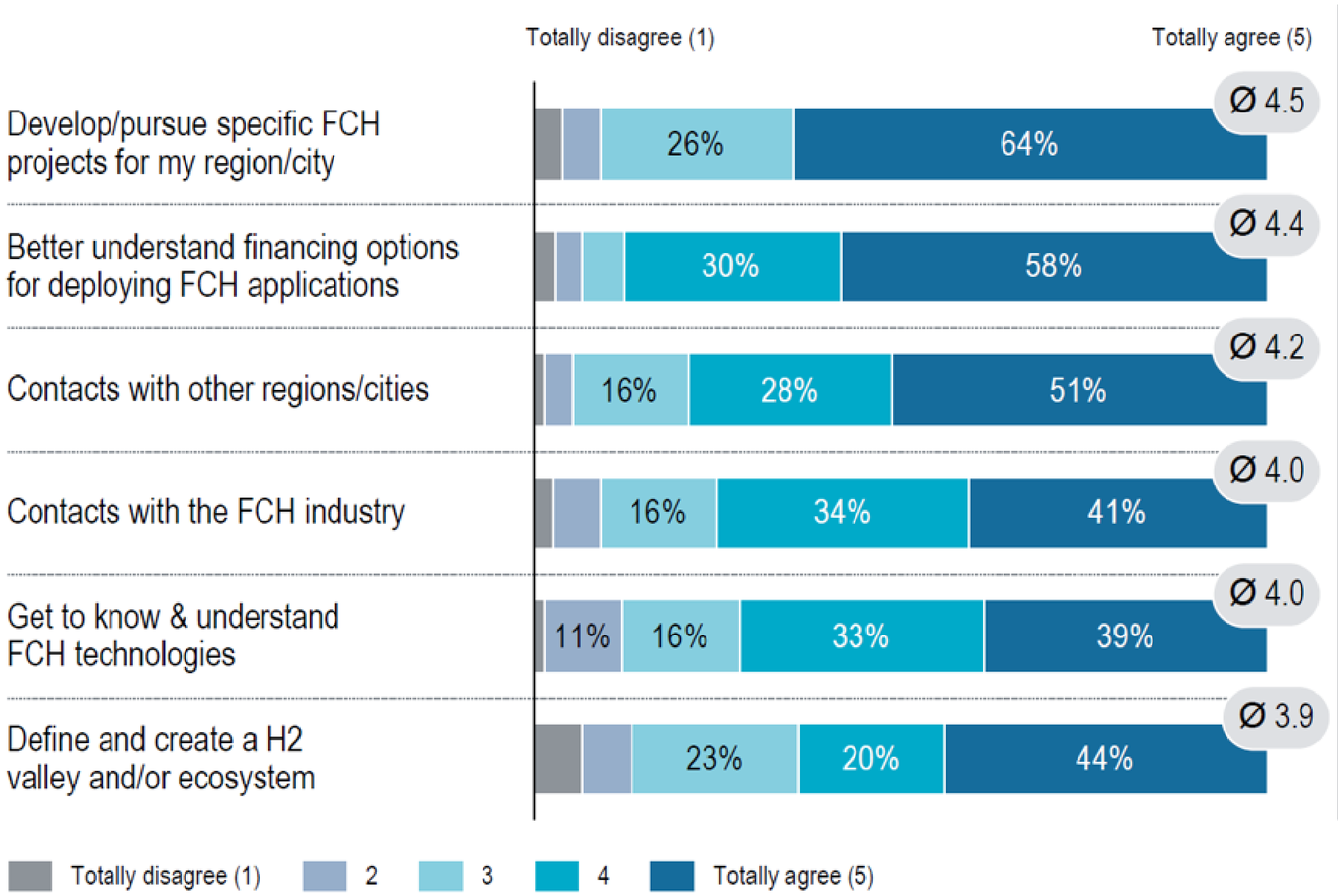
Infrastructure in place

Question: "What hydrogen infrastructure does your region/city have in place?" (n=76)



Strong interest in pursuing concrete FCH projects and exploring FCH financing options

Reasons for participating in the study?



1) Question: "Please evaluate the following reasons for participating in this project" (n=74-76)

Other reasons (selection):

