# Activities of The Research Association of Hydrogen Supply/Utilization Technology

June 4th, 2010

Masanobu Kitanaka

Division Director of Technical Development Division

The Research Association of Hydrogen Supply/Utilization Technology

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1. Outline and Background of establishment of HySUT

2. Present Activities of HySUT

3. Commercialization Problem of FCVs and H2 stations

# Outline of HySUT

Objective:
Contribution to preparing of circumstances toward FCV deployment (Technology, Standard, Consumer acceptance, Social system) by operating "Demonstration Test".

1. Establishment： 2009.7.31

2. Members：

(1) Energy Supplier

NIPPON OIL CORPORATION, IDEMITSU KOSAN CO., Ltd. , COSMO OIL CO., Ltd. , JAPAN ENERGY CORPORATION , Showa Shell Sekiyu. K.K.

TOKYO GAS CO., Ltd., OSAKA GAS CO., Ltd., TOHO GAS CO., Ltd., Saibu Gas Co., Ltd.

IWATANI CORPORATION

(2) Industrial Gas Company, Engineering Company, Device Company

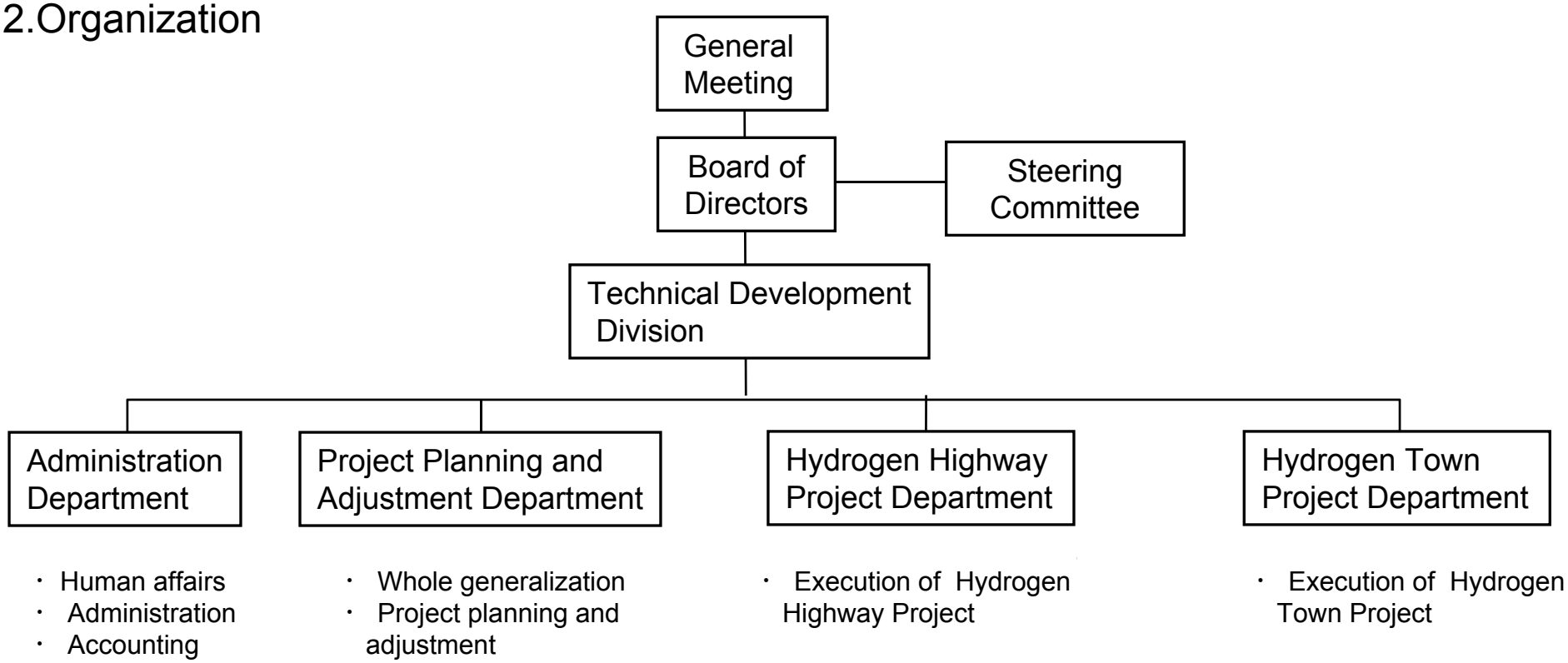
Air Liquid Japan Ltd., KAWASAKI HEAVY INDUSTRIES, Ltd., MITSUBISHI KAKOKI KAISHA, Ltd., TAIYO NIPPON SANSO Corporation

