

Japan's Initiatives for the diffusion of Next-Generation Vehicles

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Diffusion Targets for Next-Generation Vehicles

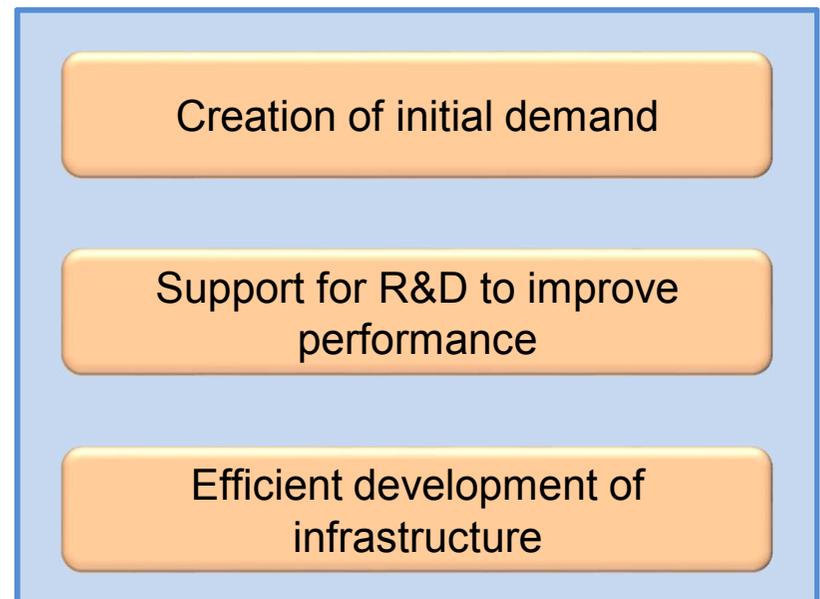
- Japan Revitalization Strategy (June, 2013) states “The government aims to capture **50 to 70%** of next-generation vehicles to total new car sales by 2030, to this end, the government will take measures such as creating initial demand, supporting R&D to improve performance, developing infrastructure, and so on.”
 ⇒ Following the Next-Generation Vehicle Strategy 2010 for basic policies.

Diffusion Targets by types of vehicles
(Targets set by the Government)

	Year 2020	Year 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%

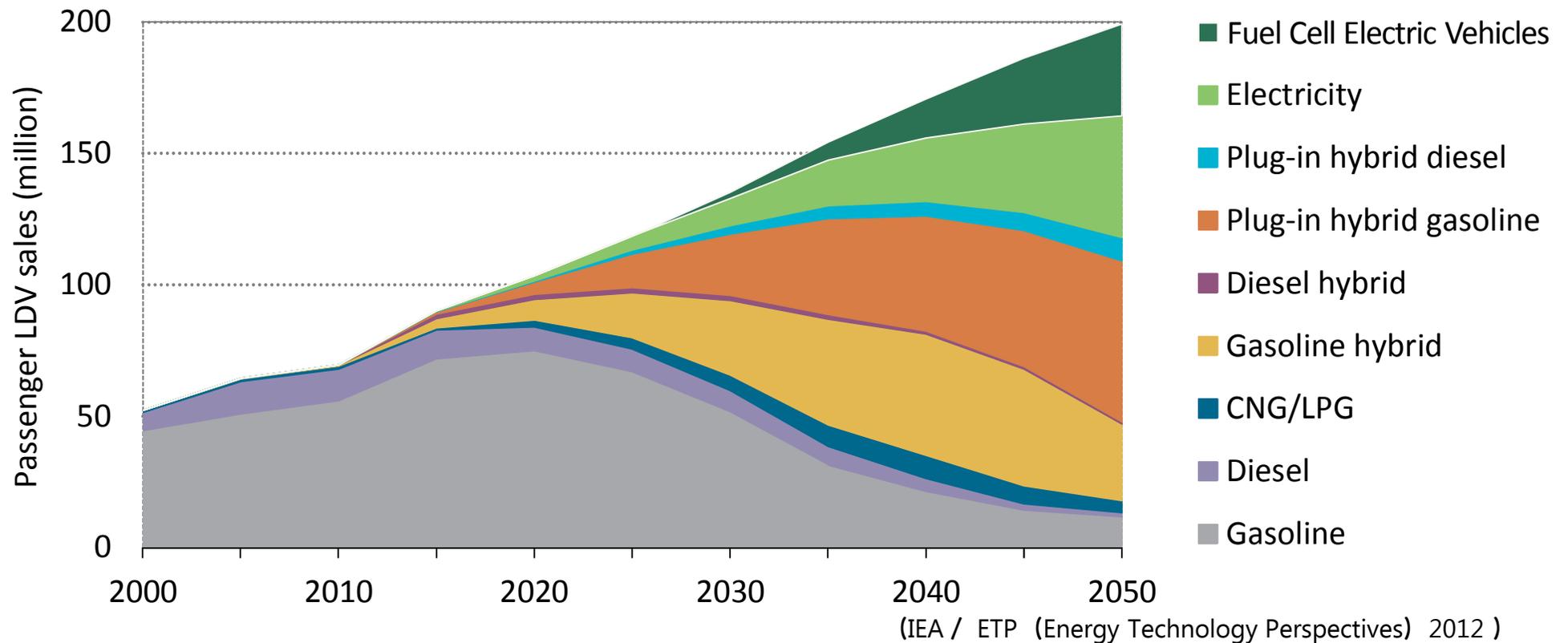
(from the Next-Generation Vehicle Strategy 2010)

