

# **Initiative to Promote a Diffusion of Hydrogen Fuel Cell Vehicles in Northern Kyushu**

**Fukuoka Strategy Conference for Hydrogen Energy**

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**Secretary General**

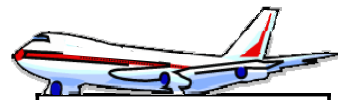
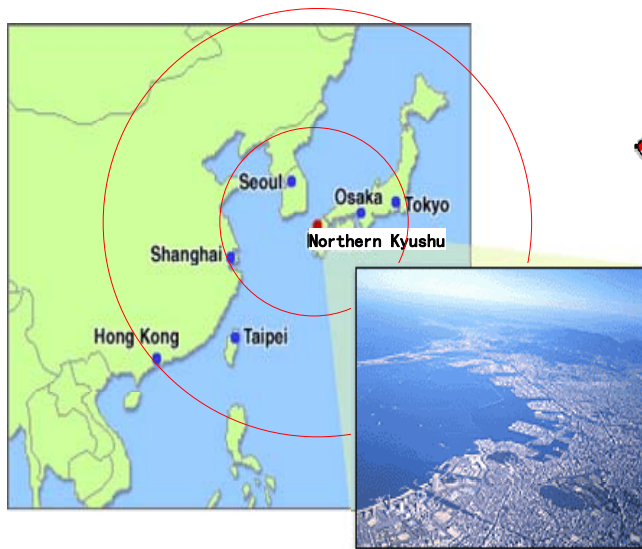
**( Executive Advisor, NIPPON STEEL ENGINEERING CO., LTD.)**

Feb. 1, 2012

# **Northern Kyushu's Potential**

# Northern Kyushu's Potential

Northern Kyushu has necessary conditions for building an FCV production hub such as being the gateway to Asia and an R & D hub, and having a cluster of manufacturing businesses and a system of cooperation among industry, academia and government.



Flights to/from Asian major cities	
Destination	Flight time
Seoul	1 hr 15 min
Tokyo	1 hr 30 min
Shanghai	1 hr 30 min
Taipei	2 hrs 00 min
Beijing	2 hrs 20 min
Hong Kong	4 hrs 40 min
Singapore	5 hrs 45 min

To major Asian cities within a few hours



Hydrogen Energy Test and Research Center (HyTReC)