# Organization and Structure of HySUT (at the time of June 4th, 2010 )

## 1. Employees

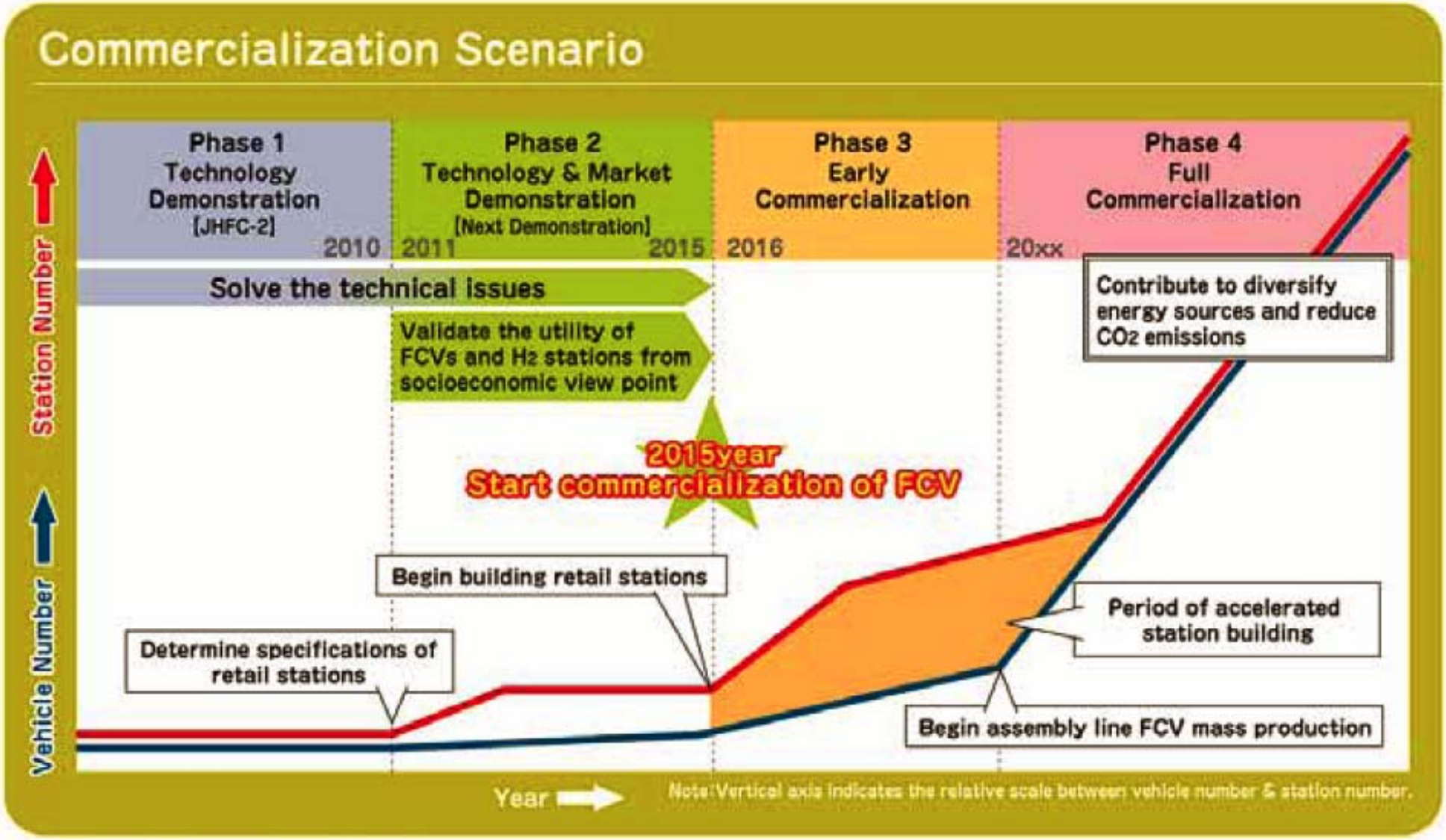
24 (7 full time employees, 17 double as their own companies)

## 2.Organization



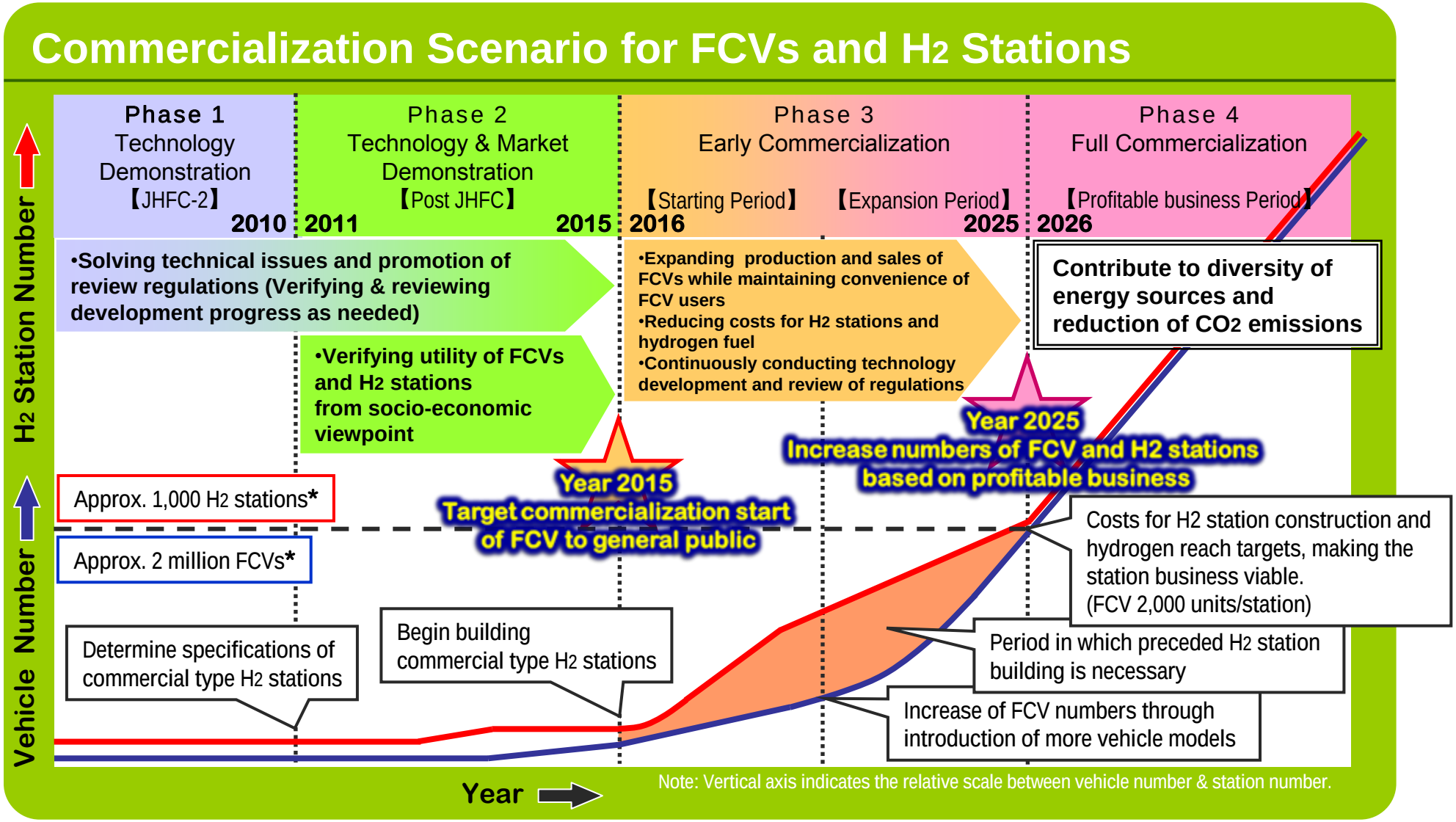
# Commercialization Scenario of fuel cell vehicles and hydrogen stations

