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Economic Cooperation**

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Agenda Item: 4

Government Initiative for Promoting Next Generation Vehicles

Purpose: Information
Submitted by: Japan



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Government Initiative for Promoting Next Generation Vehicles

April, 2014

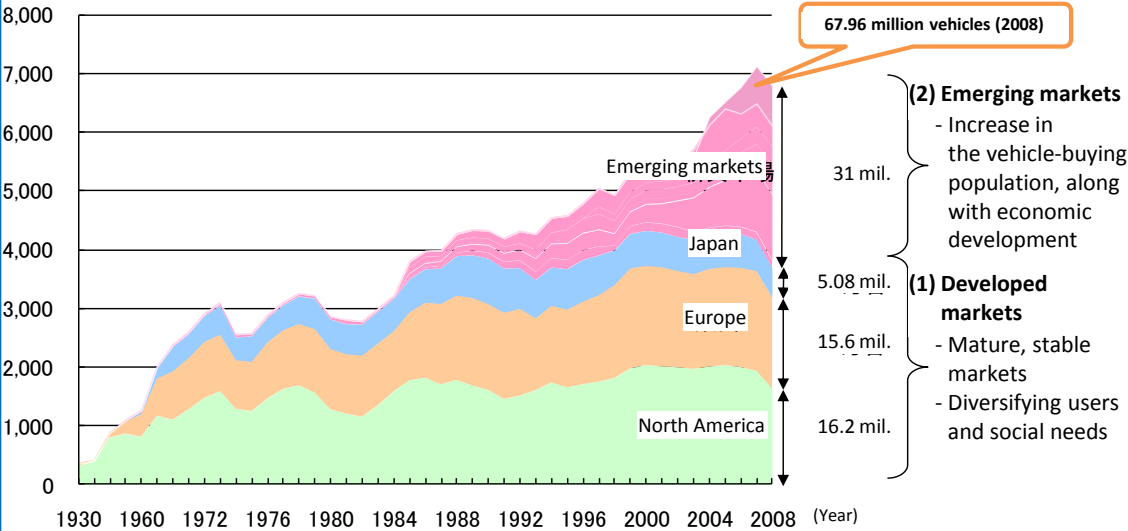
Ministry of Economy, Trade and Industry

Next-Generation Vehicle Plan 2010 (Outline)

Structural change in the auto market

- Rapid growth of emerging markets and trends toward green vehicles in developed markets

(Number of vehicles in 10,000s)



Emergence of ultra-low-price vehicles

(2) **Emerging markets**
- Increase in the vehicle-buying population, along with economic development

Trends toward greater fuel efficiency
Potential need to use different-power trains for different markets

(1) **Developed markets**
- Mature, stable markets
- Diversifying users and social needs

External factors affecting the auto industry

Great changes in the competition environment

- Alliance based on environmental technology

Energy constraints

- High oil prices in the medium-to-long term

Global warming prevention

- Target of reducing GHG by 25% from the 1990 level by 2020

New industry

- Making EVs and batteries the growth driver

Six Plans

Overall plan

Batteries

Rare metals

Infrastructure

Systems

International standards

next-gen. vehicle development and production

Secure battery R&D and technology

Secure rare metals and build resource recycling systems

Install 2 mil. normal chargers & 5,000 quick chargers

vehicles with systems (smart grid, etc.)

strategic international standardization

- Set diffusion targets (for 2020/2030)
 - Next-generation vehicles account for up to 50% in 2020
 - Advanced eco-friendly - vehicles (next-generation vehicles + eco-friendly conventional vehicles) account for up to 80% in 2020
- Diversify fuels
- Higher-value-added parts
- Promote the siting of low-carbon industries

- Improve performance of lithium-ion batteries
- Develop post-lithium-ion batteries
- Achieve economies of mass production by promoting EVs
- Create an environment for secondary use of batteries

- (Upstream)
- Strategically secure rare metals
- (Middle course)
- Develop batteries and motors free of rare metals
- (Downstream)
- Establish battery recycling systems

- Build infrastructure intensively and systematically during the market preparation phase
 - Mainly in EV/PHV towns
- Pave the way for full-scale diffusion
 - Compile EV/PHV town best practice handbook
 - Collaborate with the private sector (CHAdEMO Association)

