



# Fuel Cells and Hydrogen Joint Undertaking

Hydrogen + Fuel Cells 2011  
Vancouver, 17 May 2011

*Bert De Colvenaer, Executive Director*

# Presentation outline

- The European Union's Strategic Energy Technology Plan
- The Fuel Cell and Hydrogen Joint Undertaking
  - Call for proposals : grants
  - Fuel cell and Hydrogen deployment : study on strategy

# European Policy Challenges

- Sustainable development
- Security of supply
- Competitiveness

## **AN ENERGY POLICY FOR EUROPE**



*energy for a changing world*

# The Strategic Energy Technology plan

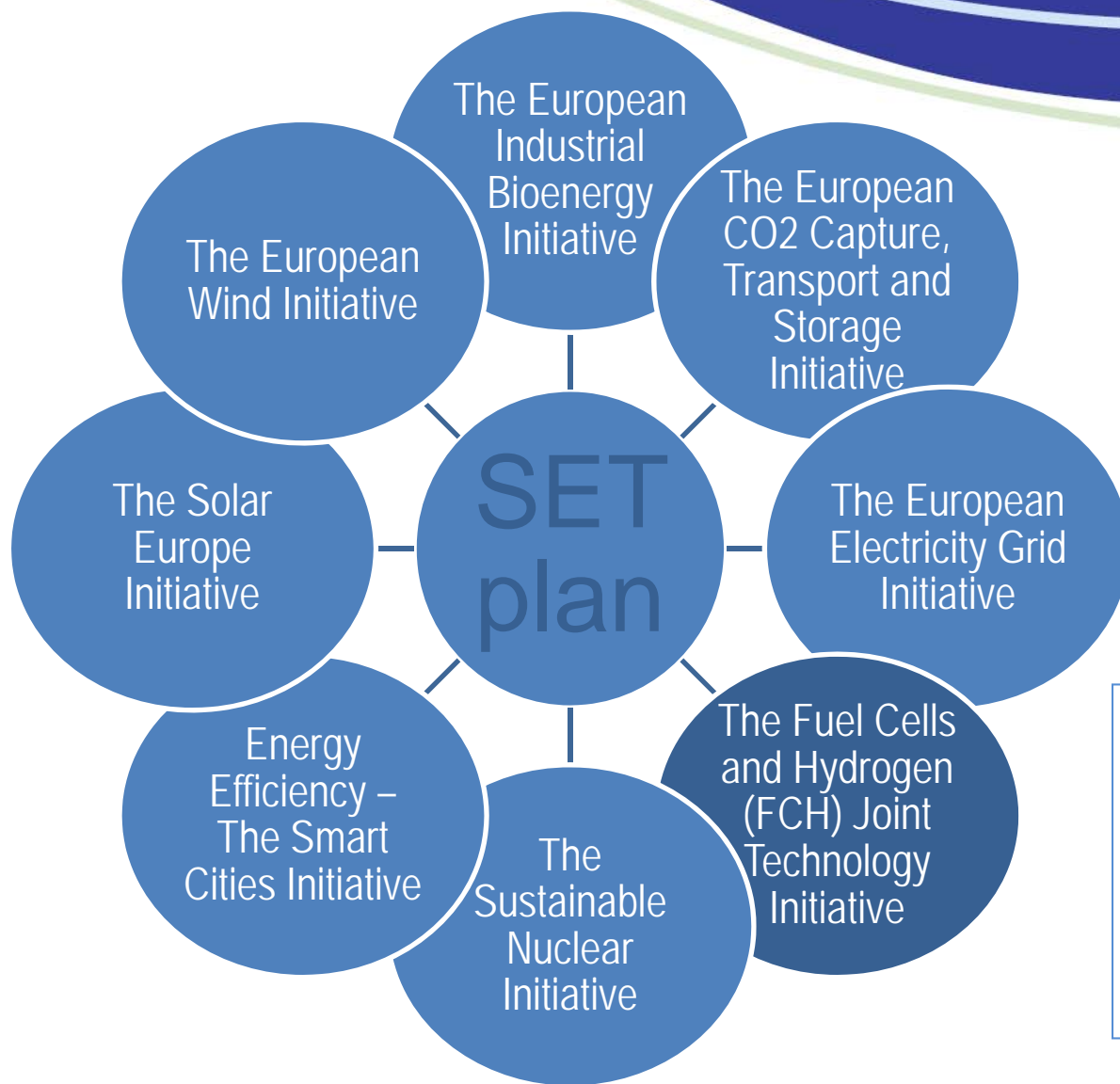
- The **TECHNOLOGY PILLAR** of EU Climate policy
- Details the **energy research priorities** for 2020 & 2050
- Ensures **coordination** and converging public and private objectives
- **Innovation-driven**, strong **industry involvement** and a stable **planning**