Reference : FCCJ Press Release, July 4, 2008



# Commercialization Scenario of fuel cell vehicles and hydrogen stations (Renew)

Reference : FCCJ, March 2, 2010




* **Precondition: Benefit for FCV users (price/convenience etc.) are secured, and FCVs are widely and smoothly deployed**

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# HySUT's Plan of Demonstration Programs

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|
| Plan | Phase 1 | | Phase 2 | | | | |

**Hydrogen Hyghway P J**
- construction of Hydrogen stations
- Highway running demonstration of FCV

**Hydrogen town P J**
- Field test of hydrogen pipeline
- Field test of direct hydrogen fuel cell

Adopted by METI's "Demonstration Program for Establishing a Hydrogen-Based Social System"

Making a plan for next stage demonstration program

FCCJ is planning of 2011-2015 demonstration program

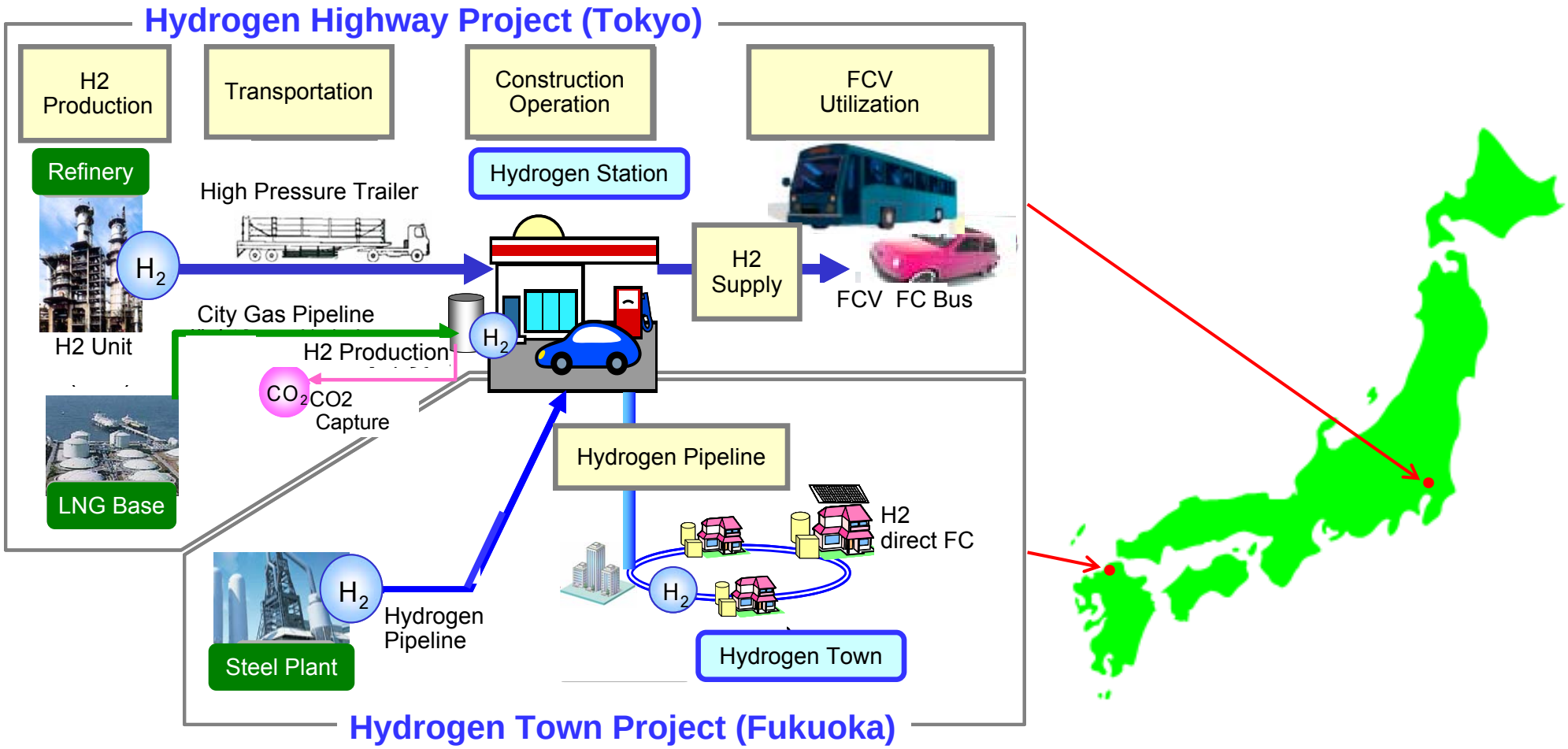
**Next Stage Demonstration Programs**
- Field running test of Hydrogen providing infrastructure
- Figure out the user's fueling actions
- Technical development and test of Mobile/Simple Stations
- Considering the how to improve user's convenience by IT technology
- Establishing the best location method of hydrogen station and its verification
- Verification of hydrogen introduction and spread policy
- Field test of next stage hydrogen station
- Meeting the international standards
- Promotion and educational activities