- Create new business models in EV/PHV towns.
- Verify systems through the Next-Generation Energy and Social System Demonstration program.
- Promote international standardization and business development based on the verification results

- Establish international standards for battery performance and safety evaluation methods.
- Establish international standards for charging connectors/systems.
- Enhance public-private organization for standardization.
- Develop human resources for standardization

Battery R&D Target (set in 2006)

Resource Strategy Roadmap

Infrastructure Development Roadmap

International Standardization Roadmap

Estimation of the Diffusion of Next-generation Vehicles (Next-generation Vehicle Strategy 2010)

Government targets by type of NGV

Ratio of the NGV sales to the total new passenger vehicle sales

	2020	2030
Conventional vehicles	50~80%	30~50%
Next-generation vehicles	20~50%	50~70%
Hybrid vehicles	20~30%	30~40%
Electric vehicles Plug-in hybrid vehicles	15~20%	20~30%
Fuel cell vehicles	~1%	~3%
Clean diesel vehicles	~5%	5~10%

Sales volume of passenger vehicles = 4,570,000 units (2012)

Notification of subsidies for measures to promote the introduction of clean energy vehicles

Do You Know about the Subsidies for CEV (Clean Energy Vehicles)?

Government's subsidies for electric vehicles (EV), plug-in hybrid vehicles (PHV), clean diesel vehicles (CDV), and charging facilities

Examples of applicable vehicles and amount of subsidies

No CO₂ emissions and quiet during driving

Electric vehicle



三菱自動車
I-MiEV M
【標準仕様車】
265.25万円
(税別・税込)～

Maximum
subsidy
¥740,000

=USD 7,400



日産自動車
リーフ
327.5万円
(税別・税込)～

Maximum
subsidy
¥780,000

=USD 7,800

Environmental performance of both electric and hybrid vehicles

Plug-in hybrid vehicle



トヨタ自動車
プリウス PHV
305万円
(税別・税込)～

Maximum
subsidy
¥450,000

=USD 4,500

Significant reduction of soot (PM), NOx, and CO₂

Clean diesel vehicle



マツダ
CX-5 XD
259万円
(税別・税込)～

Maximum
subsidy
¥180,000



日産自動車
エクストレイル20GT
312.375万円
(税別・税込)～

Maximum
subsidy
¥200,000

Available for:

individuals, corporations, and local governments purchasing EV, PHV, or CDV (except vehicles with a black or green license plate)



<http://www.cev-pc.or.jp>

次世代自動車

検索

Targets of EV Charger installation: How we deploy the charging infrastructure?

Targets for 2020

Normal Chargers (NC): 2 Million
Quick Chargers (QC): 5,000



- EVs should basically be charged by NC at night.
- A certain number of QC should also be installed as a “safety net”.

How do we start?

At the Market Preparation Stage, we build infrastructure intensively and systematically mainly in EV/PHV towns

- Establish infrastructure development guidelines
- Compile EV/PHV town best practice handbook (including business models)

→ Pave the way for the Diffusion Stage

Outline of the EV&PHV Town Concept

Outline

- The "EV&PHV Town Concept" is a model project for a demonstration experiment toward full-fledged dissemination of EV/PHV, which is formulated in the "Action Plan for Achieving a Low-Carbon Society".
- Creating initial demand for EV/PHV requires the intensive development of charging infrastructure and public awareness activities. Thus, under the concept, local government that are taking the lead in the penetration of EV/PHV were selected as model regions ("EV&PHV Town").
- In each EV&PHV Town, intensive development of environmental infrastructure will be pursued for the introduction of EV/PHV in cooperation with local enterprises. From this, penetration models that take regional characteristics into account will be established and then applied to all areas of Japan.

Arrival point at 2011

- Within the EV / PHV town planning, each EV and PHV town will carry out plan specification, plan execution, and result-sharing information to achieve each aim and objective.
- Officially issue *Best Practices Handbook Volumes 1 and 2* as a deliverable of the EV / PHV configuration



Initiatives in semi-mountainous regions

- In increasingly isolated regions, the number of gas stations is declining, which forces residents to drive long distances for gas. Here, EV/PHV, which can be charged at home, could be a suitable alternative.
- Efforts are also underway to electrify light trucks that are in high demand in rural regions.