## **AN ENERGY POLICY FOR EUROPE**



*energy for a changing world*

# The FCH JTI in the SET plan



## Fuel Cell and Hydrogen Joint Undertaking

- FCH JU : community body
- Budget : 940 M €
- FCH JU Programme Office

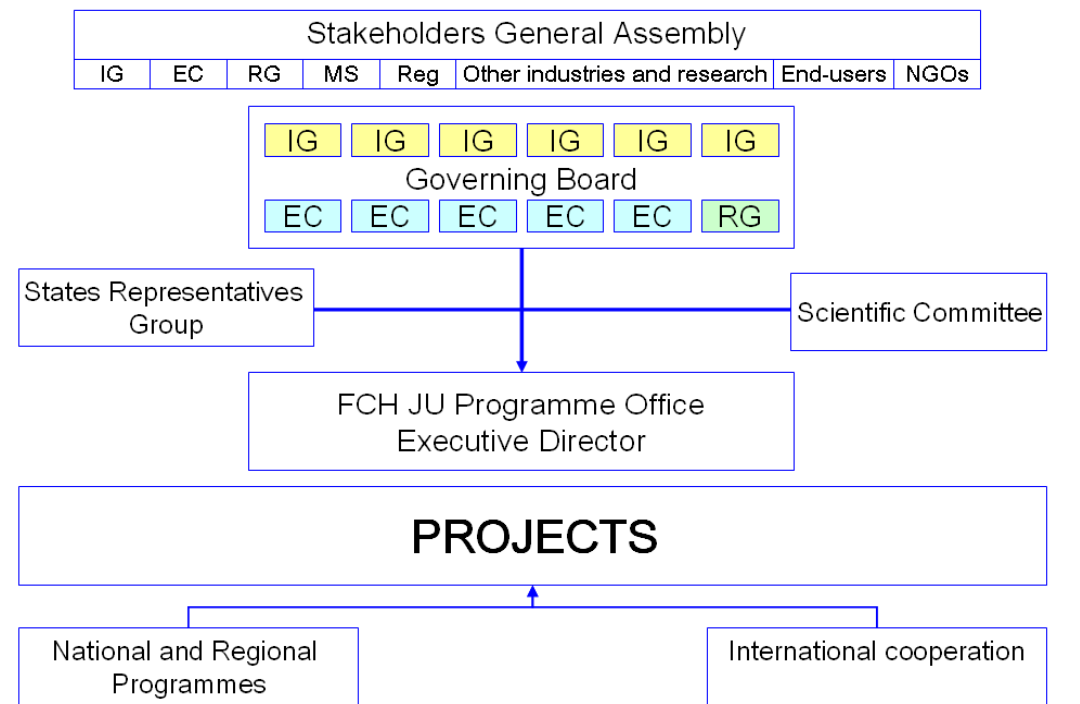
# Public Private Partnership

## FCH JU - Objectives

- Bring resources together under a cohesive, long-term strategy : **industry led public private partnership**
- Ensure **commercial focus** by matching research activities to industry's needs and expectations
- Scale-up and intensify links between Industry and the Research Community

**To accelerate the development of technology base towards commercialization from 2015 onwards**

## FCH JU – Governance structure



# Public Private Partnership



The European Community represented by the **Commission**



**European Industry Grouping**

for the Fuel Cells and Hydrogen Joint Technology Initiative (NEW-IG) - 55 Members & 6 supporters (55% large companies)