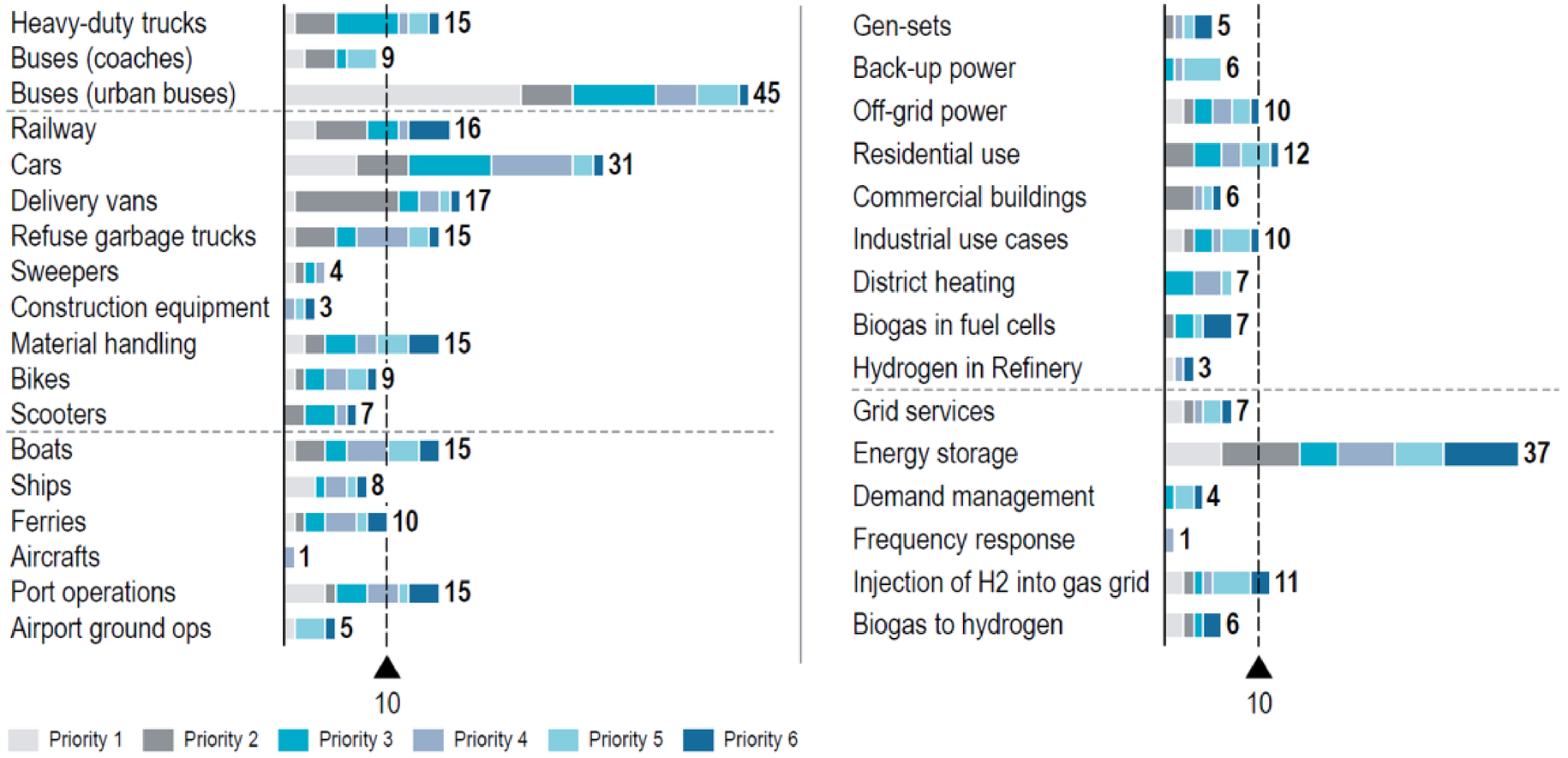
"Communicate internally and increase buy-in across departments within municipality"

"Develop approaches to public acceptability"

"Specify funding needs to be considered for future policies"

"Overview of Pro`s and Con`s of H_2 compared to other energy carriers"

Buses, cars and energy storage accumulated the highest interest while a number of applications were hardly mentioned

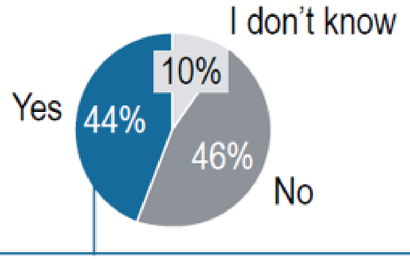


1) Question: "Please rank up to six FCH applications according to their potential for future deployment in your region/city" (n=69)

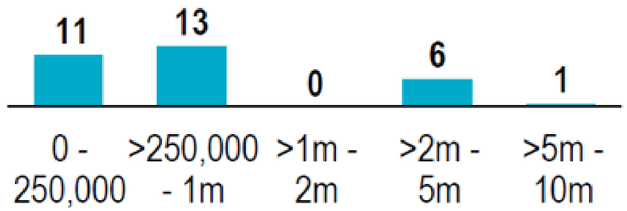
46% of participants have no internal FCH budget available yet, but the averaged 5-year project spent is projected to more than double

Current situation

Question: "Does your region/city have internal budgets available for implementing FCH application deployment projects?" (n=72)

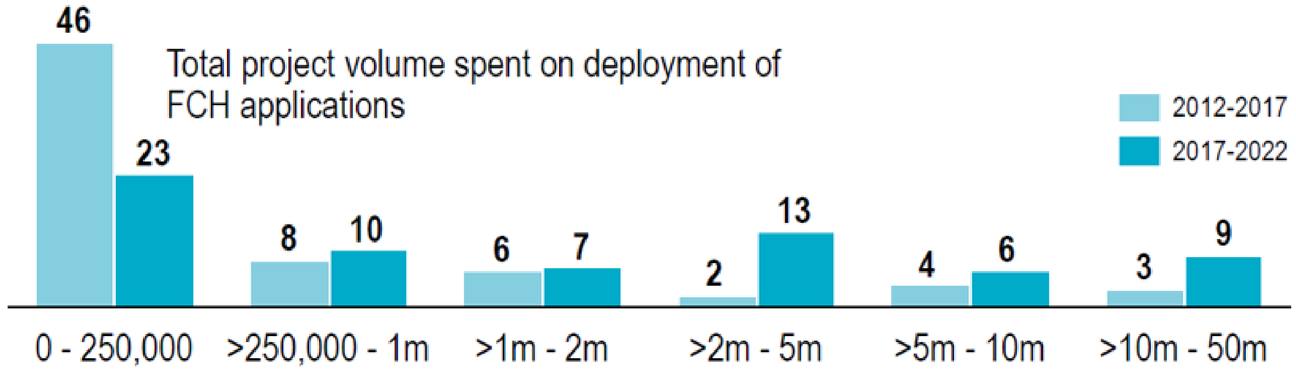


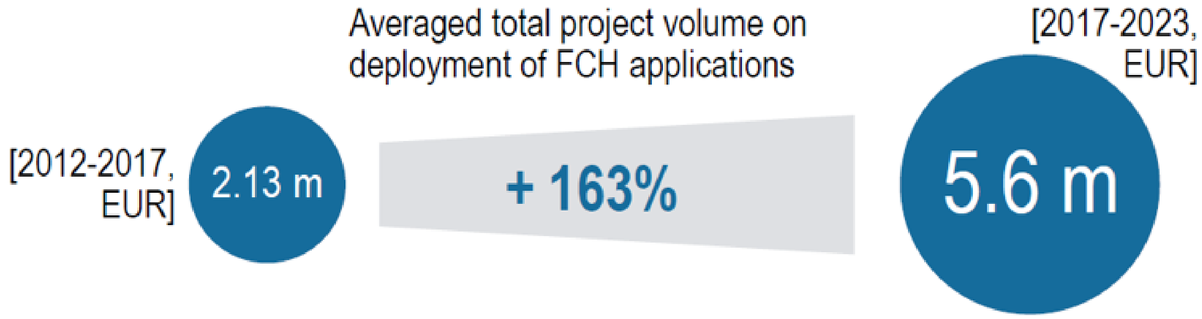
Question: "What is the aggregated volume of your internal, FCH-related budgets per year [EUR]?" (n=31)