Participatory demonstration of next-generation vehicles in a semi-mountainous regions: Gifu Prefecture

- 1) The semi-mountainous areas of Takayama City, Gero City, and Nakatsugawa City were selected as demonstration regions

Three elements that characterize semi-mountainous regions were defined: **“cold region,”** **“large elevation differences,”** and **“few gas stations.”**

- 2) Three participants were recruited and selected from each region (total of 9 participants) using the Internet and other means. The participants were lent EV/PHV for one month periods during the spring, summer, autumn, and winter.
- 3) From results obtained from the spring demonstration, no obvious disadvantages attributable to semi-mountainous characteristics were seen, while the vehicles' advantage as a means of overcoming the problem of increasingly sparse gas stations by reducing fuel costs was clearly evident. In the future, further testing will determine the effect of air conditioner/heating use during the winter.



The average total distance driven by all participants during the demonstration was large at 1,140 km per month. At the same time, the average amount that fuel costs were reduced was 9,000 yen per month (indicating the vehicles' large effect in reducing fuel costs).

An improved EV light truck: Tottori Prefecture

A light truck owned by the prefecture that was modified into an EV

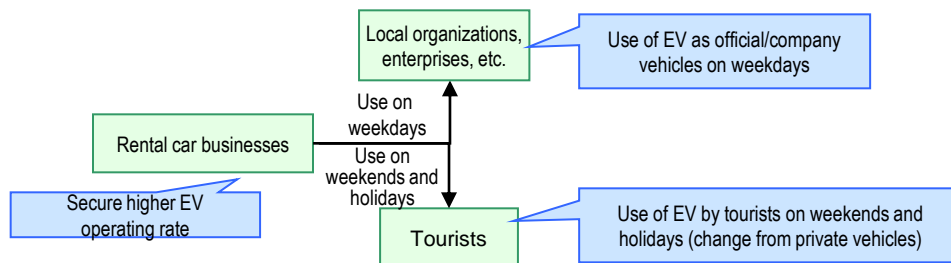


EV tourism : Aomori Oirase Gorge Park & EV Ride

- Oirase Gorge in Aomori Prefecture is the only area of Japan's 29 national parks where a national highway passes through the middle (along the gorge) of a specially protected area. This makes expanding restrictions on the passage of private vehicles in the gorge essential to ensuring its appropriate use. However, a delay in the construction of a bypass route presents a problem here.
- Consequently, Aomori Prefecture is studying a system ("park & EV ride") that will encourage people to change to electric vehicles when restrictions on private vehicles are in place.



Proposed model for a "park & EV ride" system



Expanded frequency of restriction application (conceptual image)

2 days, once a year

For 1 or 2 weeks

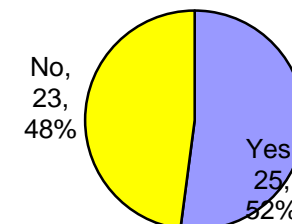
For 1 month

Expanded scope of restrictions on private vehicles (vehicles allowed to pass)

For tourists	1) Shuttle buses, route buses (allowed to pass as a substitute means of transportation)
	2) EV (rental cars) (Applied on weekdays; creation of added value through use of EV)
For local residents, etc.	3) Large vehicles (allowed to pass due to lack of alternative route until completion of the bypass)
	4) Permitted vehicles (Vehicles that would be significantly inconvenienced by detours required by the expanded restriction period [e.g., vehicles used by local residents to commute to school or work] are allowed to pass.)

Questionnaire survey of participants in a test-drive event held during restrictions on private vehicles

Question: Would exemption of EV from private vehicle restrictions motivate you to purchase an EV?



