

# A roadmap for financing Hydrogen Refueling Stations

PRD 11-11-2014



# **Study questions**

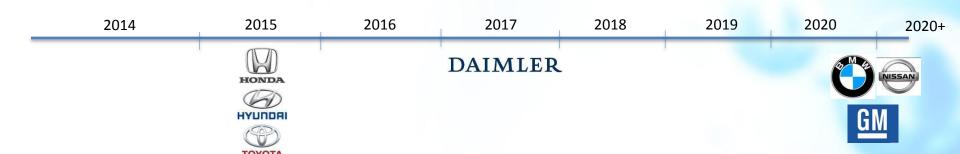
## Scope

- When can we expect bank finance to support HRS deployment?
- At what condititons?
- What are the roles of
  - Strategic Investors (Industry)
    - Car OEMs, H2 providers, HRS builders and operators, etc.
  - Public authorities
  - Financiers (public and private)

#### Who

- Consultant Roland Berger
- H2M UK and Germany
- FCH JU
- European Investment Bank (EIB)
- Consultation of banks and financing institutions:
  - Allianz Capital Partners GmbH
  - Clean Infra Partners LLP
  - IKB Deutsche Industriebank AG
  - Infrastructure Development Partnership (IDP)
  - · Macquarie Capital (Europe) Limited

# Now we have....



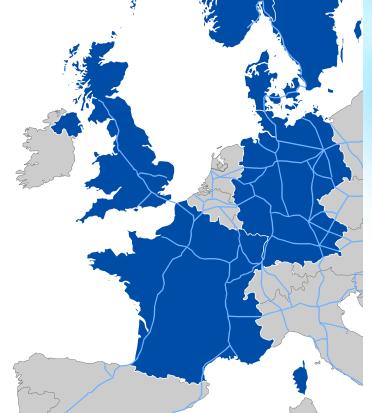
- **1. Car OEMs** announcing the commercialisation of FCEV
- Several national H<sub>2</sub>Mobility initiatives beginning the creation of nationwide hydrogen infrastructure



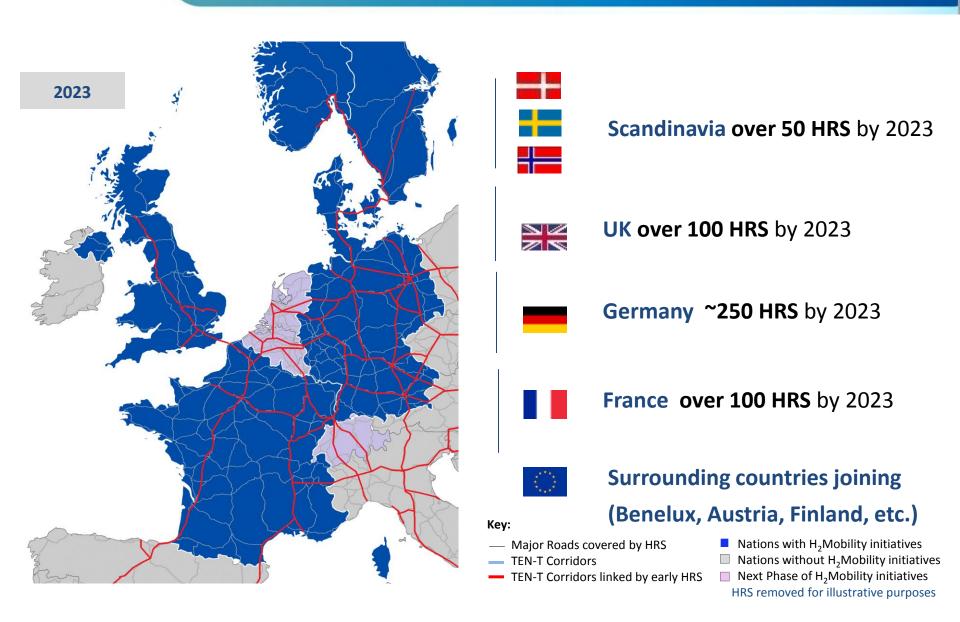








# In 10 years, we expect an European network of 600+ H2 HRS



# This represents

- a total budget of ~€600M
  - (600\* €1M/station)
- A small budget .....if we see what is a stake
  - The launch of a new European fuel infrastructure
  - The deployment of a new type of cars.
- But.... a big financing challenge

# A private financier perspective:

4 risks kill attractiveness of the investment

### High risk level:

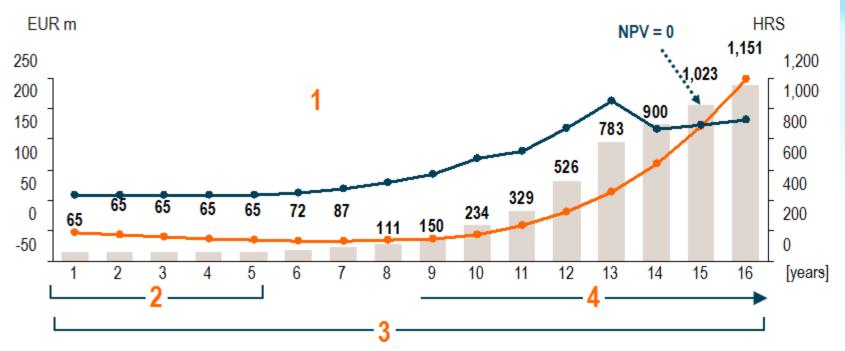
1. Revenues depend on cars uptake

#### Late profitability

- 2. Under-utilisation at start
- 3. NPV positive after 10-15 years.

