

# PUBLIC-PRIVATE FINANCING OF HYDROGEN REFUELLING INFRASTRUCTURE



Fostering a better life  
through sustainable mobility

*IPHE Workshop – December 3rd*

*Sacha Kley – Ernst & Young Sustainable Performance & Transformation*

**EY**

**Building a better  
working world**

# WHAT IS A COMMUNITY OF INTEREST?



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## What?

“ *A community of interest is a gathering of people assembled around a topic of common interest. Its members take part in the community to exchange information, to obtain answers to questions / problems or to improve their understanding of a subject* ”

Objective(s):

- Develop a common vision on the subject of sustainable mobility
- **Experiment new solutions**
- With identified partners **develop new mobility products / service offers**



**Examples of deliverables:** prospective web, evolution scenarios, green paper...

# OUR COMMUNITY

Private investment for E-mobility/ H2-mobility infrastructures

lead by



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## Context :

- ▶ Growth of BEV and FCEV markets strongly relies on infrastructure development
- ▶ Charging infrastructure installation is very capex intensive and electric mobility services are still emerging



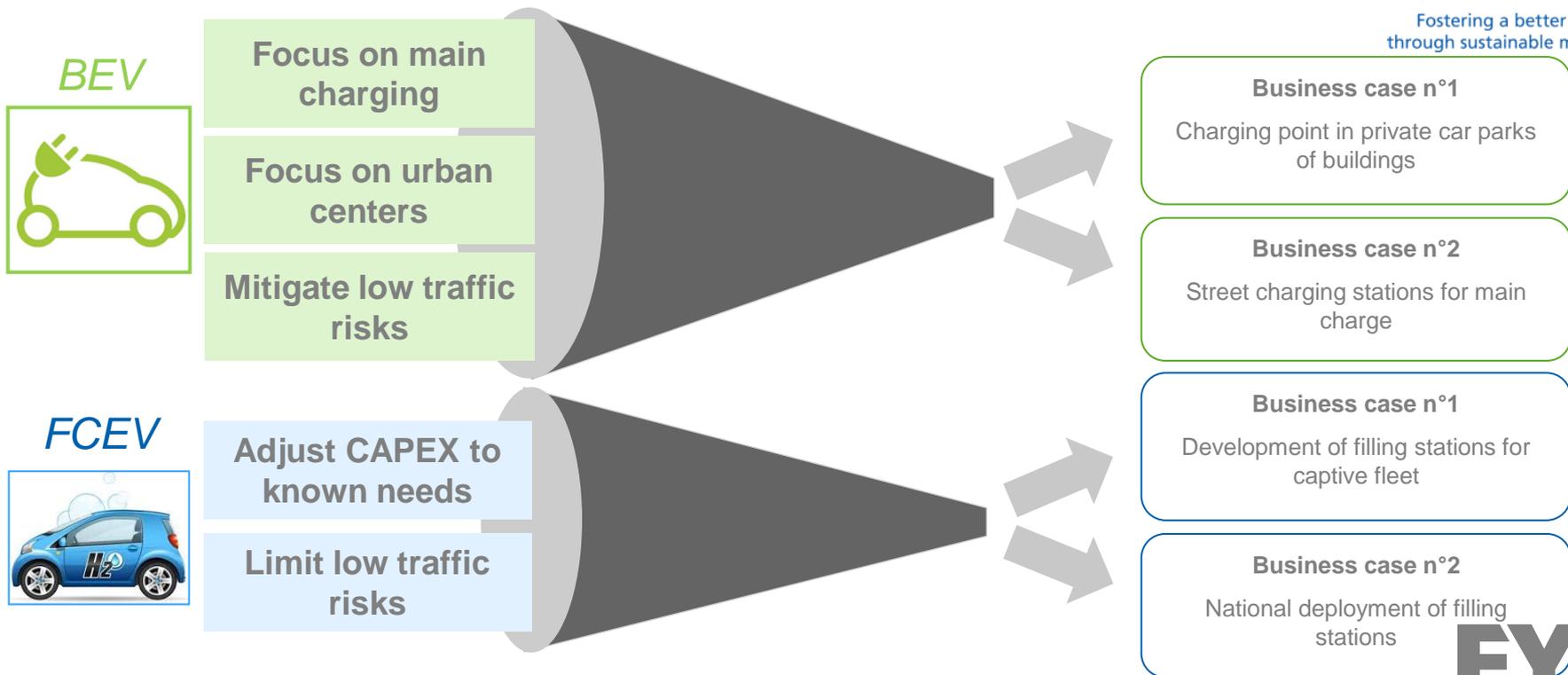
## Objectives of the community :