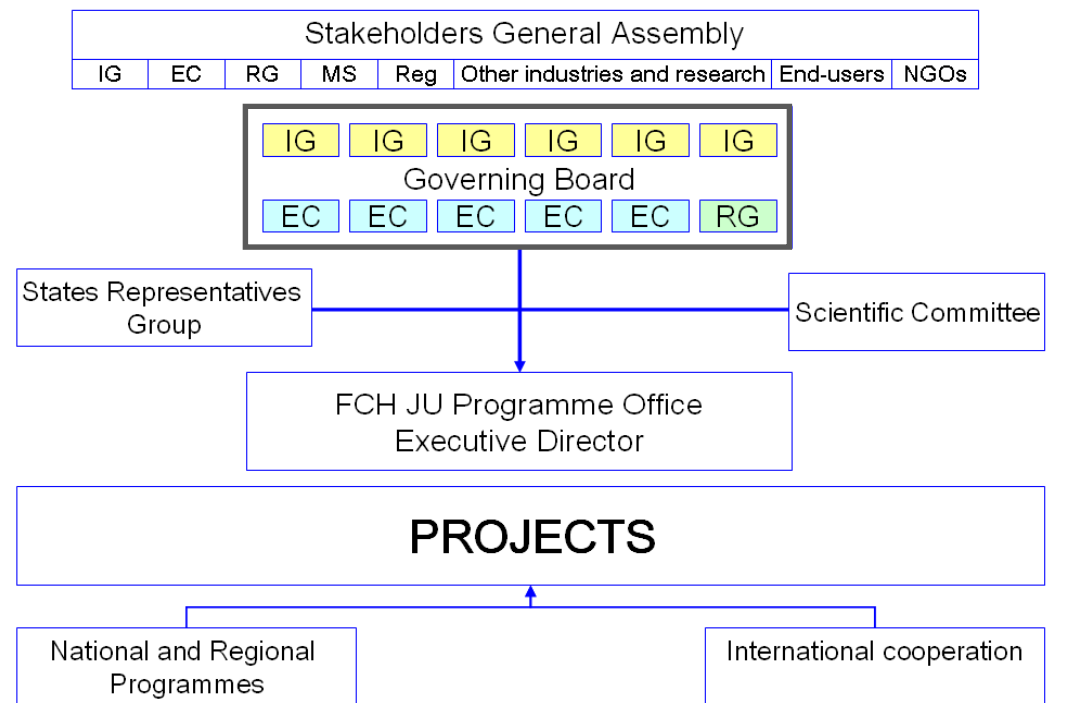


**New European Research Grouping**

on Fuel Cells and Hydrogen (N.ERGHY) - 68 Members

Both the Industry Grouping and the Research Grouping are non-profit organisations with open membership