# Outline of HySUT's Demonstration Program 2009 ~ 2010

< 2009 ~ 2010 >

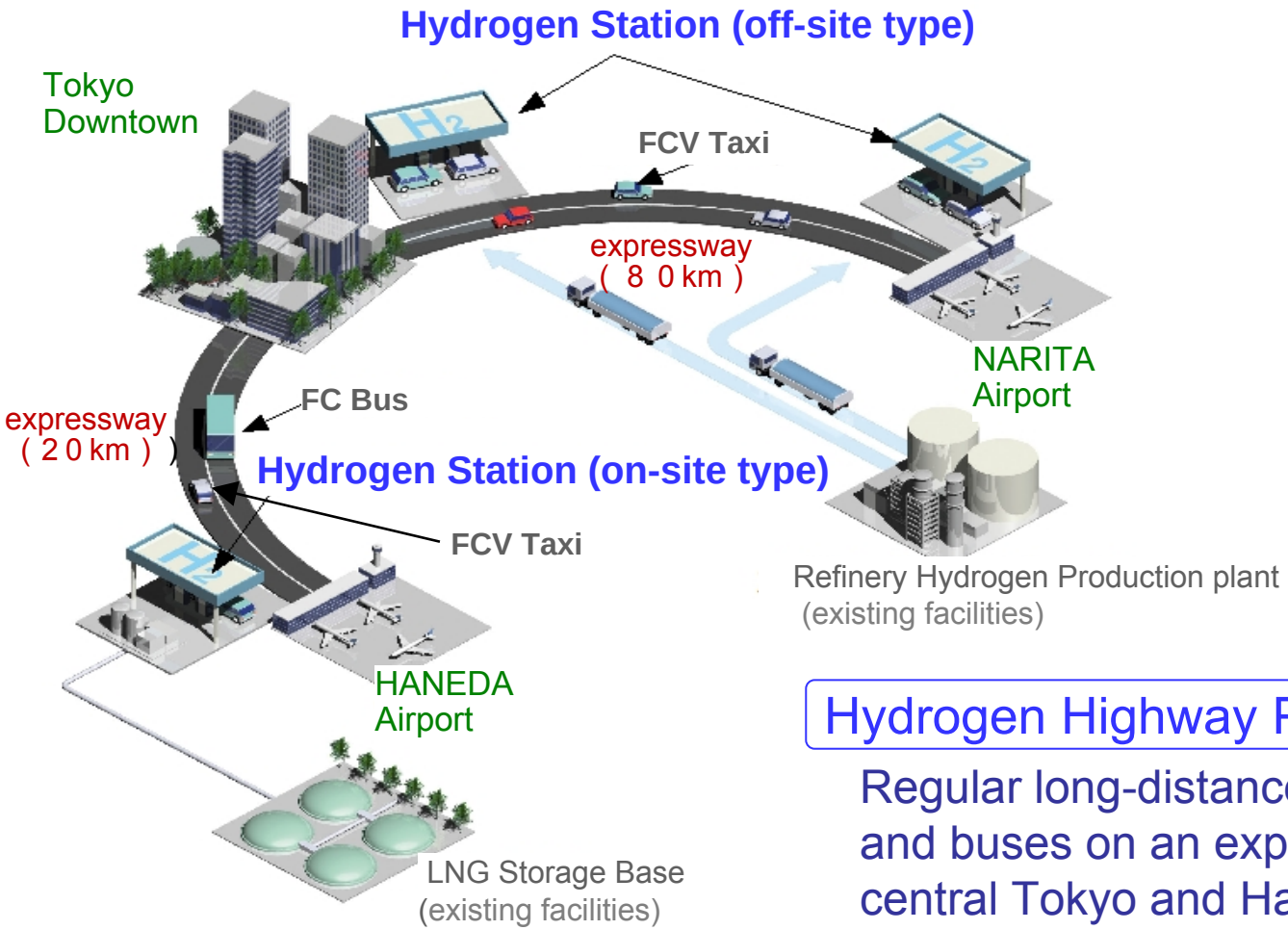
Tokyo and Fukuoka

METI : "Demonstration Program for Establishing a Hydrogen-Based Social System"