Ito Campus, Kyushu University



Cluster of various manufacturing businesses

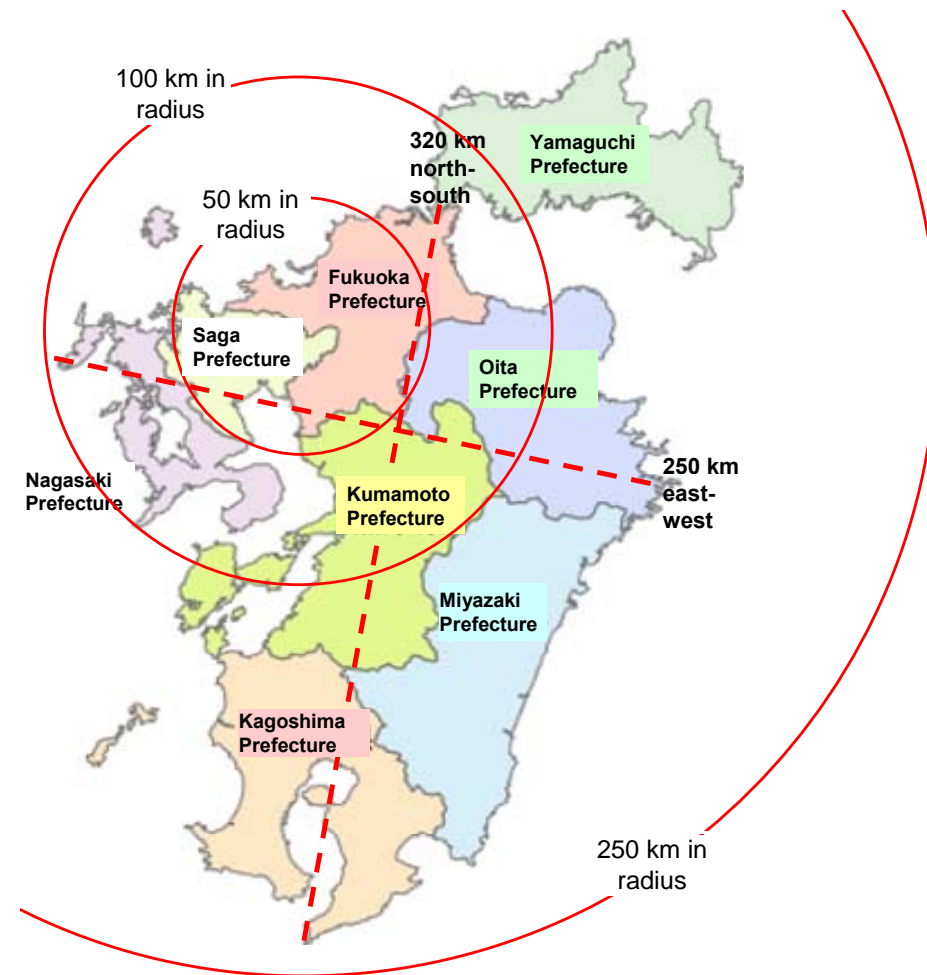


Kitakyushu Eco-Town

# Regional Characteristics of Northern Kyushu

Northern Kyushu is suitable for promoting a widespread use of FCVs because of the adequate size of its cities and geographical characteristics.

- The population of Fukuoka and Saga Prefectures combined is approx. 6million.