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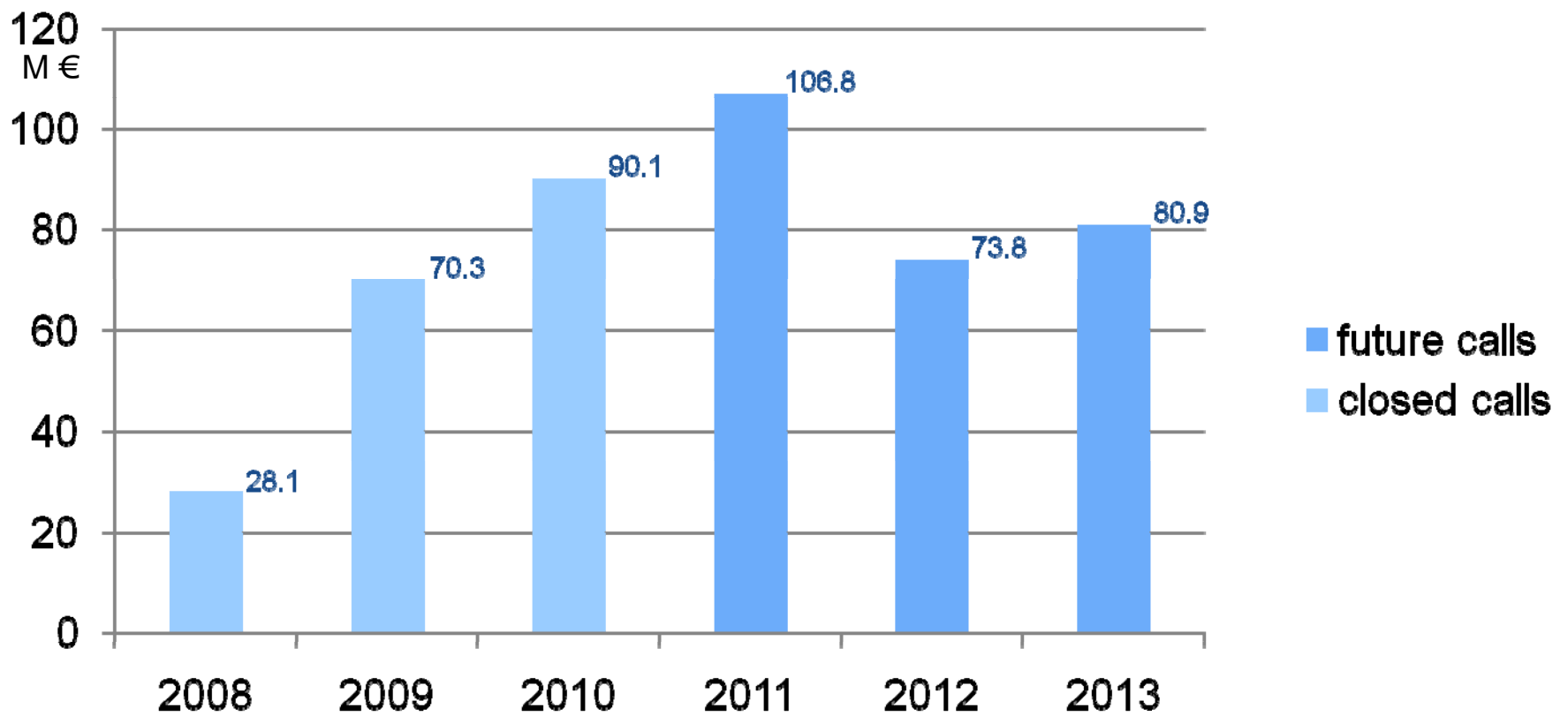
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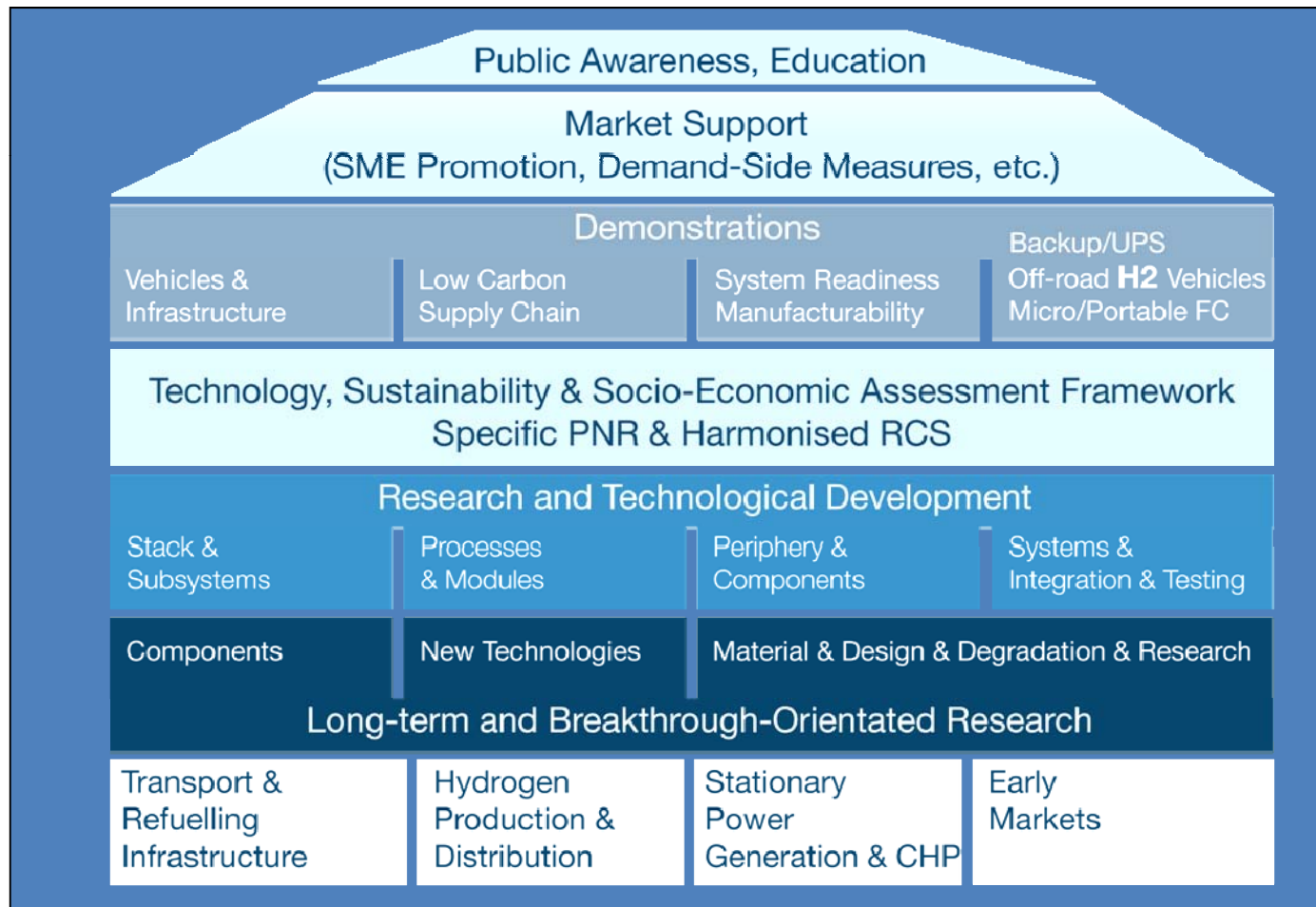
## Research Grouping Members