Basic Initiatives



[Reference] Global Projections by Vehicle Types (ETP2012)

○ IEA also estimates that next-generation vehicles will spread in the future.



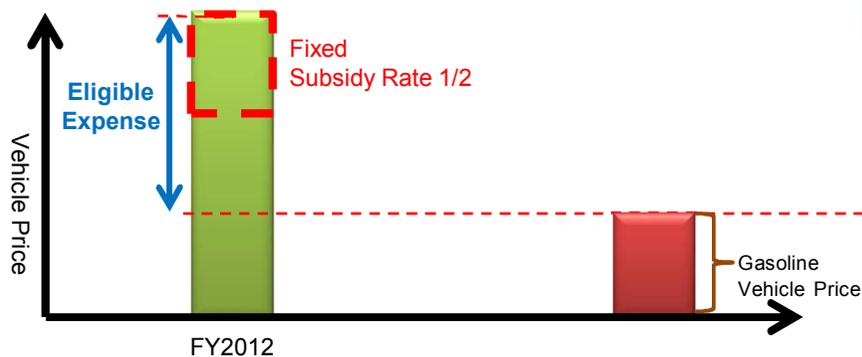
Creation of initial demand – Basic ideas for subsidy amount of CEV Subsidy in FY2013

○A scheme that urges automobile manufacturers to reduce prices so that a solid next-generation vehicle market will be formed by around 2015 without government subsidies.

FY2012

Half the price difference with a gasoline vehicle of the same class will be subsidized.
However, the maximum subsidy amounts are ¥1 million for EVs/PHVs, and ¥400,000 for CDs.

※ EV: Electric Vehicles
PHV: Plug-in Hybrid Vehicles
CD: Clean Diesel Vehicles



FY2013

① Revision of the subsidy coverage taking into account the running costs (differences between fuel prices and electricity rates)