- Kyushu is a compact region which extends 250 km east-west and 320 km north-south.
- Hydrogen supply infrastructure network can be built efficiently because of the adequate distribution of the road network and urbanized areas.



# Hydrogen Strategies

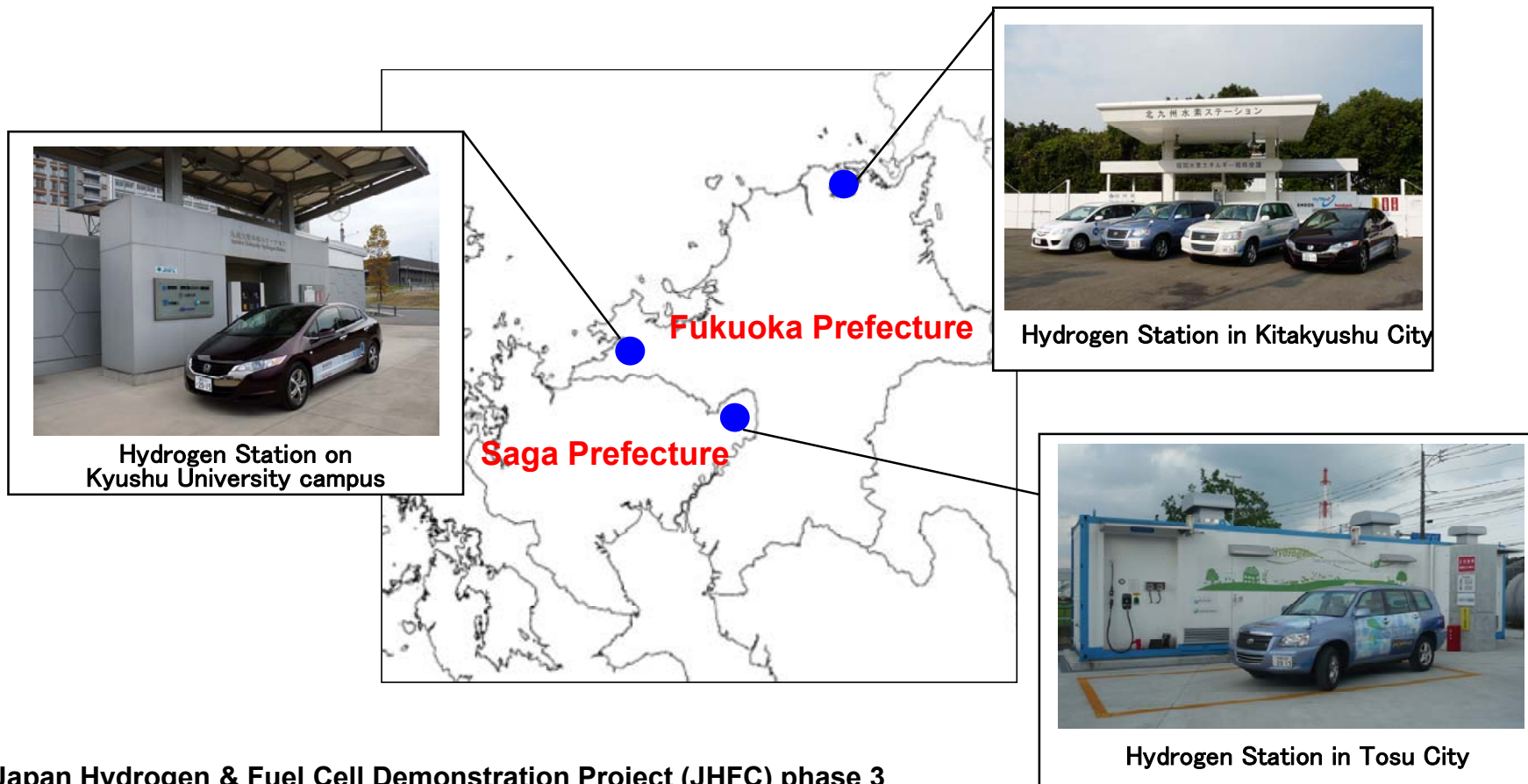
## Fukuoka Hydrogen Strategy (Hy-Life Project)