- ▶ Develop a common vision on the subject of electric mobility (BEV & FCEV)
- ▶ Identify main charging needs to be targeted
- ▶ Assess infrastructure investment and operation costs and propose innovative business models and strategies
- ▶ Discuss investment opportunities with financial actors and provide recommendations

# THE COMMUNITY'S BUSINESS CASES



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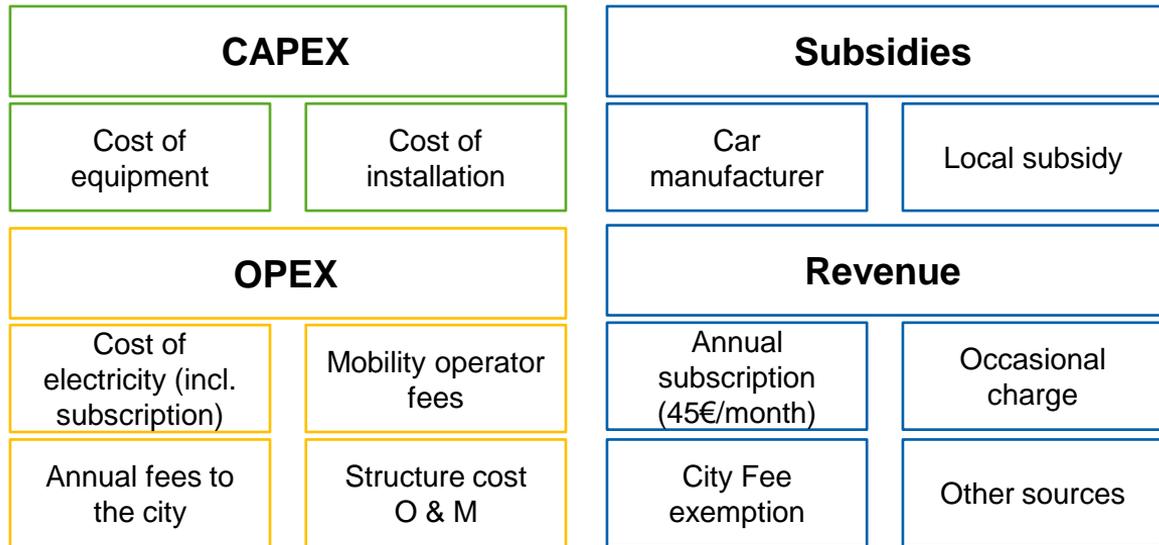


# CURBSIDE CHARGING POINTS FOR BEV

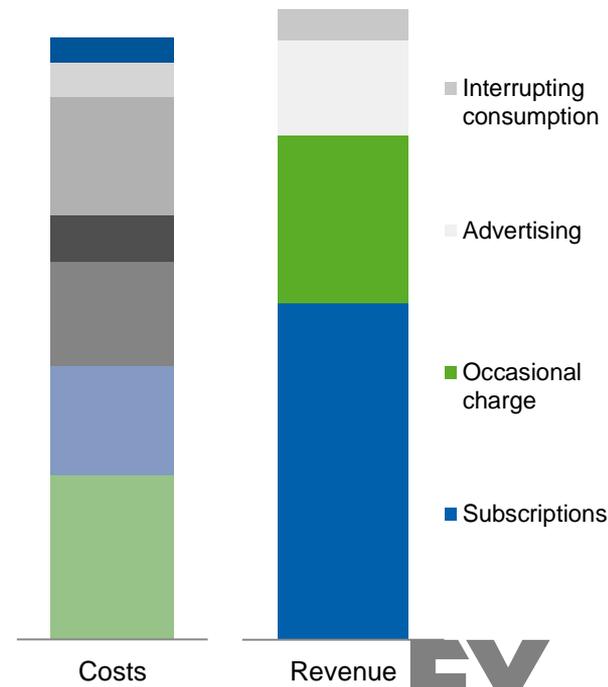
## SPECIFIC ISSUES OF ANOTHER MARKET ON A LARGE SCALE



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- ▶ Investment : ~ 2bn€ for France. Scaled to demand.
- ▶ ROI : 5,5 %
- ▶ **Low** Traffic Risk BUT **Low** ROI