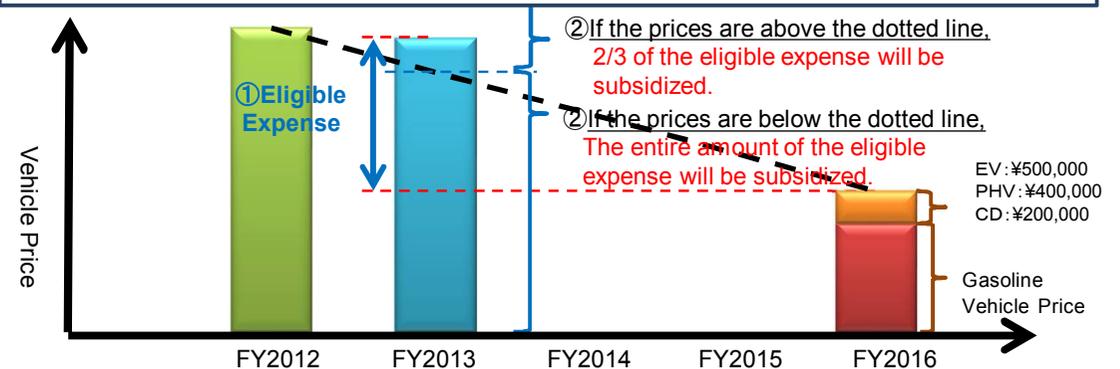
Aiming at reducing the prices, for instance, to the amount of the present gasoline vehicle price plus ¥500,000 in case of an EV (target price) by early FY2016, the difference is considered as eligible expense.

② Setting of subsidy rates which would urge businesses to reduce prices

Incentives for price reduction will be offered by subsidizing (i) 2/3 if the price in FY2013 is above or (ii) the entire amount if the price is below the straight line (black dotted line below) which traces the expected price reduction at a certain rate each year leading to the target price in early FY2016.

③ Reduction of the maximum subsidy amounts

EV·PHV: ¥1 million → ¥850,000, CD: ¥400,000 → ¥350,000



Clean Energy Vehicle Promotion Subsidy

Requested Budget Amount for FY2014 **¥30 billion** (¥30 billion)

Automobile Division,
Manufacturing
Industries Bureau

03-3501-1690

Project Details

Outlines / Purposes

- From a standpoint of measures against environmental and energy constraints, it is important to diffuse next-generation vehicles such as electric vehicles in the transportation sector which accounts for 20% of the nation's CO2 emission.
- In addition, next-generation vehicles are the field which is expected to grow in the future. Automobile manufacturers from various countries are planning to enter into the business, which intensifies the international competition.
- Furthermore, expectations are building up for another role of EVs and other vehicles as part of an energy management system where they can contribute to peak-shift by utilizing high capacity storage batteries.
- Meanwhile, they are in an early introductory stage with various issues including high costs. Therefore, we will create initial demand through measure to reduce burdens on vehicles, promote price reduction as a result of mass production, and ultimately establish a self-reliant domestic market before any other countries.

Conditions (Eligible entities, Eligible acts, Subsidy rates, etc.)

Governments

Subsidy

Private entities, etc.

Subsidy

Applicants

Eligibility

○ Vehicles

- Electric Vehicles
- Plug-in Hybrid Vehicles
- Clean Diesel Vehicles (Passenger cars) etc.

Electric Vehicles



Photo Gallery



Plug-in Hybrid Vehicles



Clean Diesel Vehicles



Support for R&D to improve performance

- To improve performance, support will be provided for the development of next-generation battery materials lead by private enterprises.
- Support for R&D on storage batteries is provided in order to achieve the roadmap (drawn up by NEDO) of secondary batteries mounted on vehicles.
- ⇒ Promotion of higher capacity and lower cost of car-mounted LIBs
- ⇒ Development of new technologies to create batteries that excel LIBs



二次電池の課題	現行LIB	先進LIB	ブレークスルーが必要	革新電池
課題となる要素技術	スピネルMn系 他 炭酸エステル系混合溶媒 他 炭素系 微多孔膜	高容量化・高電位化等 耐燃性・高耐電圧性等 高容量化等 複合化、高次構造化・高出力対応 等		金属-空気電池 (Al, Li, Zn等) 金属負極電池 (Al, Ca, Mg等) 等
電池化技術	新電池材料組合せ技術/電極作製技術/固-液・固-固界面形成技術 等			
長期的基礎・基盤技術の強化	界面の反応メカニズム・物質移動現象の解明、劣化メカニズムの解明、熱的安定性の解明、「その場観察」技術・電極表面分析技術の開発、等			
その他課題	システムとしての安全性・耐環境性の向上、V2H/V2G、中古利用・二次利用、リサイクル、標準化、残存性能の把握、充電技術 等			