Track-record and future ambitions

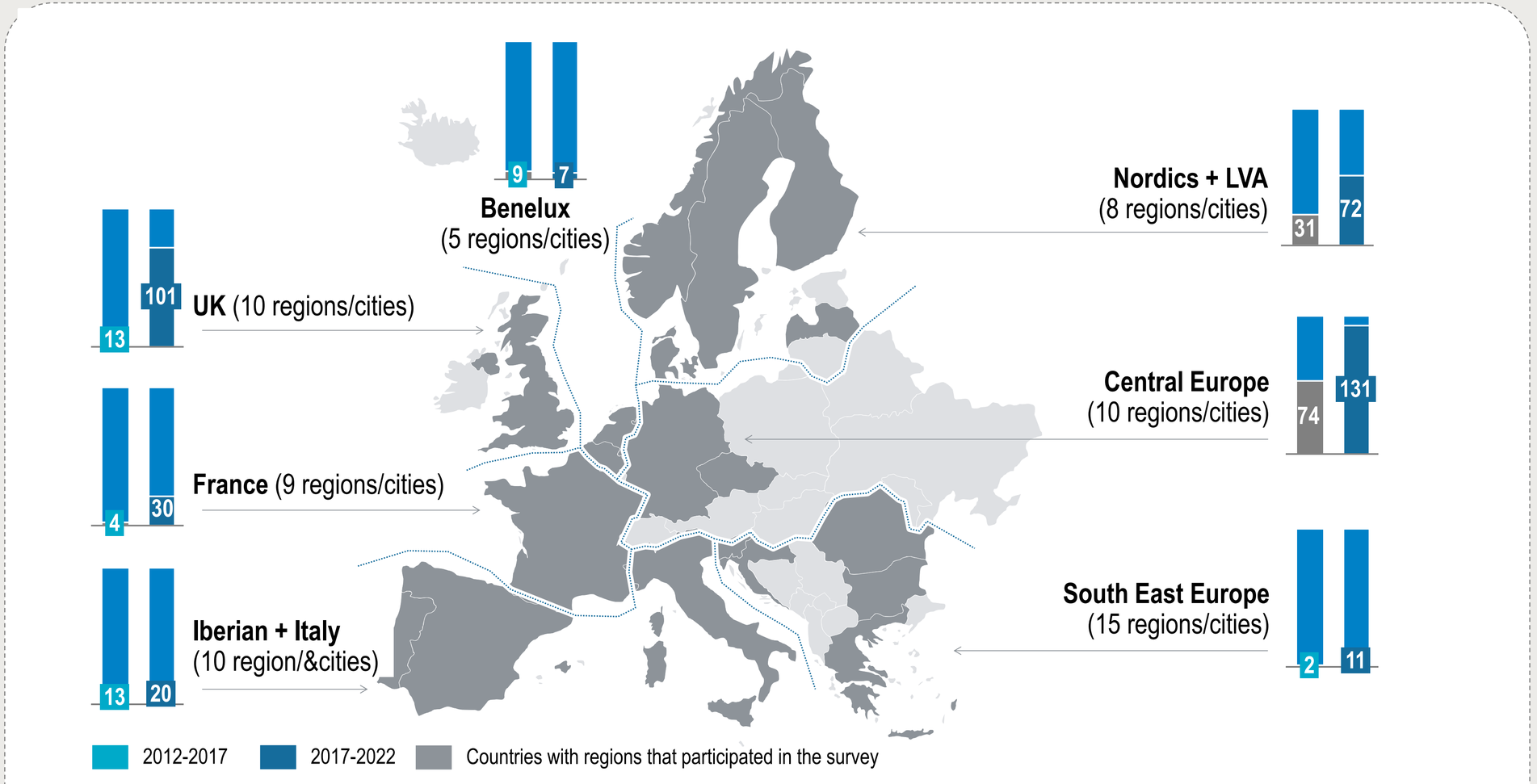
Question: "What total project volumes did your region/city spent on the deployment of FCH application over the last five years (2012-2017, n=69) how much is planned (2017-2022, n=68) [EUR]?"





Considerable future FCH projects are planned all over Europe (2017-2022), especially in Central Europe, Nordics and UK