# Outline of 2009-2010 Hydrogen Highway Project

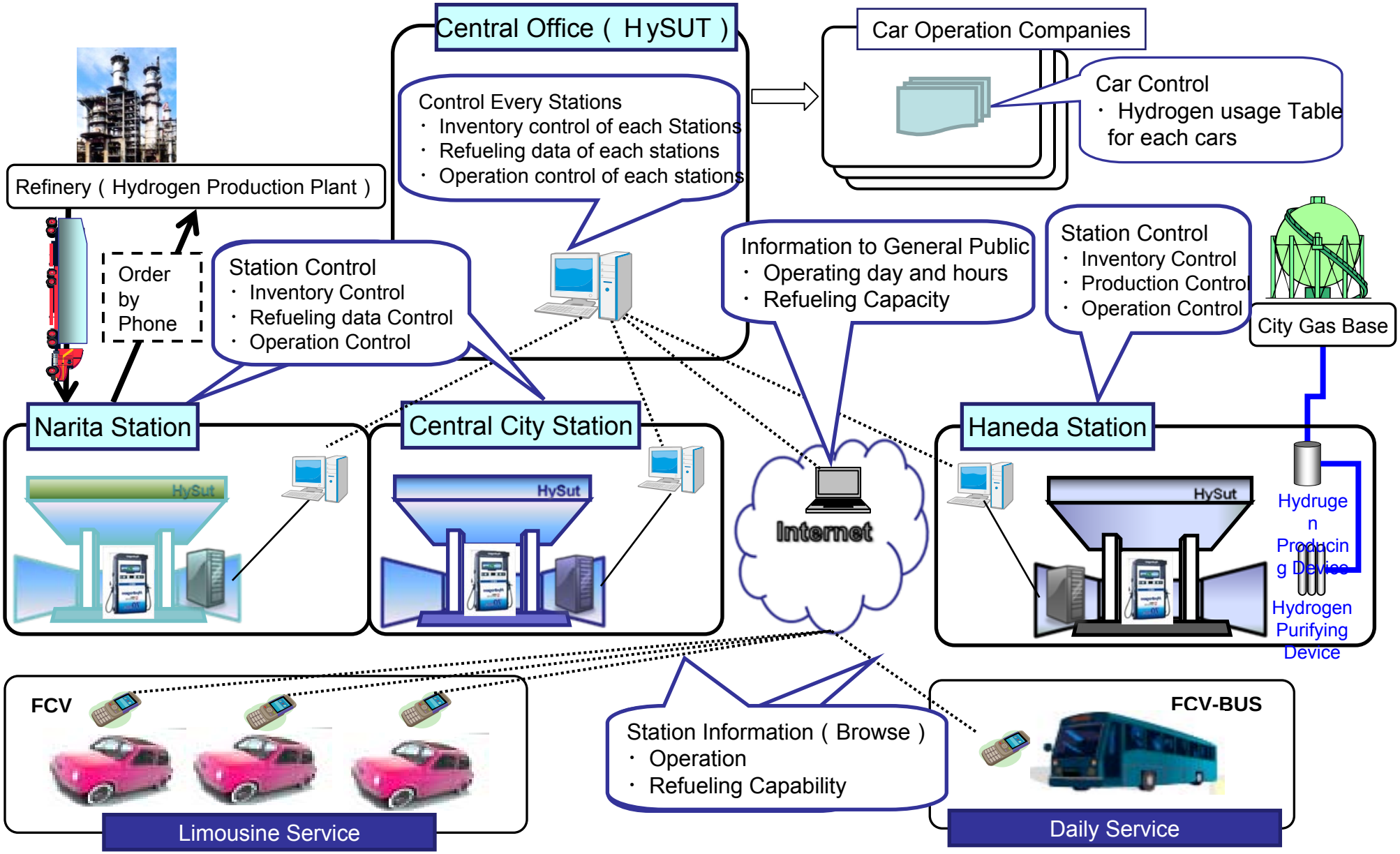
METI : “Demonstration Program for Establishing a Hydrogen-Based Social System”




## Hydrogen Highway Project (Tokyo)

Regular long-distance service of FCV and buses on an expressway connecting central Tokyo and Haneda/Narita Airport

# Hydrogen Stations Central Control System （ Plan ）

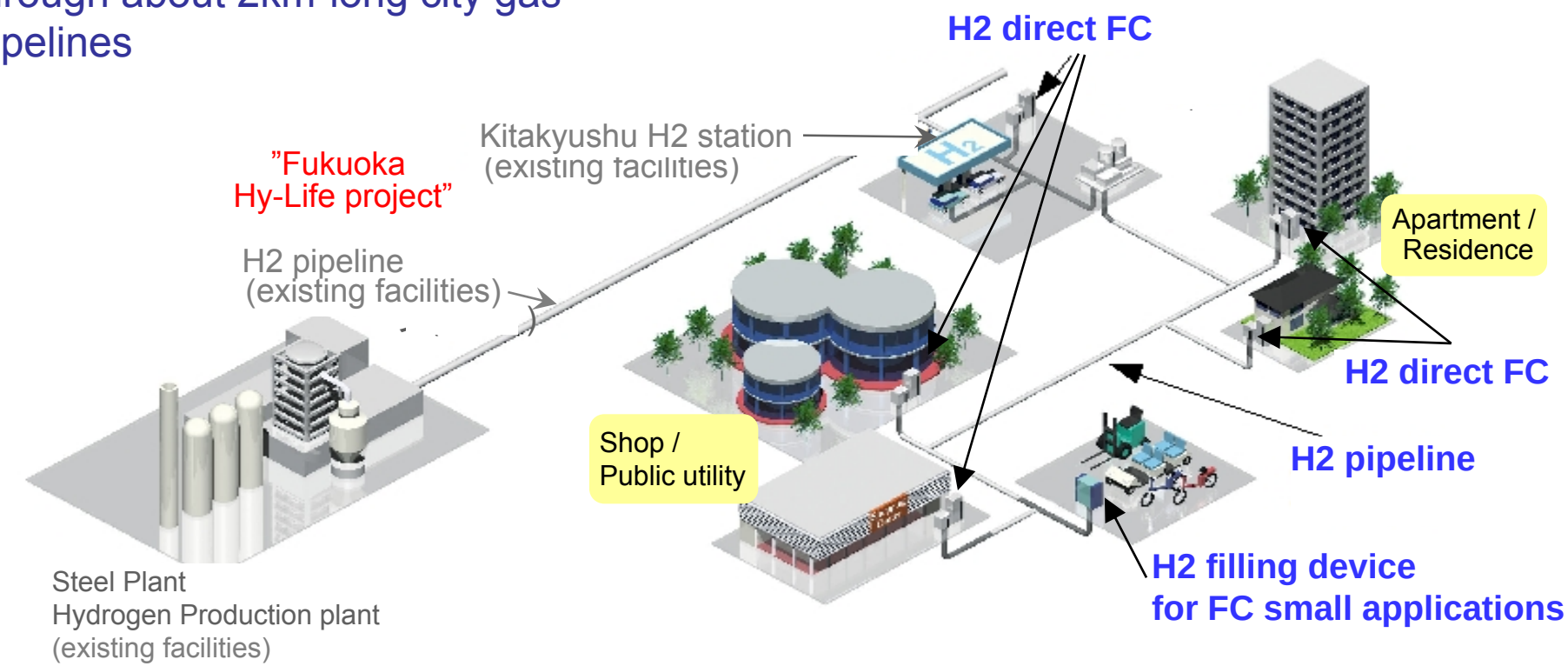


# Outline of 2009-2010 Hydrogen Town Project

METI : “Demonstration Program for Establishing a Hydrogen-Based Social System”