Only endeavor in Japan integrated supporting hydrogen manufacturing, transportation, storage, and use.



# Implementation of Hydrogen Infrastructure & FCV Demonstration Project

As a major activity of NEDO's demonstration project\*, 14 hydrogen stations were constructed and have been in operation across Japan. Three of them are in Northern Kyushu.



\* Japan Hydrogen & Fuel Cell Demonstration Project (JHFC) phase 3

# Cluster of Automotive Industries in Northern Kyushu

## Northern Kyushu 1.5 Million Car Production Project

Fukuoka Prefecture promotes a project to build an automobile production hub with an annual capacity of 1.5 million vehicles aiming to establish a consistent automobile manufacturing chain from development to assembly in Northern Kyushu.

Saga Prefecture actively promotes a project to assist businesses in expanding trade opportunities and entering new markets.

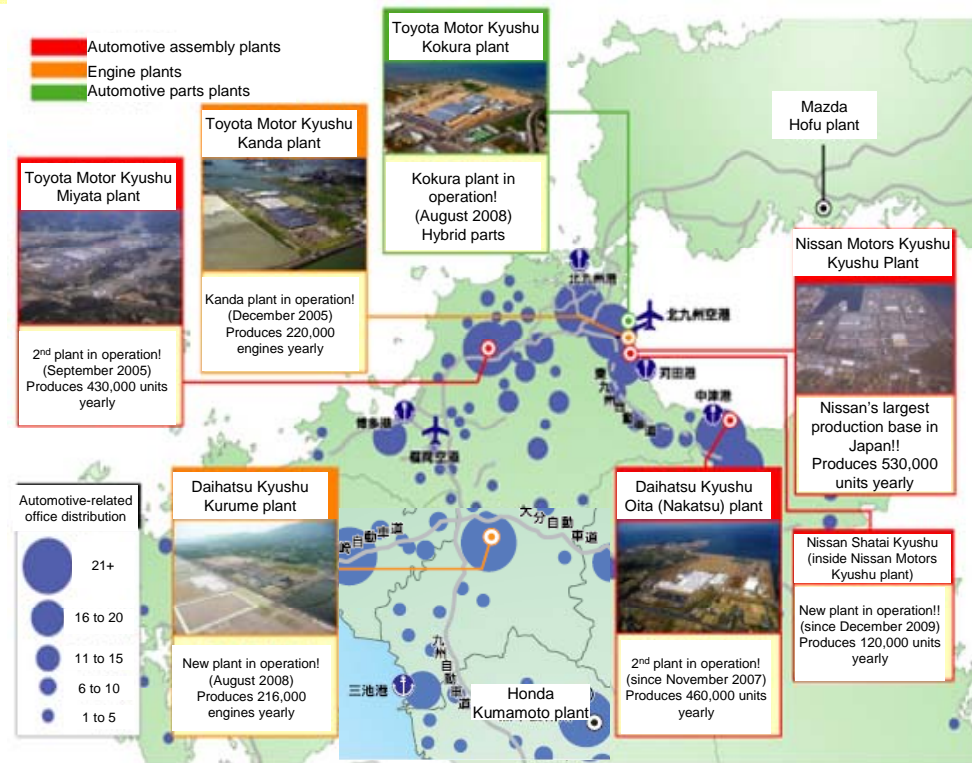
### Targets

Annual production:  
**1.5 million vehicles**

Local procurement: **70 %**

**Advanced human resource hub** for automotive industries

Development and community demonstration hub of **advanced automotive technologies**



# **Effects of the Diffusion of FCVs and Hydrogen Supply Infrastructure / Japan's Move toward a Widespread Use of FCVs**



## Effects of the Diffusion of FCVs and Hydrogen Supply Infrastructure

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- **Japan has a technological advantage in FCVs with the largest number of patent applications in fuel cell technologies. A widespread use of FCVs will spur Japan's industrial competitiveness in the global market and contribute to securing employment in the automotive sector.**
- **FCVs will contribute to the combat against global warming by reducing CO<sub>2</sub> emissions, as they are more energy efficient than conventional vehicles with internal combustion engines.**
- **Although transport sector currently depends largely on fossil fuels for energy, hydrogen energy will contribute to the stabilization of energy demand and supply as it can be derived from various sources including renewable energy sources.**
- **FCVs and FC buses can function as emergency power supply systems as they can generate electricity from internally stored hydrogen or hydrogen from filling stations.**

# Japan's Move toward a Widespread Use of FCVs and the Role of Northern Kyushu

## Joint declaration by 13 private companies (January 13, 2011)

13 automobile manufacturers and hydrogen suppliers have jointly declared to introduce FCVs on a full-scale to the domestic market, mainly in the four major cities Tokyo, Aichi, Osaka, and Fukuoka by 2015.

- Automobile manufacturers are aiming to introduce FCVs in the domestic market by starting sales of FCVs by 2015 mainly in four major cities.
- Hydrogen suppliers are aiming to set up leading hydrogen supply infrastructures at 100 places in Japan by 2015 to create initial demands for FCVs.
- Automobile manufacturers and hydrogen suppliers are working together to introduce and spread FCVs on a nationwide basis and establish hydrogen supply infrastructures.



※ After introduction, promote introduction of FCVs throughout the country and establish hydrogen supply infrastructures.

## The role of Northern Kyushu

Northern Kyushu plays a leading role in achieving a self-sustained diffusion of FCVs and hydrogen supply infrastructure in Japan by leveraging its strength acquired through the implementation of “Fukuoka Hydrogen Strategy” and clustering of automotive industries.