# FCH JU Operational budget



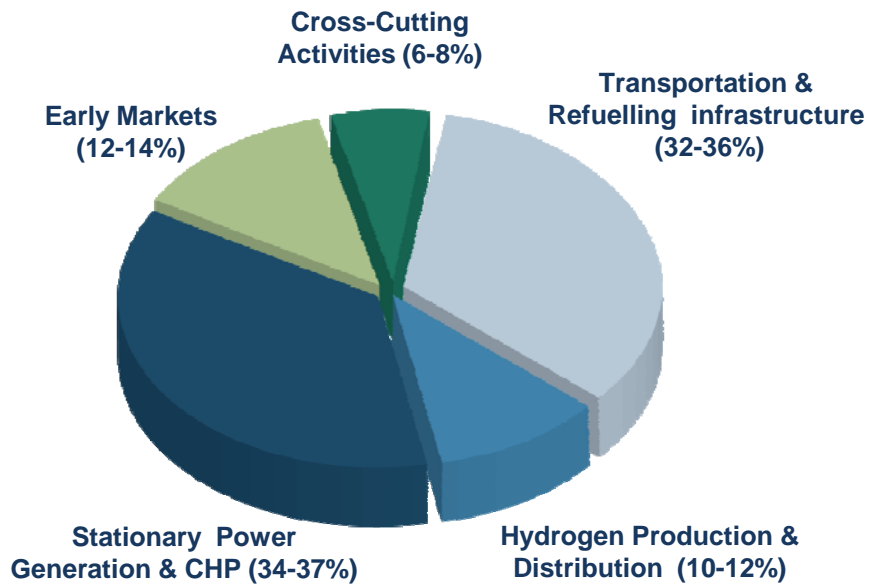
# Multi-Annual Implementation Plan



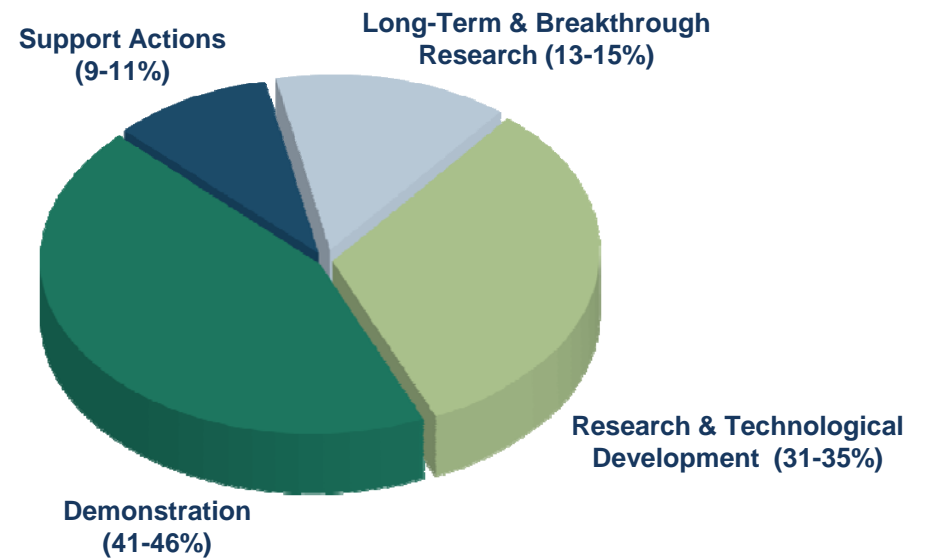
**Adopted in  
May 2009**

# FCH JU Budget Breakdown

## By Application Area



## By Activity Type



\* as stated in the Multi Annual Implementation Plan

# CHIC

Clean Hydrogen in European Cities

## JTI-FCH objectives

Approval + Certification

Measurement + Monitoring

Safety

Assessment framework

Evaluation

Dissemination to new cities

Public awareness

## CHIC Project Concept

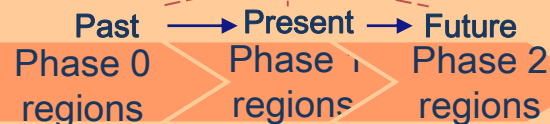
### H<sub>2</sub> Infrastructure and FC Bus Operation



### Performance and Sustainability Assessment

Environment Economy Society

### Dissemination



## Key figures

- 26 partners from 9 countries
- 26 fuel cell buses in 5 cities
- 2 filling stations per city
- Demonstration phase 2010-2016
- at least 3 different bus manufacturers