Survey results – Total estimated project volume[1)] [m EUR] – APPROXIMATION

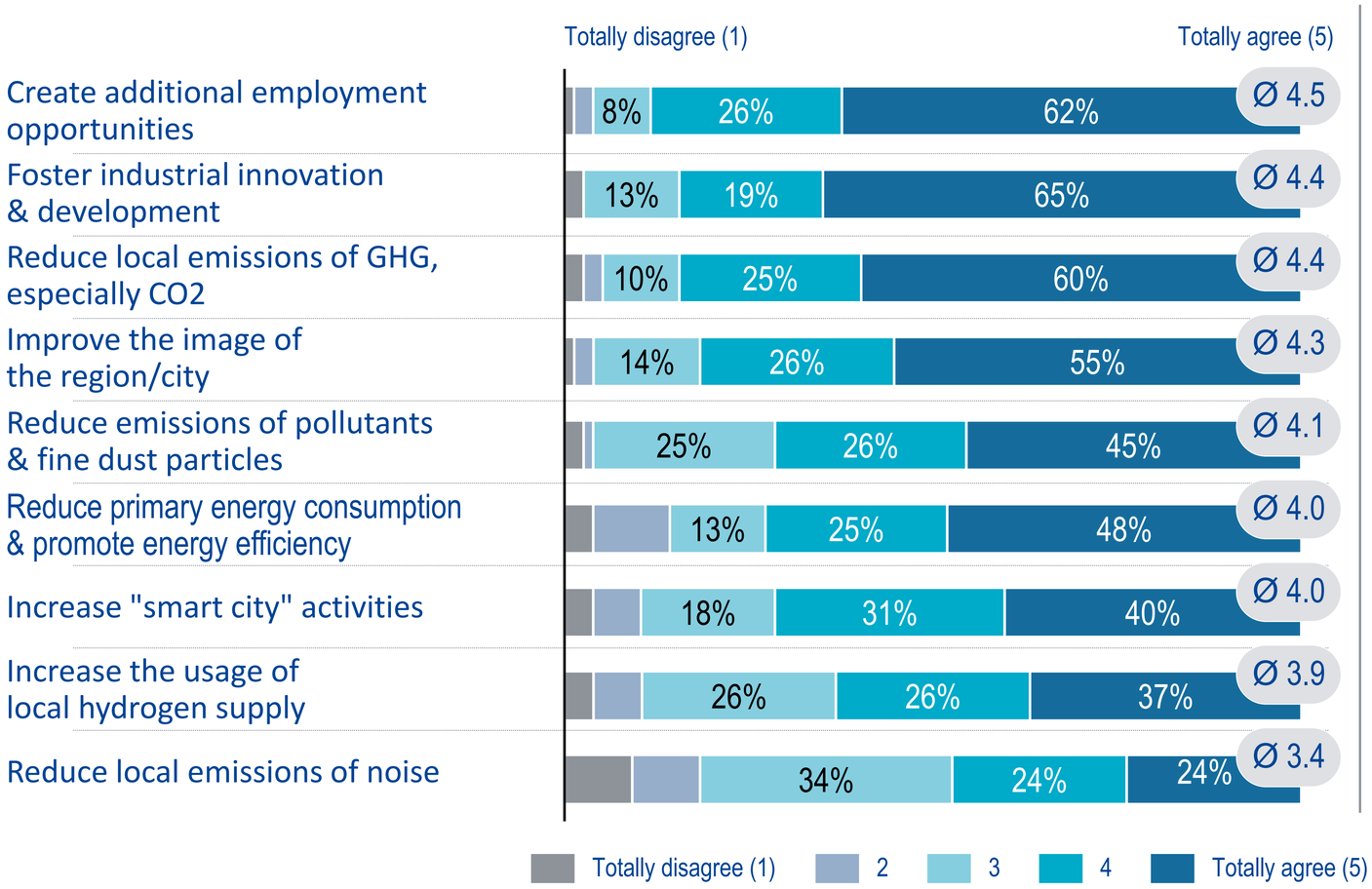


1) Overall project volume in each geographic cluster calculated as sum of all aggregated project volumes of regions/cities; # of regions/cities refers to those with answers to this question

Source: FCH2 JU, Roland Berger

The strongest drivers for pursuing FCH applications are industrial innovation & development as well as employment creation

Survey results – Reasons for pursuing FCH applications[1]



Other reasons (selection):

"Boost scientific research and innovation"

"Unlock grid constraints and make better use of renewable generation"

"Usage of excess renewable energy"

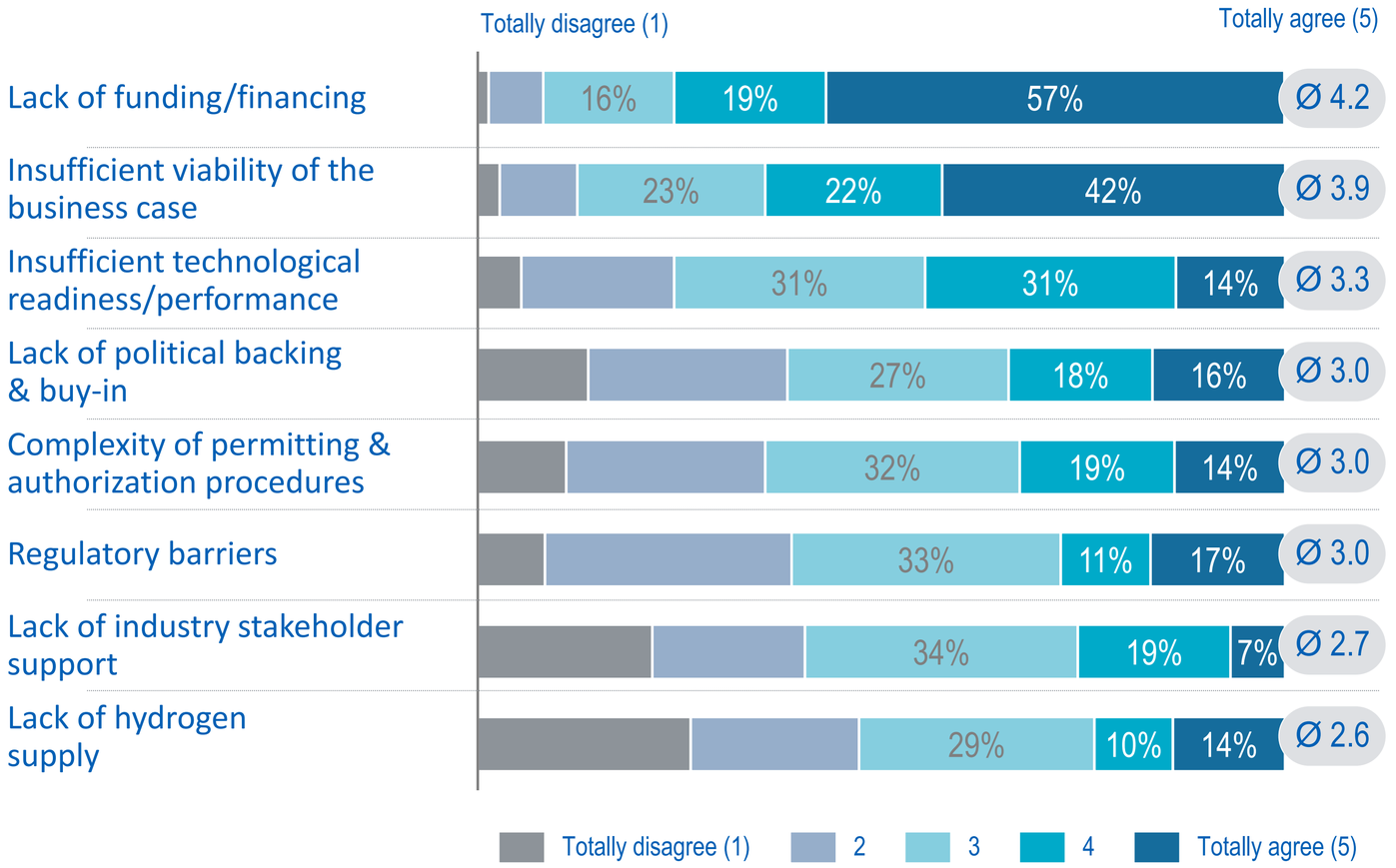
"Increase smart, sustainable living using resources at hand"