# **Initiative to Promote a Diffusion of Hydrogen Fuel Cell Vehicles in Northern Kyushu**

# Vision for the Plan to Introduce FCVs in Northern Kyushu

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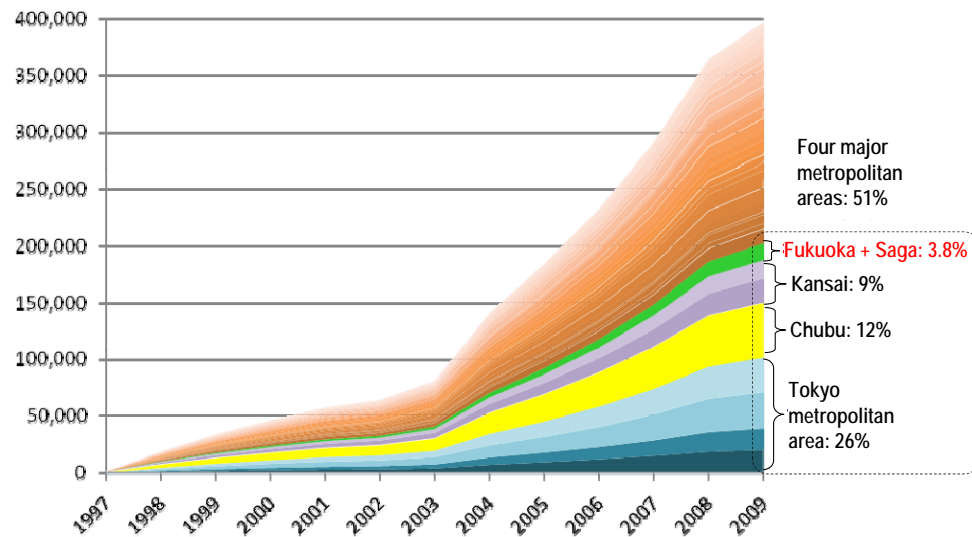
## **Purpose:**

**It aims to foster and cluster FCV-related businesses and stimulate the local economy by taking a lead in creating a self-sustained market for FCVs and hydrogen supply infrastructure in Northern Kyushu through cooperation among industry, academia and government.**

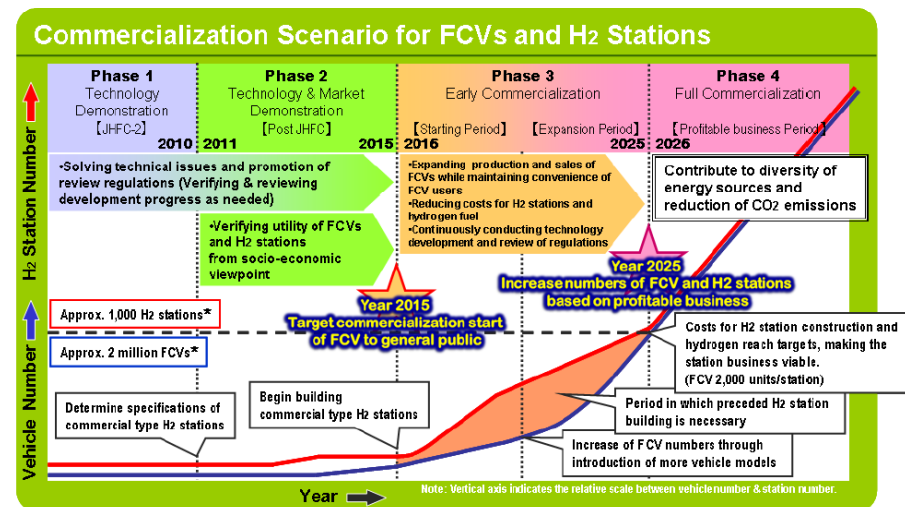
- **Create an initial market for FCVs by 2015 by taking a lead in setting up hydrogen filling stations in Northern Kyushu.**
- **Accelerate the construction of hydrogen filling stations to encourage a widespread use of FCVs in Northern Kyushu by 2020.**
- **Take measures to facilitate the introduction of FCVs through cooperation among industry, academia and government in order to realize a self-sustained diffusion of FCVs and hydrogen supply infrastructure in Northern Kyushu.**
- **Take the lead over other regions in Japan in developing a self-sustained market for FCVs and hydrogen supply infrastructure through above-mentioned initiatives.**

# Targets for the Full Commercialization of FCVs in Northern Kyushu

- Accelerate the diffusion of FCVs to ensure that the sales of FCVs in Northern Kyushu will go far beyond the current share at the beginning of the early commercialization phase in 2015
- Although FCCJ's commercialization scenario envisages the beginning of a self-sustained expansion around 2025, Northern Kyushu will push this ahead of schedule wherever possible.



Sales of hybrid vehicles



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

FCCJ's commercialization scenario

# Concept of Developing Hydrogen Supply Infrastructure

Develop hydrogen filling stations in a phased manner to make smooth diffusion of FCVs possible.