## Hydrogen Town Project (Fukuoka)

Hydrogen supply to households through about 2km-long city gas pipelines



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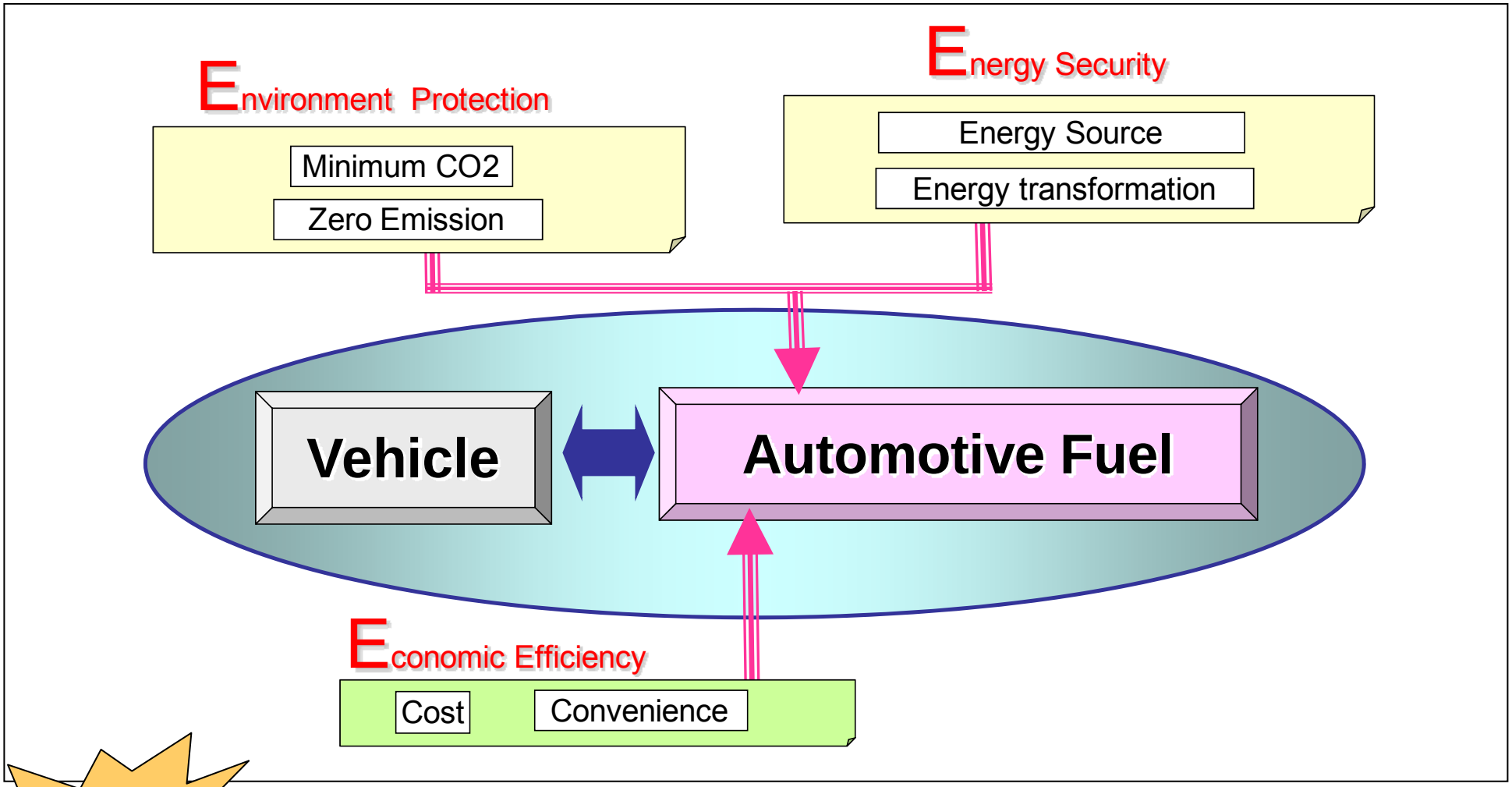
# 3E Requirements of Automotive Fuels