# H2 CHARGING INFRASTRUCTURE : A TWO – PHASES NATIONWIDE DEVELOPMENT



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## Phase 1: Clusters/captive fleet 2015-2020

240 HRS in  
120 cities

Geographical  
coverage

Captive fleets

### Captive Fleet are an appropriate answer :

- ▶ Captive fleet represent an identified demand and thus stable revenue
- ▶ HRS easily scaleable to fleet size and numbers
- ▶ Clustering of captive fleet allow a regional development prior to nationwide deployment



## 1 Identification of captive fleets

Light professional vehicles, with high mileage expectations on the long run. Many fleet in the same area form a cluster, which will have one or a few HRS (Hydrogen Refuelling Stations).

## 2 Investment phase

HRS in clusters range from 20 to 80 kg/day.

## 3 Financial result

Losses are expected on the short run. Goal is to reach **240 stations** in 120 cities by **2020**.

# H2 CHARGING INFRASTRUCTURE : A TWO – PHASES NATIONWIDE DEVELOPMENT



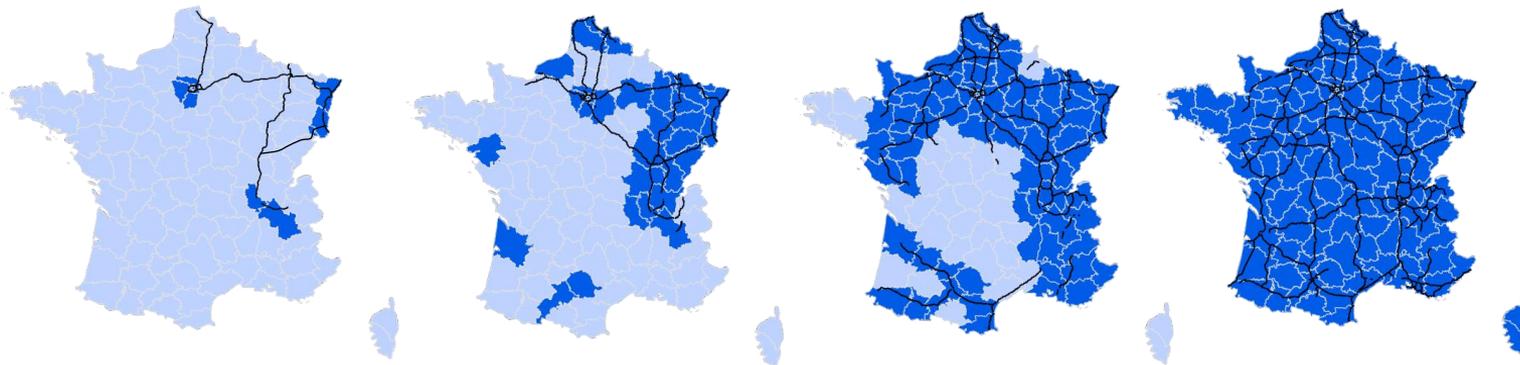
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## Phase 2: National expansion 2020-2030