## Origin analysis

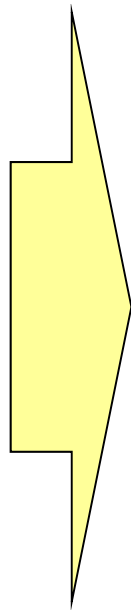
- # of registered vehicles
- Sales of luxury cars
- Sales of hybrid cars

## Destination analysis

Analysis of road traffic census (car owner interviews, O-D surveys)

## Needs analysis

- Questionnaire to individual car owners (1,000 respondents)
- Questionnaire to corporate car owners (334 respondents)
- Stakeholder meeting (participated by 30 major local companies)



## H2 Station Deployment Plan

### By 2015

- ① Locate H<sub>2</sub> stations at “origins” of FCV users
- ② Locate H<sub>2</sub> stations at major rest stops along expressways
- ③ Locate H<sub>2</sub> stations at “destinations” of primary importance to users with wide-area mobility

### By 2020

- ④ Locate H<sub>2</sub> stations at “destinations” of users with wide-area mobility
- ⑤ Locate H<sub>2</sub> stations at midpoints between the “origins” and “destinations” along inter-city highways
- ⑥ Locate H<sub>2</sub> stations at major bus offices



↑ FCV & FC bus test-ride event  
← Stakeholder meeting

# [Reference] Image of Hydrogen Supply Infrastructure Development Necessary to Create a Demand for FCVs in Northern Kyushu