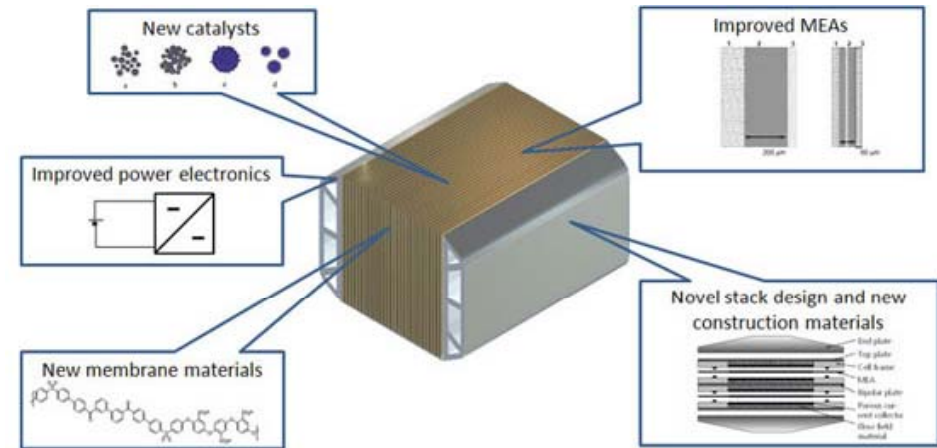


## Next-Generation PEM Electrolyser For Sustainable Hydrogen Production

An efficient PEM electrolyser integrated with Renewable Energy Sources (RES) will be constructed and demonstrated.

Goals: improvement of components, reduce cost and improve stability.

Advanced stack design using components suitable for mass production and highly efficient power electronics.



Installation of prototype at the Statoil Energy Park with hydrogen refuelling station.

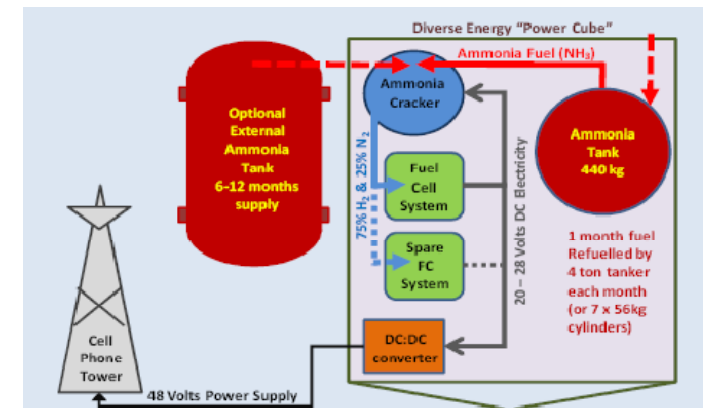
Coupling to RES - wind turbines and silicon solar panels. The produced hydrogen will supply the local hydrogen vehicle fleet.



# NH34PWR



- Deployment of 40 PowerCubes in Europe and Africa
- Objective : replace diesel generators for telecom towers
- Benefit (est) : a 25% reduction of TOC vs. diesel generators  
a 2-year ROI  
a 80% reduction in green-house gas emissions







# HyLIFT-DEMO



European demonstration of fuel cell powered materials handling vehicles including infrastructure

## Objectives

-  demonstration of 30 fuel cell forklifts
-  demonstration of hydrogen refuelling infrastructure
-  performance of accelerated durability tests
-  preparation of market deployment from 2013 on