Subsidy scheme for Charging Infrastructure

1. Budget and project period

Budget: ¥100.5 billion (FY2012 supplementary budget)

Application period: March 19, 2013 to February 27, 2015

One Year Extension

2. Costs subsidized and the grant rate

Subsidies are granted to those newly purchasing and/or installing a charger under the following four classifications:

Project class	Outline	Costs subsidized	Grant rate
#1	Installation of charging facilities with high public value* under the vision for charger installation specified by local governments, etc.	Charger purchase and installation costs	2/3
#2	Installation of charging facilities with high public value* even though not under the above vision	Charger purchase and installation costs	1/2
#3	Installation of charging facilities in the parking lot of a residential complex, monthly parking lot, etc.	Charger purchase and installation costs	
#4	Installation of charging facilities other than the above	Charger purchase costs	

* “High public value” must meet the following requirements.

- (1) The charging facilities must be freely accessible by anyone from the entrance facing a public street.
- (2) Use of the charger must not require the use of other services (such as food and drink).
- (3) Users must not be restricted. (However, charging facilities that can be used by paying a fee are acceptable.)





Fuel Cell Vehicles : Present conditions of inside and outside Japan

- Japanese automobile manufacturers and 13 energy business operators announced a joint statement about fuel cell vehicles (FCVs) on January of 2011. The substances are that ①to bring FCVs to market in 2015, and ②to develop hydrogen refueling stations centering four main urban areas.
- Japan Revitalization Strategy (decided by Cabinet Meeting of June 14, 2013) targeted to the fastest diffusion of FCV in the world, by installing about 100 hydrogen stations with focusing around four main urban areas toward the product releases of FCV in 2015.

Participant enterprises to the joint statement

- Automobile manufacturers Toyota, Nissan, Honda
- Petroleum companies JX Nippon Oil & Energy Corp., Idemitsu, Showa Shell, COSMO OIL
- Town gas companies Tokyo Gas, Osaka Gas, Toho Gas and Saibu Gas
- Industrial gas companies Iwatani Corporation, Taiyo Nippon Sanso

Collaboration of Auto manufacturers

Toyota, BMW	Nissan, Daimler, Ford	Honda, GM	Hyundai
<p>< Announced on Jan. 24, 2013 ></p> <ul style="list-style-type: none"> • An agreement was reached regarding joint development of FCVs. • Sales of FCVs will start in 2015. 	<p>< Announced on Jan. 28, 2013 ></p> <ul style="list-style-type: none"> • An agreement was reached regarding joint development of FCVs. • Production model FCVs are scheduled for delivery in 2017. 	<p>< Announced on Jul. 2, 2013 ></p> <ul style="list-style-type: none"> • An agreement was reached regarding joint development of FCVs. • Sales of FCVs will begin in 2015. 	<p>< Announced on Feb. 26, 2013 ></p> <ul style="list-style-type: none"> • Plans have been made for the mass-production of 1,000 FCVs by 2015. 

Fuel Cell Vehicles ③: Activities for Developing Hydrogen Refueling Stations

- For the market introduction of fuel cell vehicles in 2015, it is necessary to develop hydrogen refueling stations, which are essential infrastructure, on a timely basis, in addition to improving the performance, safety, etc. of the fuel cell vehicles themselves and achieving low costs.
- For these standpoints, the following actions have been taken to lower the cost of hydrogen station installation in Japan which is acknowledged as relatively expensive than other countries(*In Europe and the US: 100~200 million yen, In Japan: 500~600 million yen).

Activities aimed at promotion of development of hydrogen refueling stations

① Subsidization of development

- Prior to putting fuel cell vehicles on the market, part of the hydrogen station development costs will be subsidized.

② Reexamination of restrictions

- As for restrictions in the High Pressure Gas Safety Law, reexamination will be made of matters such as the design criteria for pressure vessels and restrictions on usable steel stock.
- Based on the Restriction Reform Implementation Plan (decided by Cabinet Meeting in June 2013), reexamination of restrictions will be accelerated for 24 items.

③ Achievement of low costs of component devices

- With regard to equipment consulting hydrogen production devices, compressors, pressure accumulators, etc., technical development will be carried out to reduce costs.

④ Creation of initial demand

- The number of fuel cell vehicles is use small in the Initial stage.
- Therefore, it is necessary to create initial demand, for example, for vehicles for business use, such as administrative vehicles, buses, and taxis. In cooperation with local autonomous bodies and private enterprises.