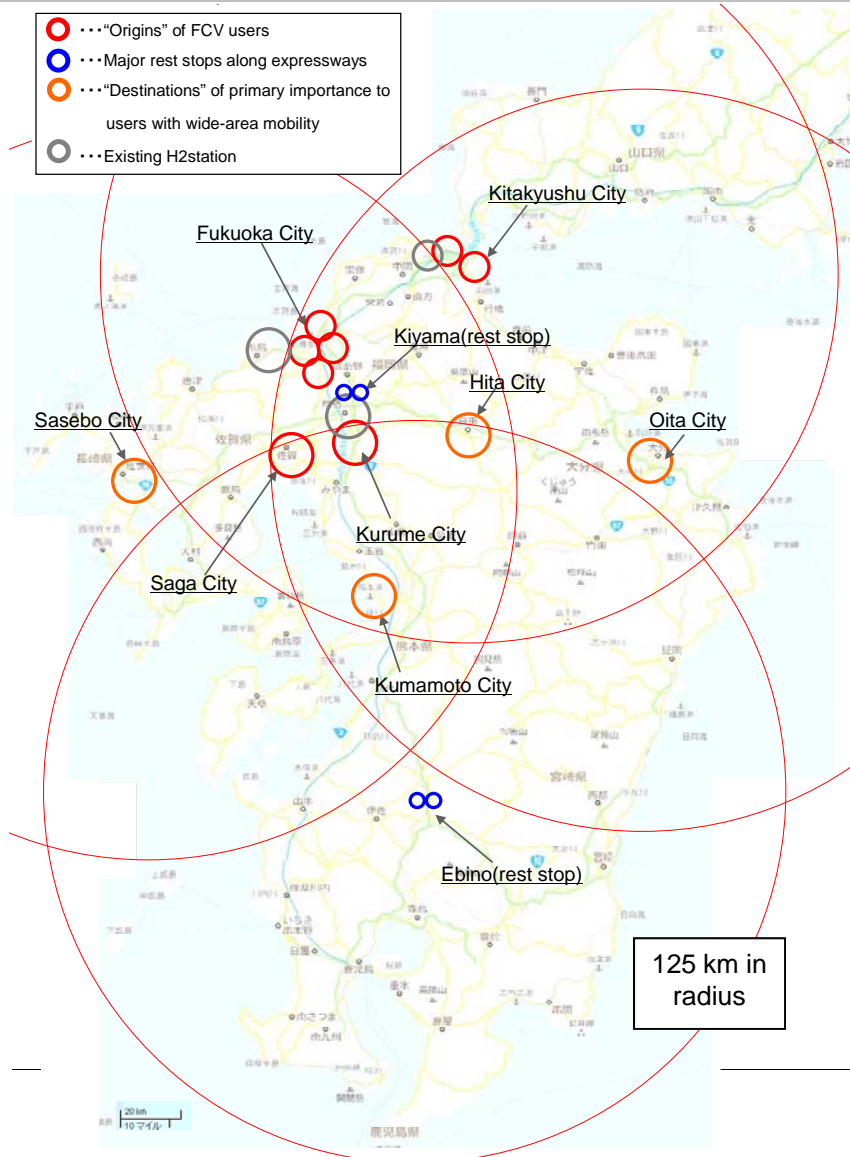


Image by 2015

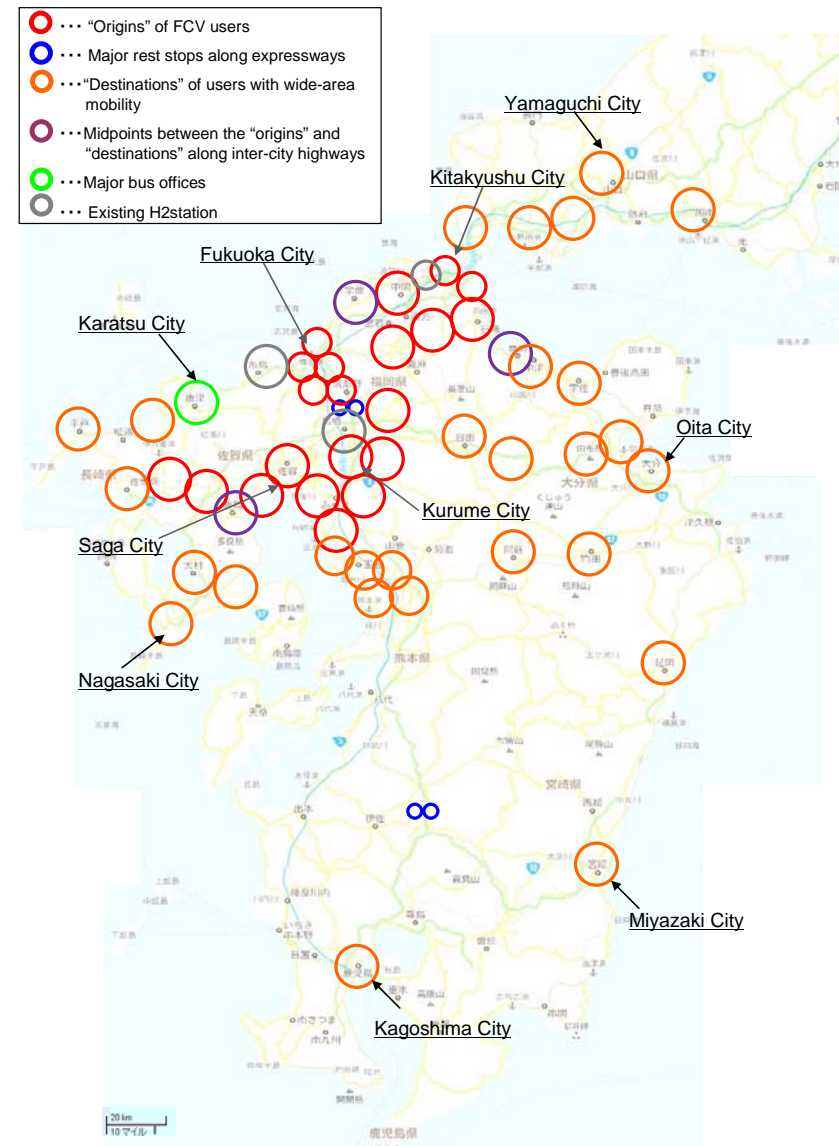


Image by 2020

## Measures to Promote the Introduction of FCVs (Excerpt: Creating the Initial Demand for FCVs)

Setting precedents	Precedents for introduction	<ul style="list-style-type: none"> <li>• FCVs introduced as official vehicles of national and local governments and company vehicles</li> <li>• FC buses introduced to public transit</li> </ul>
	Promotion of introduction	<ul style="list-style-type: none"> <li>• Case examples of companies using FCVs are introduced via public relations media</li> </ul>
Initial cost reduction	Assistance for introduction	<ul style="list-style-type: none"> <li>• FCVs are eligible for subsidies just as electric vehicles</li> <li>• Part of the purchase price is reimbursed as Eco-Points</li> </ul>
	Tax incentive	<ul style="list-style-type: none"> <li>• Extension of Eco-Car Tax Breaks (car acquisition and weight taxes)</li> </ul>
	Financing mechanism	<ul style="list-style-type: none"> <li>• Development of soft loans</li> </ul>
Running cost reduction	Tax incentive	<ul style="list-style-type: none"> <li>• Extension of Eco-Car Tax Breaks (car acquisition and weight taxes)</li> <li>• Exemption of hydrogen from fuel tax</li> </ul>
	Discounted / free expressway toll	<ul style="list-style-type: none"> <li>• Discounted / free toll on urban expressways</li> </ul>
	Discounted / free parking fees	<ul style="list-style-type: none"> <li>• Discounted / free parking fees</li> </ul>
	Auto insurance reduction	<ul style="list-style-type: none"> <li>• Reduction on auto insurance premium</li> </ul>
	Reduction on other maintenance costs	<ul style="list-style-type: none"> <li>• Reduction on vehicle inspection costs</li> </ul>
Others	Clarify benefits of introducing FCVs to companies	<ul style="list-style-type: none"> <li>• Companies which added FCVs to their fleets are certified as Eco-Establishments (given bonus points and other benefits in the public bidding process)</li> <li>• Raising companies' awareness of using FCVs as part of their CSR activities</li> </ul>



## Measures to Promote the Introduction of FCVs (Excerpt: Developing Hydrogen Supply Infrastructure)

Initial cost reduction	Subsidies for installation	<ul style="list-style-type: none"> <li>• Subsidies for the installation of hydrogen supply infrastructure</li> </ul>
	Technological development	<ul style="list-style-type: none"> <li>• Assistance in technological development for cost reduction</li> <li>• Assistance in product development by HyTReC (Hydrogen Energy Test and Research Center)</li> </ul>