# Future perspectives

- Accelerate commercial deployment of FCH in Europe

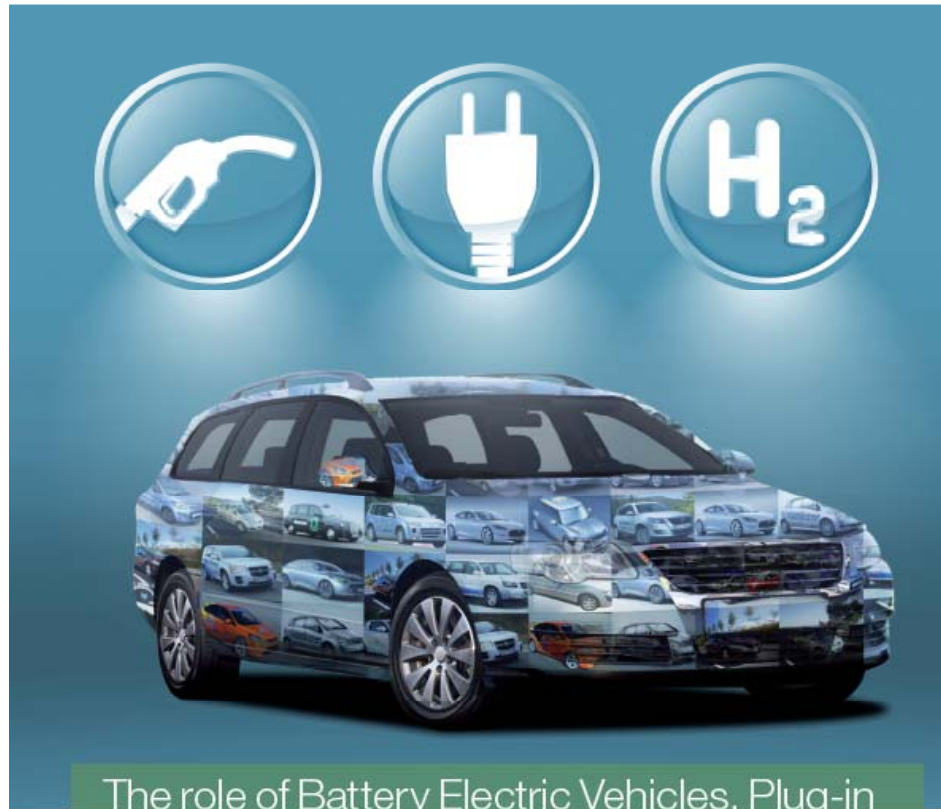


- International cooperation (Japan, US, Korea, Canada, ...)
- Third countries participation in FCH JU Call for Proposals
- Exchange on best practices (safety, RCS, H2 infrastructure, ...)

# A portfolio of power-trains

for Europe

A portfolio of power-trains for Europe:  
a fact-based analysis



The role of Battery Electric Vehicles, Plug-in Hybrids and Fuel Cell Electric Vehicles

Industry participants	
Car OEMs	DAIMLER, HONDA, KIA, HYUNDAI, KIA MOTORS, NISSAN, FORD, VW, TOYOTA
Oil and gas	Eni, OMV, Shell, TOTAL, galp energy
Utilities	EnBW, VATTENFALL
Industrial gas companies	AIR PRODUCTS, AIR LIQUIDE, Linde
Equipment OEMs	INTELLIGENT ENERGY, Powertech
Wind	NORDEX
Electrolyser companies	HYDROGENICS, PROTON ENERGY SYSTEMS, ELT Elektrolyse Technik, Hydrogen Technology
NGOs, GOs	European Climate Foundation, NOW, New Energy World