1) Question: "What are your region's/city's main reasons for pursuing FCH applications? How relevant and important are typical drivers for FCH technologies to you, also compared to one another?" (n=76-77)

Source: FCH2 JU, Roland Berger

Funding/financing as well as business cases are the most acute challenges to the successful deployment of FCH applications

Survey results – Hurdles and challenges posing obstacles for FCH deployment[1)]



Other reasons (selection):

"Lack of skilled local people"

"Missing public awareness"

"Lack of time"

"Insufficient coordination between different initiatives"

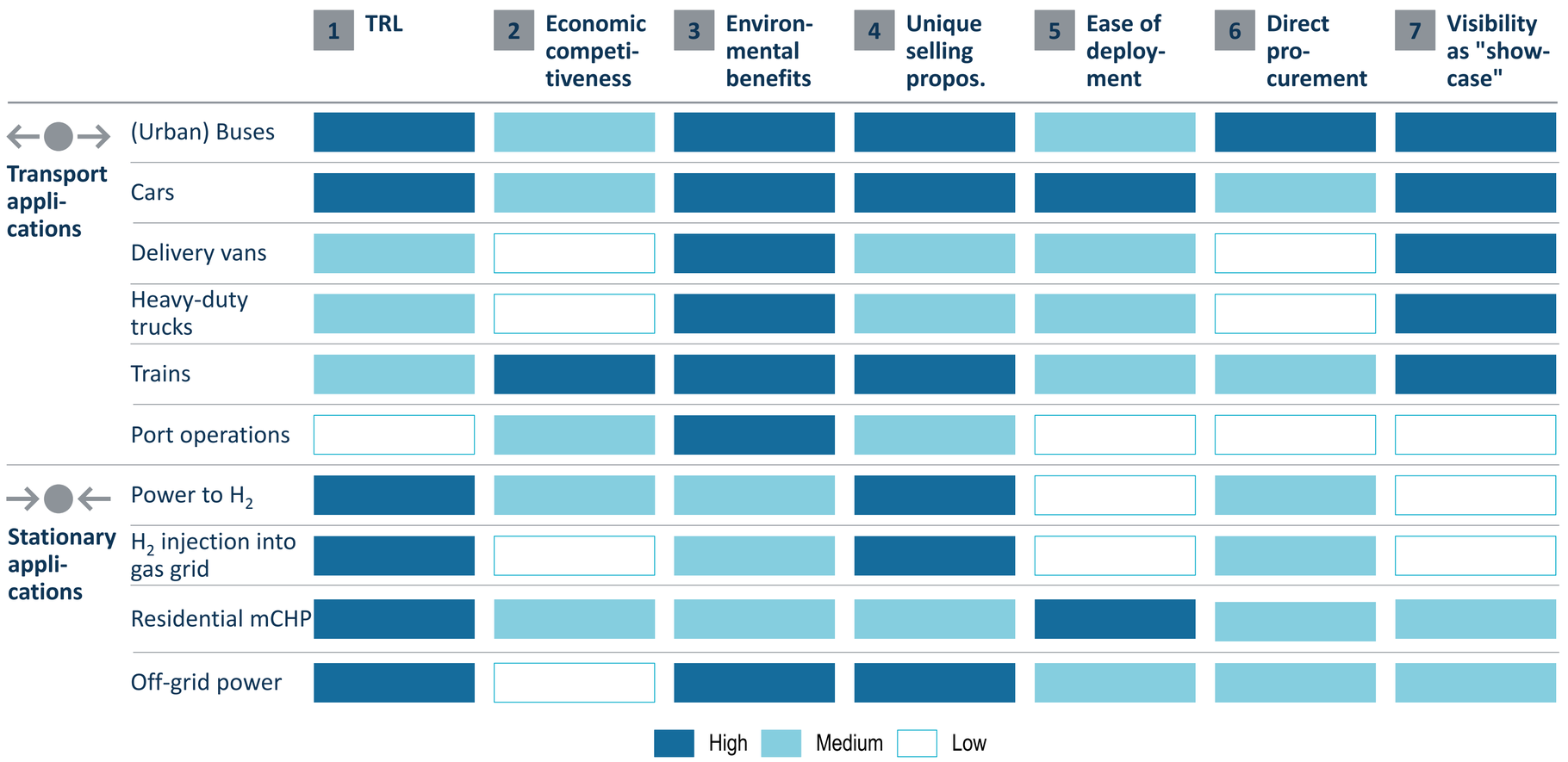
"Large area with small population density"

1) Question: "Within your region/city, which hurdles and challenges currently pose obstacles to the deployment of FCH applications?" (n=72-74)

Source: FCH2 JU, Roland Berger

The FCH applications in scope are heterogeneous – Different tech. readiness, economic competitiveness and deployment complexity