2m vehicles by  
2030

All kinds of  
vehicle

6000 filling  
stations



### Deployment of HRS for national roll-out:

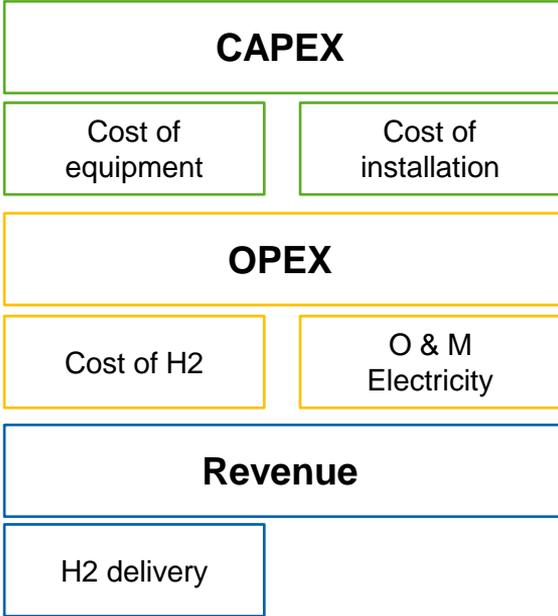
- ▶ 700 bars HRS (compared to 350 bars for clusters approach)
- ▶ Target of 6 000 stations which is 55% of conventional filling stations in France
- ▶ Capacities of station from 80 to 400 kg per day

# H2 CHARGING INFRASTRUCTURE ECONOMICAL FEASIBILITY IS NOT A MYTH

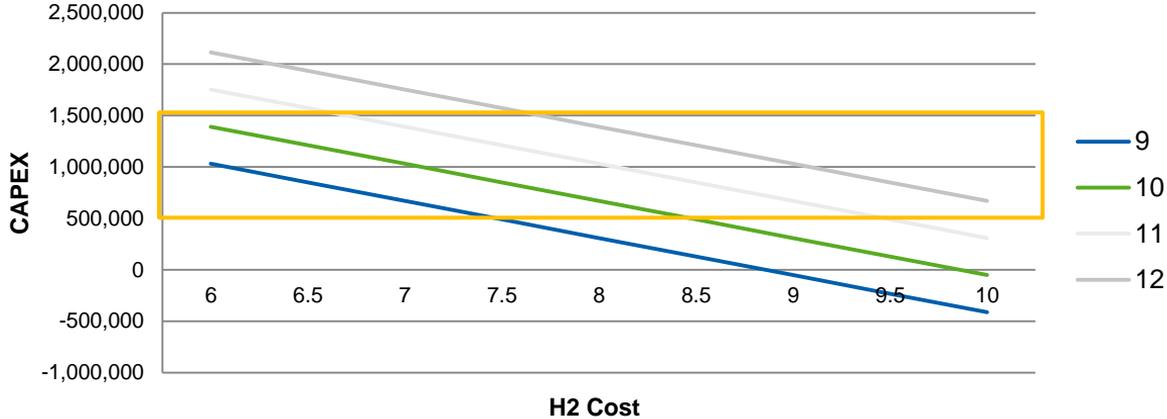
Figures do not represent any opinion or commitment on current or future market prices by community members



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Equilibrium CAPEX 200kg/j - OPEX for dual pressure station depending on H2 price



➔ Economical feasibility of our Business Case at a 10% ROI is a reality.  
**Traffic Risk** is the actual issue we need to tackle to attract financing.



# BUSINESS CASE FOR FCEV

## FINANCING SCHEMES AND OPPORTUNITY : LEADS



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**Direct Subsidies do not reduce the actual risk for the investor but increase ROI.**

- ▶ Traffic Risk is inherent to FCEV charging infrastructure: impossible to scale “ vehicle by vehicle ”

**The project Risk for the investor can be mitigated by acting on the client’s side.**

- ▶ Direct Subsidy : Incentives to buy FCEV / Indirect: : Increased carbon tax that will affect FCEV competitiveness

**Traffic Risk Mitigation can be achieved through an “insurance” scheme.**

- ▶ Building an H2 Charging station = allowing **potential** CO2 emission reduction
- ▶ *“If by 2030 XX% of the potential emissions are avoided, the State “pays” for (100-XX) % of a predetermined amount” .*  
Thus the worst-case-scenario loss for the investor is known and limited.
- ▶ By basing such a solution on an Emission Credits exchange scheme with a minimal and an exchange market, actual cost for the State is kept minimal.

# THREE KEY MESSAGES FOR H2 CHARGING INFRASTRUCTURE FUTURE



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# 1

## Economical Feasibility

Within our hypotheses, 10% ROI is economically possible on a nationwide project.

# 2

## Compatibility with other new mobility

Different uses for BEV and FCEV allow for possible growth on both market

# 3

## Traffic Risk Mitigation : Public – Private solutions

Public support can be fine tuned to be the most efficient with as little actual cash-out as possible.



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# Thank you for your attention.



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