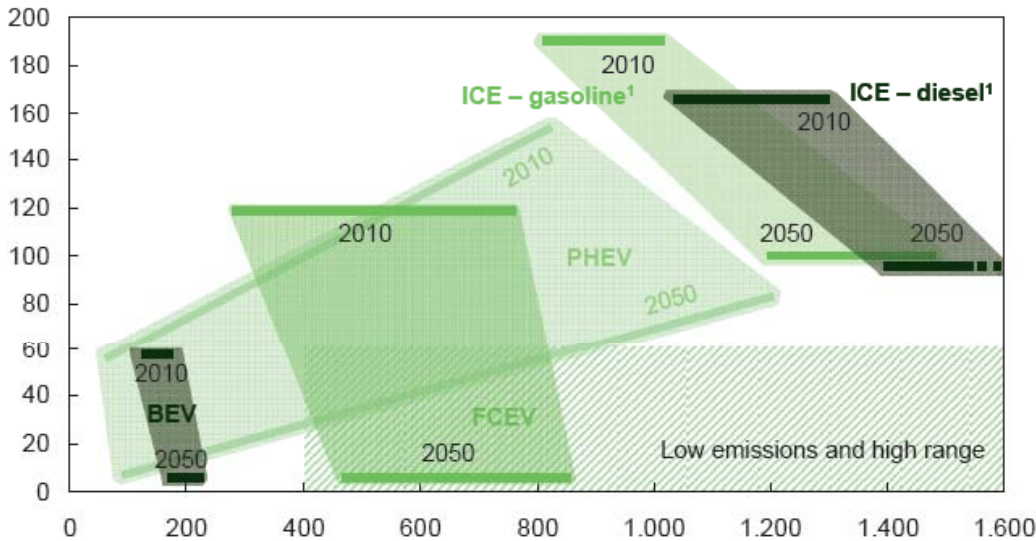
Publication: 8 November 2010

Available on <http://fch-ju.eu>

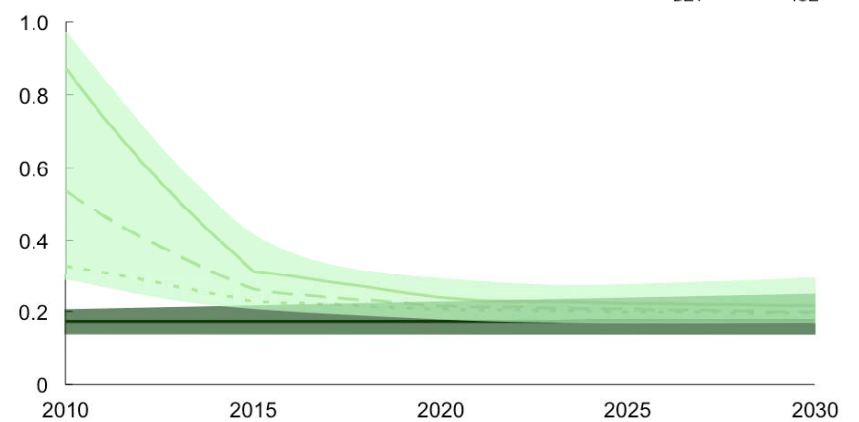
# A portfolio of power-trains

for Europe

CO<sub>2</sub> emissions  
gCO<sub>2</sub>/ km

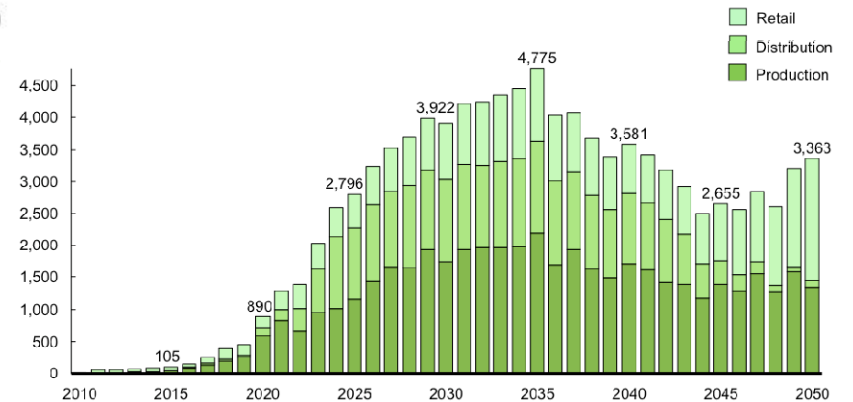


TCO ranges<sup>1</sup> of different power-train technologies  
EUR/km



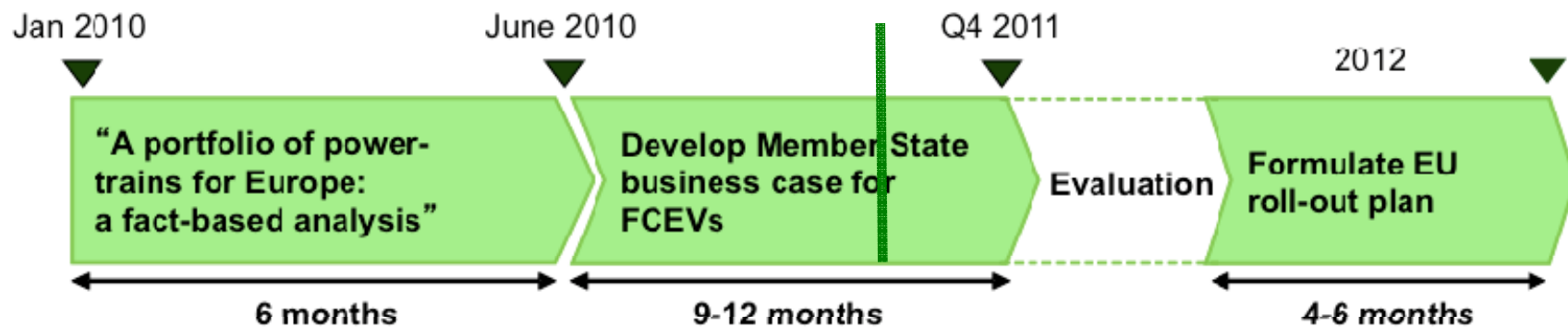
1. CO<sub>2</sub> emission improvement
2. TOC convergence for all powertrains
3. H<sub>2</sub> Infrastructure investment estimation

Range  
km



# Deployment Strategies

## Planning for Fuel Cell vehicles strategy



Similar approach for other deployment strategies :

- Fuel cell busses & infrastructure
- Stationary applications (small, medium, large)
- Fork lift trucks & infrastructure

# Summary

- Fuel Cells is one of the Strategic Energy Technologies for Europe
- FCH JU is a Public Private Partnership
  - 1 B€ R&DD projects over 6 years
  - Active engagement in FCH deployment strategies



Thank you for your attention !

Further info :

- FCH JU : <http://fch-ju.eu>
- NEW-IG : <http://www.fchindustry-jti.eu>
- N.ERGHY : <http://www.nerghy.eu>