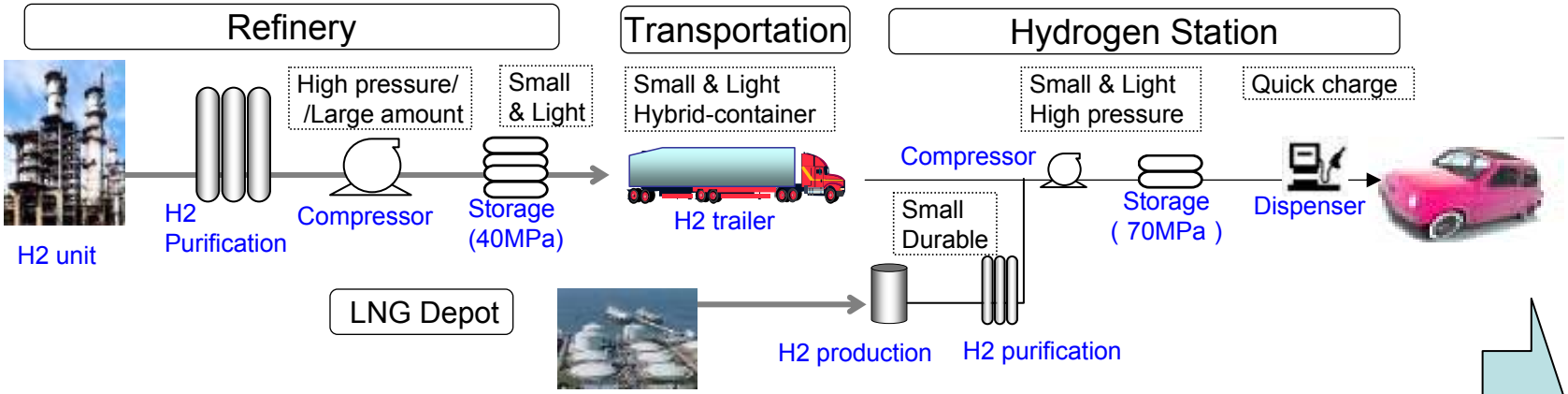

Important Problem

| Urban Air Pollution | Energy Resources | Global Environment |
|---|---|---|
| (Emission Control) | (Stable & Sustainable Supply) | (CO2 Reduction) |

# Cost-down through R/D and Regulation relaxation

## 1 . R/D cost-down

NEDO project etc : Fundamental/Elemental R/D




・ Field test of total supply system

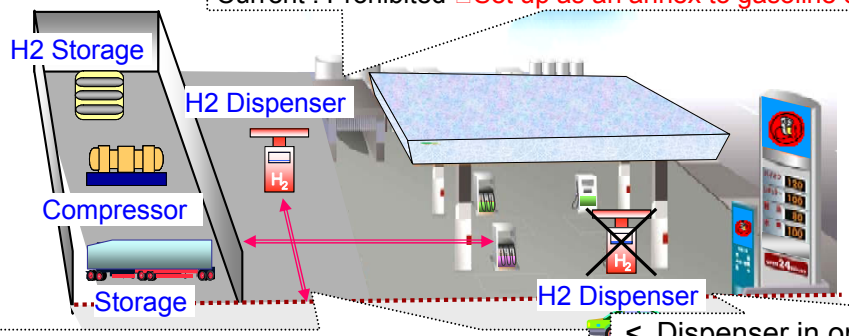
Target : Below gasoline price per driving distance

## 2 . Regulation relaxation cost-down

< Example >

<Storage capacity limit>
Building Standards Law
Current:
Semi-factory area : 3,500Nm$^3$
( 100FCV charge capa. )
Shop/Sales area : 700Nm$^3$
( 20FCV charge capa. )
Semi-residence area : 350Nm$^3$
( 10FCV charge capa. )
□Raising shop/sales area limit to the same as semi-factory area limit

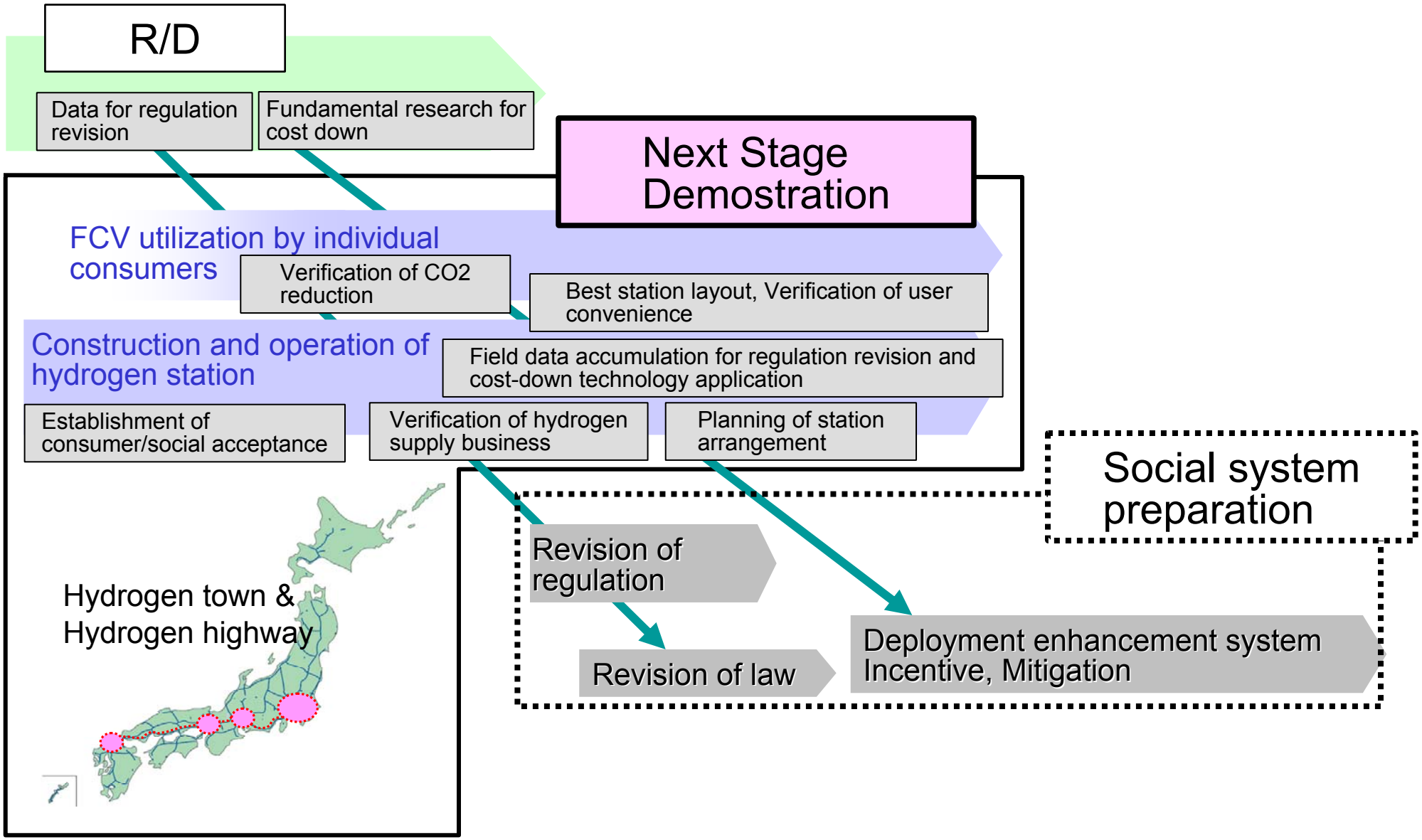
< High pressure equipment in open space for refueling >
Fire Service Law
Current : Prohibited □Set up as an annex to gasoline dispenser