	Rationalization of regulations	<ul style="list-style-type: none"> <li>• Rationalization of regulations to help reduce costs (design requirements etc.)</li> </ul>
Running cost reduction	Tax incentives	<ul style="list-style-type: none"> <li>• Reduction on or exemption from fixed property tax</li> </ul>
	Labor cost reduction	<ul style="list-style-type: none"> <li>• Raising the mandatory retirement age for high-pressure gas production safety managers. Utilization of retired engineers.</li> </ul>
	Rationalization of regulations	<ul style="list-style-type: none"> <li>• Rationalization of regulations to help reduce costs (inspection etc.)</li> </ul>
Human resource development	Human resource development	<ul style="list-style-type: none"> <li>• Assistance in acquiring certificates from vocational schools etc.</li> <li>• Establishment of a qualification system specialized in the operation of hydrogen filling stations</li> </ul>
Others	Securing sites for the infrastructure	<ul style="list-style-type: none"> <li>• Reduction on or exemption from income tax and fixed property tax for landowners who lease their land for the infrastructure</li> </ul>
	Assistance in authorization procedures	<ul style="list-style-type: none"> <li>• Guidelines and manuals concerning authorization procedures prepared by administrative bodies</li> </ul>

# Conclusion

## Aiming to Develop a Hub of FCV-related Industries in Northern Kyushu

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- **Time to start developing hydrogen supply infrastructure to lead the diffusion of FCVs is imminent.**
- **It is important to develop hydrogen stations in the potential hub of early commercialization phase and take the characteristics of the area into consideration in marketing FCVs.**
- **As the very first attempt to review the project in Japan, Northern Kyushu hosted the Advisory Committee Meeting this fiscal year, in which experts reviewed and analyzed challenges specific to the target areas based on the needs of local vehicle users and major businesses.**
- **Based on the committee's review, discussions will be held with parties involved to draw up a concrete action plan.**
- **Foster and cluster FCV-related businesses to stimulate the local economy by building a hub for the full commercialization of FCVs and hydrogen supply infrastructure through cooperation among industry, academia and government in Northern Kyushu around the core of Fukuoka and Saga Prefectures.**