### First mover disadvantage

4. no protection against competition when business case becomes sure and profitable

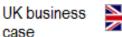


 illustrative Calculation based on the business case for the UK Source: Roland Berger (study for FCH JU)

--- Acc. disc. cash flow after interest payment and debt repayment --- Acc. disc. equity investments

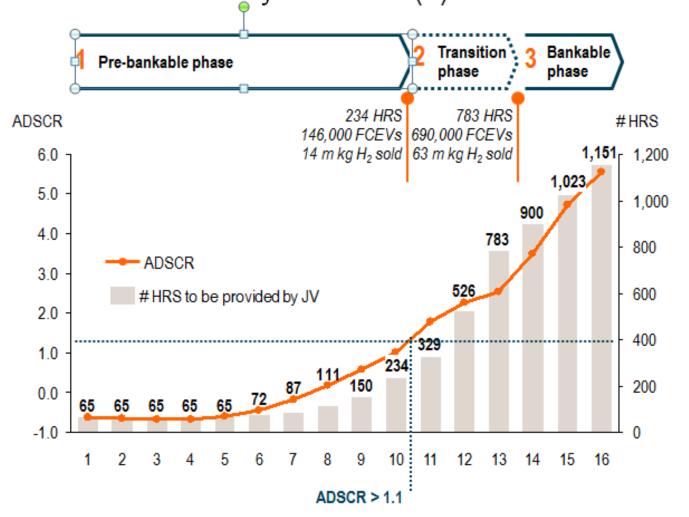
# HRS to be provided by JV

# Is this the end of the discussions with banks?



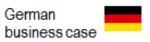


In a step-by-step approach, HRS roll-out can become a viable business that is fully bankable (1)



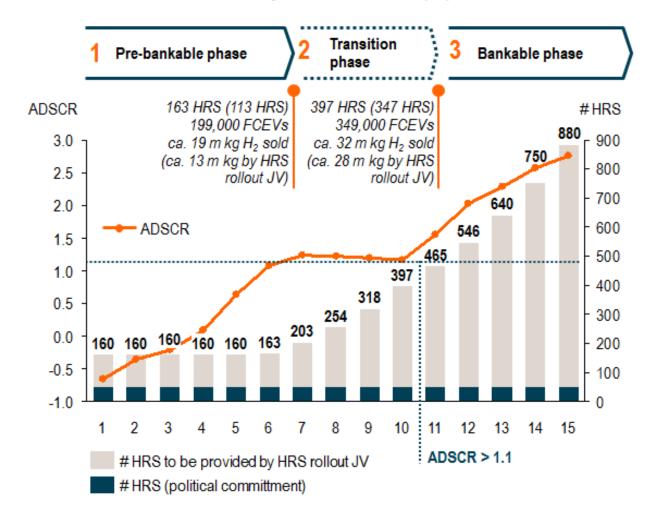
#### Features of the phases:

- Pre-bankable Phase: Strategic equity and governmental support – funds from financiers not yet available
- Transition Phase: Financing instruments with capacity to absorb larger risks from public banks are available (e.g. EIB-RSFF) – HRS rollout starts to build up a credit history
- Bankable Phase: Financing from public and private lenders and from private investors is available





In a step-by-step approach, HRS roll-out can become a viable business that is fully bankable (2)



# Features of the phases:

- 1 Pre-bankable Phase: Strategic equity and governmental support – funds from financiers not yet available
- 2 Transition Phase:
  Financing instruments
  with capacity to absorb
  larger risks from public
  banks are available
  (e.g. EIB-RSFF) –
  HRS rollout starts to
  build up a credit
  history
- Bankable Phase:
  Financing from public and private lenders and from private investors is available

# Different stakeholders interested in different stages

Pre-bankable phase (Phase 1)

Transition phase (Phase 2)

Bankable phase (Phase 3)

# Lenders/investors main conditions for financing

- Strategic investors
- Public/ development bank
  - Private equity
    - Commercial banks
    - Infrastructure investors

- > Strategic interest in build-up of infrastructure
- > Long-term profitability
- Project complies with public policy objectives
- > Viable business case
- > Established market, low revenue risk
- > Strong growth perspective
- > Leverage must not yet be maximized
- > Established market, low revenue risk
- > Guaranteed/secure revenues
- > Established market, very low risk level
- > Guaranteed/secure revenues
- > Long term perspective > 10 years