< Distance between H2 dispenser and road >
High Pressure Gas Safety Act
Current : 6m □ 4m, same as gasoline dispenser

< Dispenser in open space for refueling >
Fire Service Law
Current : Prohibited □Set up as an annex to gasoline dispenser

# Missions of "Next Stage Demonstration" toward Deployment



# Required point of view on Social Demonstration Test

## □ Social Point of View (Social acceptance)

How the Hydrogen energy system is safe and reassured, and contribute to CO2 reduction

## □ User's Point of View (User's convenience)

Verify user's convenience of hydrogen supply network (Hydrogen Stations)

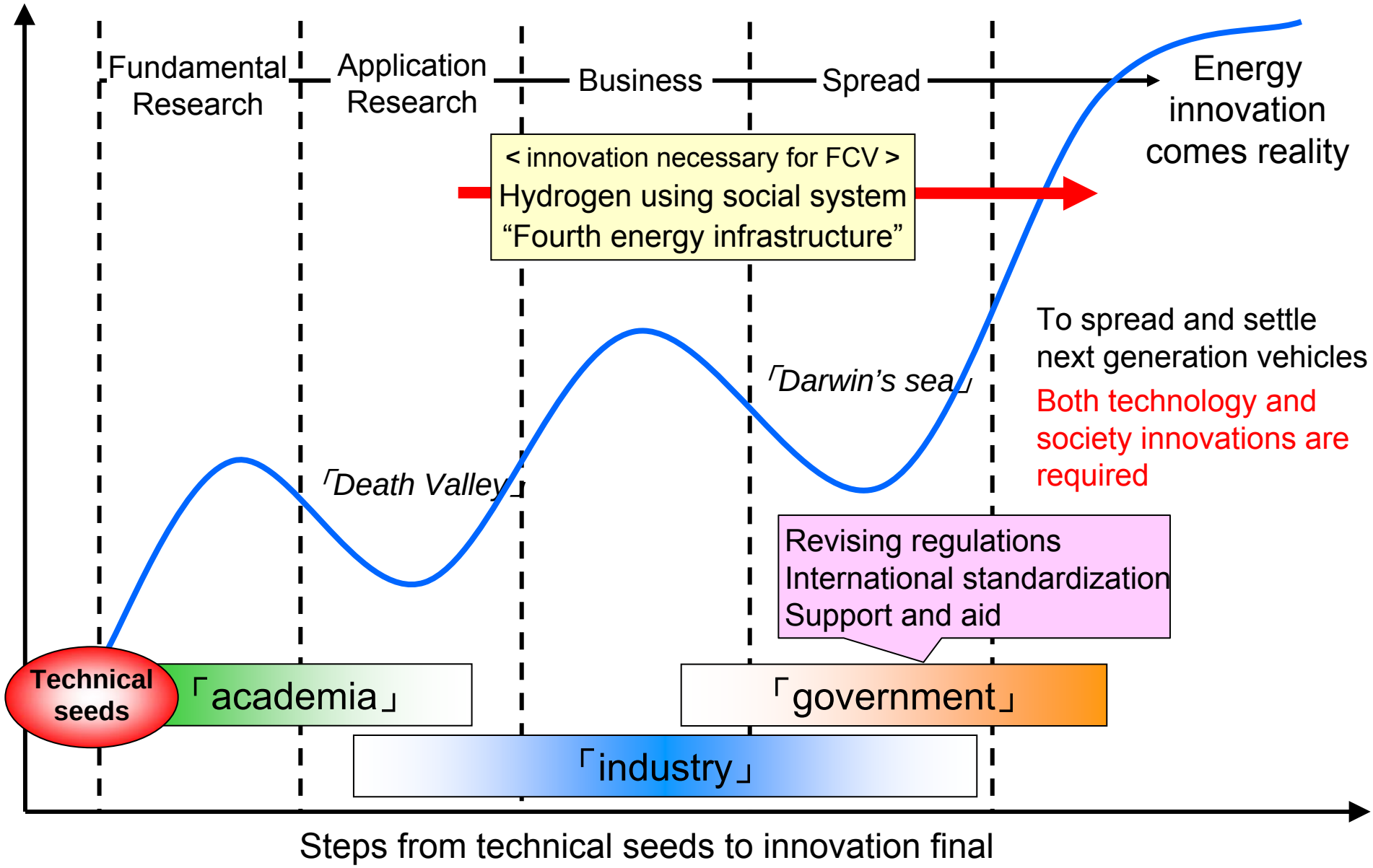
"Locating Hydrogen Stations without losing user's convenience" "Enabling the hydrogen cost Lower than gasoline equivalence"

## □ Supplier's Point of View (Business Feasibility)

Verify the feasibility of hydrogen supplying business (Production, Transportation and Hydrogen stations)

"Enabling the competitive price for gasoline"

# Innovation steps and FCV



Thank you for your attention.