Evaluation results of 10 FCH applications[1] on seven key dimensions



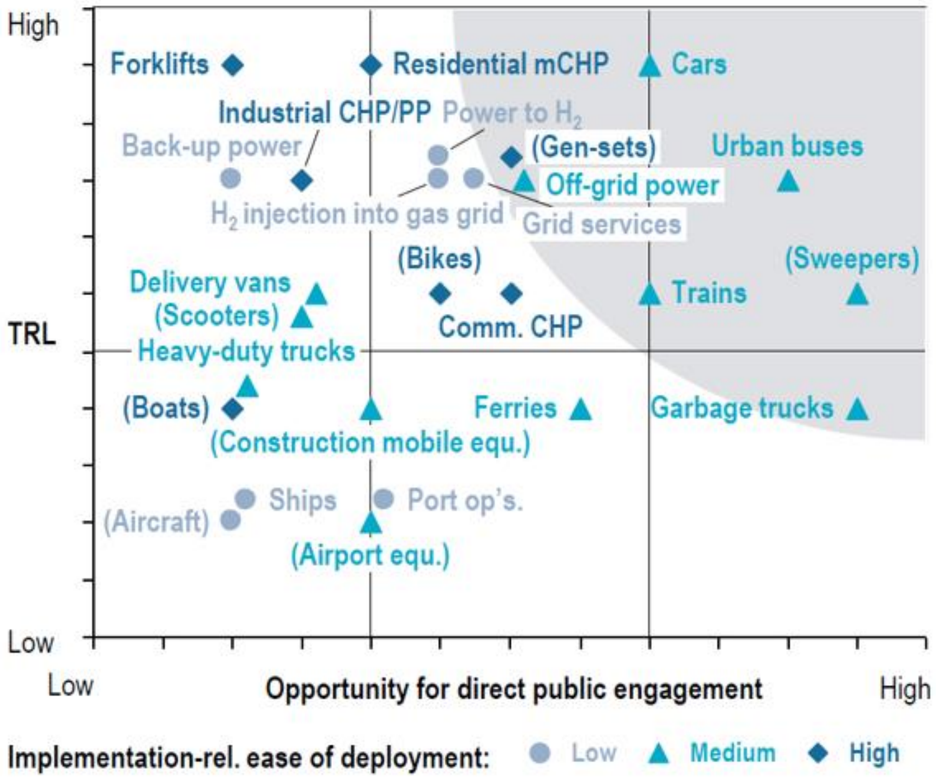
1) Please note that the selection only contains the ten top-ranked applications as stated by the Regions and Cities in the initial self-assessment survey (June 2017)
2) Results differ depending on location, time horizon, benchmark technology as well as specific use case under consideration

Some applications can be deployed in the short term, as they are comm. available and implementation lies within in the public domain

Short-term deployment opportunities for regions and cities

Indicative

What applications can I deploy tomorrow?



Key considerations

- In the short term, cities and regions can look for high **TRL applications** for actual deployment projects
- **Public infrastructure sectors** are well suited for deployment of applications because of direct control of public authorities (e.g. publically-owned local/regional transport operators or utilities)
- Cities and regions can reduce complexity in multi-stakeholder settings by acting as **direct customers** of industry

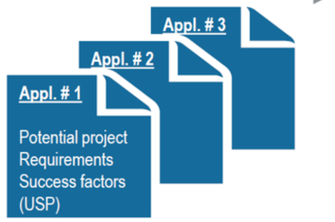
1) Results differ depending on location, time horizon, benchmark technology as well as specific use case under consideration

2) Applications in parentheses are still to be discussed within Working Group Calls

Source: FCH2 JU, Roland Berger

Merging the diversity

Summary of prel. business cases



> Helps to **paint a clear picture** of the individual application
> Highlights the potential way forward in future projects per application
> Specifies the minimum conditions necessary to implement successful projects

Reflection process and Q&A call[1]

> Helps to **see its own region or city** in a comprehensive perspective
> Identification of exemplary future projects as good fit for the region's/cities way forward
> Comparison of summaries to local and regional strategies
> Clarification of open questions

Application ranking

1	Application # 6
2	Application # 4
3	Application # 8
...	…
10	Application # 23

> Helps to **prioritize the region's and city's interest** in hydrogen applications and future projects accordingly
> Defines the basic applications to construct successful hydrogen valleys
> Indicates hydrogen application landscape and potential demand for industry (market sizing)

1. Access FCH projects

How to …

> Identify **local use cases** for hydrogen
> Identification of **enabling stakeholders** and engagement strategies
> Drafting of **hydrogen strategies and roadmaps** (key dimensions, questions, must-haves, winning political and industry support, etc.)

2. Advance FCH projects

How to …

> Elaborate on **local synergies** of hydrogen application use cases
> Grow FCH activities beyond first application(s) or even create a **strategic concept** for a hydrogen valley
> Engage in **demo projects** and real life prototyping to gather experience and insights with applications

3. Build FCH ecosystems

How to …

> Define **strategies for hydrogen valleys** in line with existing policies
> Initiate **public procurement** processes for first sizable fleets/applications
> Conduct **lighthouse project** financing and share knowledge amongst FCH stakeholders

4. Grow role of industry

How to …

> Consider learnings from prelim. business cases and **implications for future deployment** projects
> Shape the **role of industry** in future hydrogen valley concepts
> Define **new business models** for hydrogen supply/storage to make local ecosystems more attractive

The funding tool allows for detailed analysis of existing grant funding opportunities on a simple and user-friendly platform

60+ funding programmes included …

.. 30+ countries and 270+ individual regions covered

… on average EUR 1.96 m potentially accessible per project and programme[1]

Scope and content

> Focus on **non-repayable grant funding** opportunities on national and European level

> Detailed content regarding the available **budgets and funding conditions**

> Custom search filters to achieve maximum **fit with individual needs** of Cities and Regions

1) Avg. amount of mean funding volume per project and funding programme

Tool format and timeline for implementation

> Funding and financing navigation tool set up in MS Excel, for user friendly access

> Easy to navigate between "funding programme fact sheets" for detailed insights into available sources

> Possibility to search via filter or open text to assure customization of search requests

till mid-Oct.	Oct.-Nov.	Nov.-Dec.	from Jan.
Finalization of database entries by Roland Berger team	Tool open for first user trial run and feedback loop (content and design)	Inclusion of feedback, completion of database	Go-live of final tool

First glance (1/2): cockpit

Funding and Financing Navigation Tool

Cockpit

Your Filter

Country*: United Kingdom

Region*: Cornwall and Isles of Scilly

Project beneficiary: Commercial business; SME[1]; Public entity[2]; NGO; Academic institution; Other (incl. PPP)