# Roles of strategic investors, governments & financiers



# Governments —— + — Strategic investors — + — (Public) Financiers



- > Create first mover advantage and stimulate swift rollout
- > Absorb share of financial challenges
- > Address FCEV rampup risk through regulation / incentives
- > Increase strategic value of the HRS rollout through regulation

- > Finance and handle HRS rollout from the start
- > Absorb share of financial challenges
- > Mitigate project risks especially FCEV ramp-up risk

- > Reduce financing costs through public bank loans
- > Support establishing a financing trackrecord as early as possible
- > Create blueprint for a market-based rollout across the FU

# **Public Banks**

Public banks can support by supporting the roll-out from the beginning

#### Pre-bankable phase

- Guidance on requirements of a later due diligence, e.g. legal and financial structuring
  - → get JV set-up right from the start
  - → reduce transaction costs
- Initial funding (with gov't backing/guarantee)
- Commitment to fund under certain conditions (provide assurance)
  - → clarity for JV members on what is possible and what is not possible

#### Transition phase

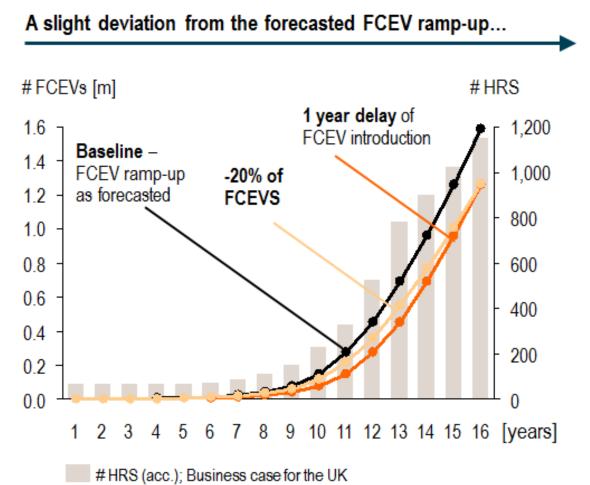
- Provide risk financing/risk sharing instruments (e.g. with some government support)
- Provide assurance for private sector lenders (anchor investor; reputation and signalling effect)
- Commitment to fund under certain conditions (provide assurance)
  - → clarity for JV members on what is possible and what is not possible

#### Bankable phase

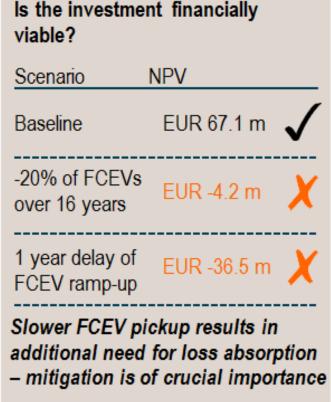
- Provide assurance for private sector lenders (anchor investor; reputation and signalling effect)
- Provide a large chunk of financing (larger than typical private sector lenders)

# **Strategic Investors**

## Commitment from OEMs on FCEV sales is an absolute necessity



... has a major impact on the business case



# **Strategic Investors**

Financier perspective: commitment from car OEMs better that regulation if itt provides garanteed revenue

Effective- ness	high		low
Category	1 Guaranteed revenue	2 Regulations on FCEV purchase	3 Incentives for FCEV purchase
Selected mitigants	Contract with large scale off- taker (fleets) concluded	Regulation requiring minimum share of alternative fuel vehicles in fleets	Government incentives for FCEV purchase bridging price gap to
	Pre-purchase of H <sub>2</sub> by carmakers in line with planned FCEV ramp-up ("Take or pay")		conventional vehicles  Tax credits for fleet operators integrating FCEVs in their fleet
			Higher weight of CO <sub>2</sub> emissions in vehicle tax
Impact	Makes project finance accessible	Helpful (a deferred positive effect on financing through a higher H <sub>2</sub> off-take from the start of the rollout and the resulting improvement of business case KPIs is possible), but insufficient to access project finance	

# Governments

### Beyond regulation, Governments can 4 kick start the HRS roll out

# Study examines 4 pathways

Adapted PFI –
creation of a
strong first
mover advantage

Concession for installation and operation of initial HRS network with favorable availability payments

Loan with conditionally repayable share – government absorbs losses if H<sub>2</sub> sales is below forecast

Cheap loan from year one – share of loan might not have to be repaid if revenues from H<sub>2</sub> sales are too low Combined HRS /
FCEV package –
tackling
underutilization by
aligning FCEV and
HRS rollout

Grant for FCEV purchases tendered to partnerships between fleets and vehicle manufacturers – condition is to install and operate HRS

CAPEX grant – compensating losses from initial underutilization

Grant covering share of investment at the start of the HRS rollout



mechanisms to align vehicle manufacturers' and refueling network operators' efforts for FCEV market introduction and HRS network rollout

• All details available on www.fch-eu.eu

The study in perspective