Desired funding[3]: < EUR 2 m; EUR 2 m – EUR 5 m; EUR 5 m – EUR 10 m; > EUR 10 m

Co-funding required: Yes; No

FCH application/sector: Light- and medium duty transport

Open search: zero emission

Get results

Get results

1) Specialized SME grants are available
2) incl. state-owned entities
3) Hint: select higher range (when in doubt) to increase pool of potential instruments displayed

Your Results

Name	Total entity-based
ManagEnergy	n.i.
NER400	-
Cohesion fund	63.400,00 EUR m
Connecting Europe Facility - Transport	24.050,00 EUR m
Connecting Europe Facility - Energy	5.350,00 EUR m
European Institute of Innovation & Technology (EIT)	2.700,00 EUR m
Innovate UK	2.063,41 EUR m
Financial Instrument for the Environment (LIFE) - Action Grants	373,00 EUR m
Urban Innovative Actions	372,00 EUR m
Interreg Europe	359,00 EUR m
CIVITAS 2020	250,00 EUR m
FCH2 JU	116,00 EUR m
URBACT III	96,30 EUR m
Low Carbon Infrastructure Transition Programme	87,12 EUR m
Financial Instrument for the Environment (LIFE) -NGO	38,80 EUR m
ELENA EIB	20,00 EUR m
LIFE operating grants	18,00 EUR m
European Maritime and Fisheries Fund	340,00 EUR m

The agreed-upon application framework for Phase 2 comprises five top mobility applications and H_2 production as cross-cutting topic

Application scope for Phase 2 based on consolidated ranking

1 Five FCH mobility applications as focus for detailed business cases

> Buses
> Cars
> Delivery vans
> Garbage trucks
> Trains

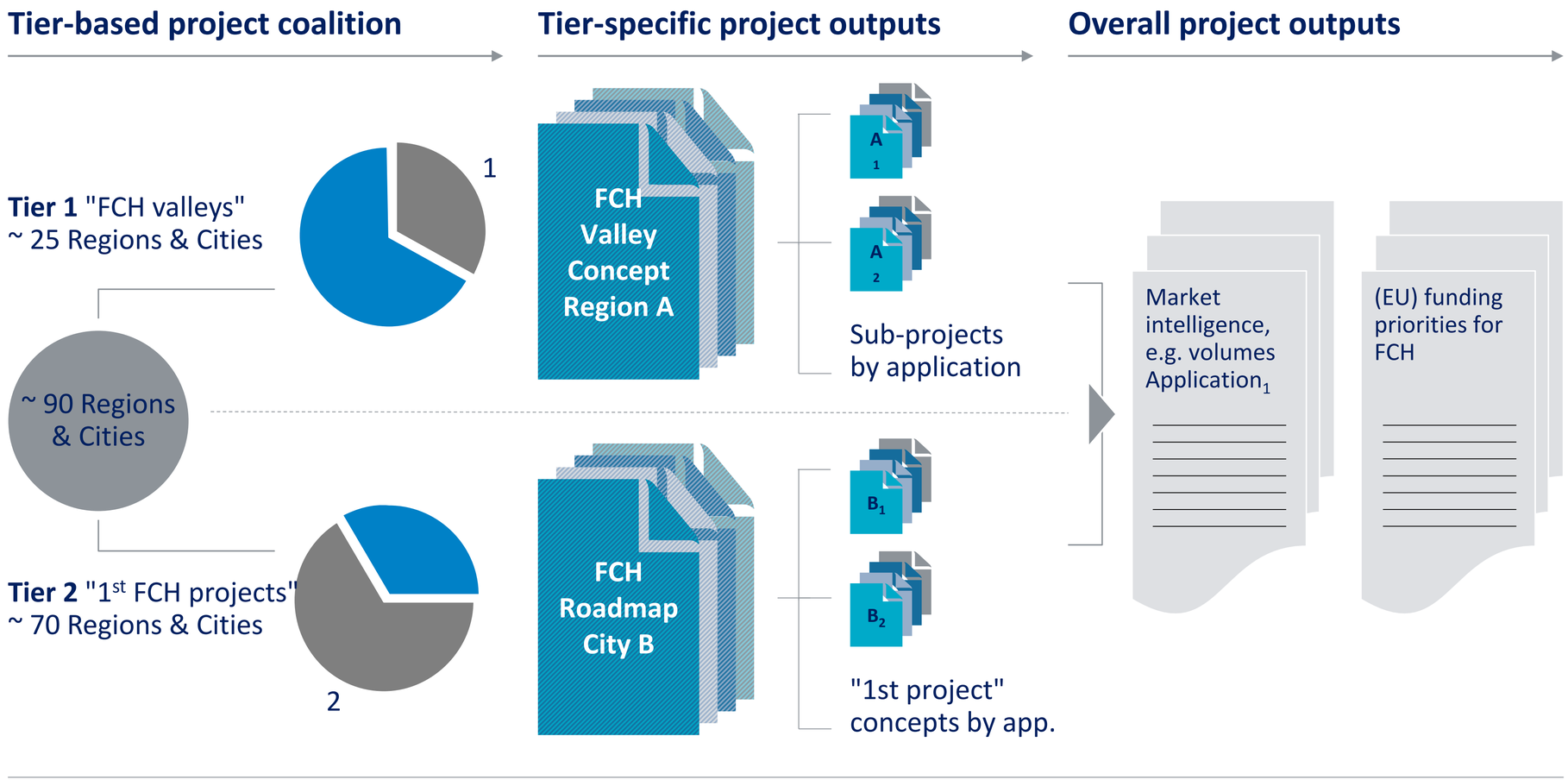
2 Selected further applications as focus for technology development dialog platform

> Heavy-duty transport
> Maritime applications
> Commercial buildings

3

(Green) hydrogen production as cross-cutting topic for both consideration in detailed business cases as well as development of project concepts and roadmaps in Phase 2 of the project – for the latter also including a view on secondary applications (depending on interest in the coalition)

The coalition will be divided into two tiers – Target outputs are valley concepts, roadmaps and project ideas, market/funding intelligence



Regions & Cities develop, RB facilitates & supports in the process, FCH industry assists with experience and expertise

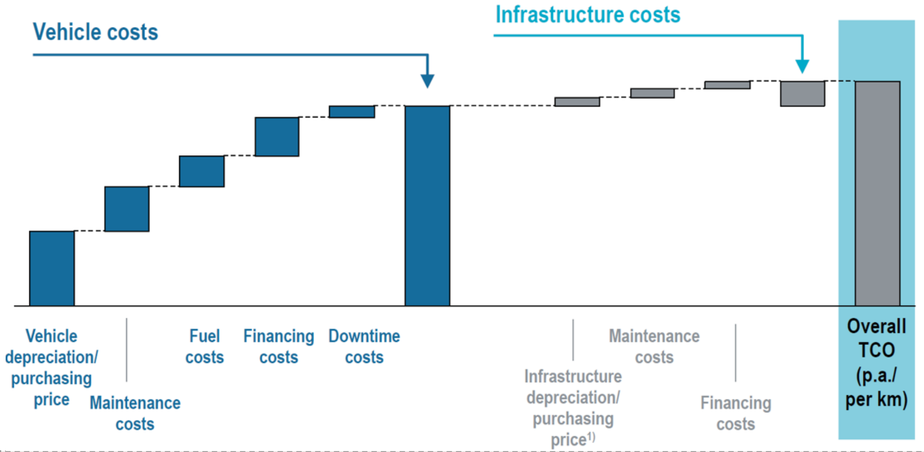
Objective of the detailed business case module is to support participants in assessing their individual FCH deployment costs

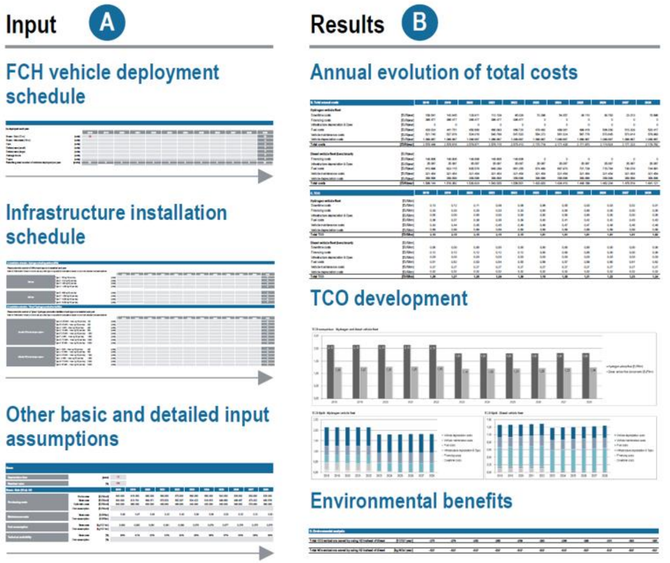
Main objectives

- **Provide an FCH business case framework that can be adjusted** to local FCH deployment project scope and framework conditions
- Support Regions and Cities in calculating individual FCH deployment project costs to **identify financing needs** and **provide a base for local decision-making**
- **Facilitate deeper understanding on main cost drivers** of business cases and main areas with need for further analysis during project development

Key contents

- **Time horizon:** Calculate FCH deployment costs for the next 10 years – Focus on projects to be initiated in next 3 years
- **Selection of applications and infrastructure options:** Choose individual project configuration based on pre-defined selection of applications and infrastructure options
- **Input parameters:** Adjust all main input parameters according to individual needs
- **Scenarios:** Look at future cost developments for main CAPEX items in different cost development scenarios
- **Benchmarking:** Compare cost implications of FCH deployments against conventional diesel technology
- **Environmental benefits:** Develop a view on CO_2 and NOx emission reduction by FCH deployments





Overview of regional workshops

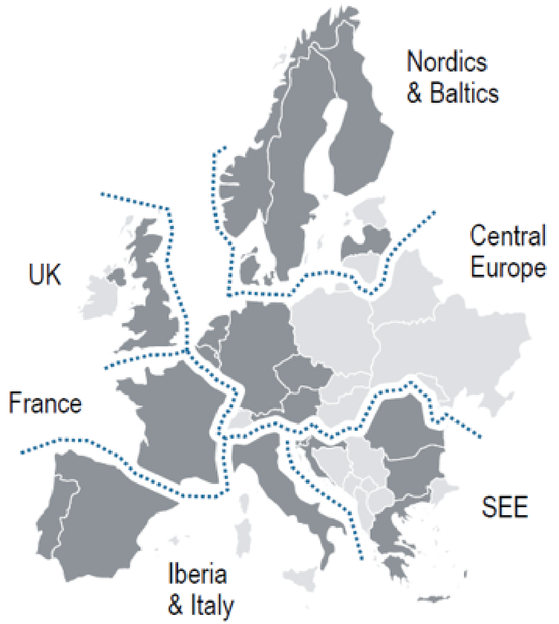
Dates for the regional workshops

Workshops	February 07	08	09	March 10	11
Iberia & Italy – Puertollano Host: CNH2	◆ 14.02.2018				
Central Europe – Leipzig Host: HYPOS		◆ 20.02.2018 *(together with HYPOS conference)*			
Nordics & Baltics – Oslo Host: Akershus Region		◆ 22.02.2018			
SEE – Athens Host: Municipality of Vrilissia			◆ 01.03.2018		
UK – London Host: Greater London Authority				◆ 09.03.2018	
France – Paris Host: AFHYPAC			*(together with AFHYPAC Regions Working Group meeting)*		◆ 13.03.2018
H_2 Valleys – Frankfurt			◆ 27.02.2018		

You are free to participate in any of the workshops offered – Register now and spread the word also to interested stakeholders outside the coalition!

Registrations are open on http://www.fch.europa.eu/event/local-workshops-fch-ju-regions-and-cities-initiative

Meetings organised for each of the six geographical clusters:



Status of the study