Project Cost to Develop Advanced Technology for Application and Commercialization of Lithium-Ion Batteries

FY2014 Budget Request **¥2.5 billion (¥2.2 billion)**

New and Renewable Energy Division,
 Agency for Natural Resources and Energy
 03-3501-4031
 Automobile Division, Manufacturing Industries Bureau
 Information and Communication Electronics Division,
 Commerce and Information Policy Bureau
 03-3501-6944

Project Details

Outlines / Purposes

- This project aims to develop technologies through the leading-runner approach so that performances of lithium-ion batteries, power sources of next-generation vehicles such as EVs and PHEVs, are pursued to their limits.
- Specifically, develop technologies to produce battery packs whose energy density stands at 250Wh/kg and output density at 1500W/kg for EVs; and energy density at 200Wh/kg and output density at 2500W/kg for PHEVs; and the cost at ¥20,000/kWh for both in the year 2020.
- In addition, develop lithium-ion batteries compatible with non-automobile applications to expand the use to have volume efficiency, and eventually enhance international competitiveness.
- Seven project themes have been adopted so far and material examination and development have been conducted to achieve the goals. In FY2014, development and evaluation of cells and packs as well as examination and development of manufacturing technologies will be conducted based on the past achievements of this project.

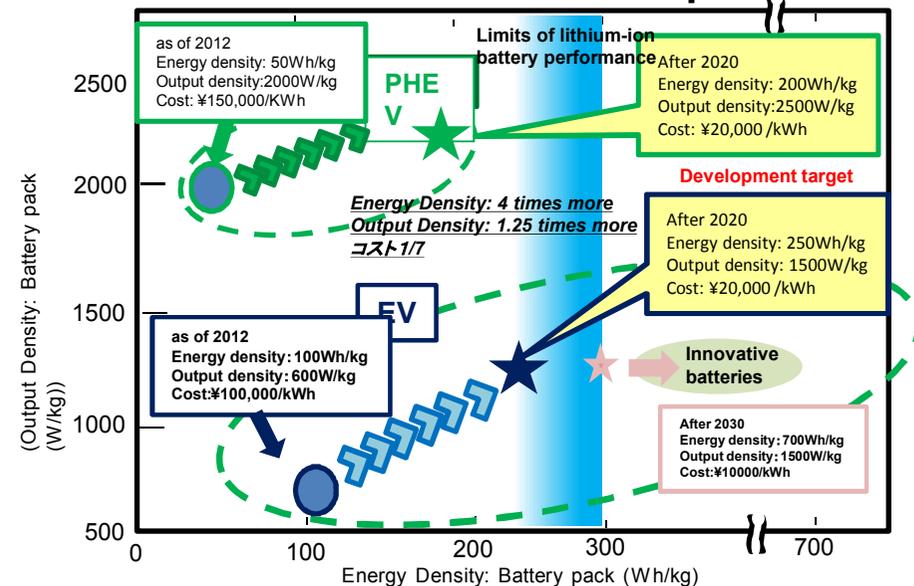
Conditions

(eligible entities, eligible acts, subsidy rates, etc.)



Project Picture

○ Realization of the NEDO Roadmap



○ Extension of Cruising Distance

Cruising distance of EVs:

120~200km



Present

Development target (2020)

~400 km

○ Examples of Applicable Fields



Use at ports (cranes and trucks)

To pursue property limits by commercializing new high-performance materials

Project Cost for Advanced Basic Scientific Research in Innovative Storage Batteries

FY2014 Budget Request ¥3.5 billion (¥3.09 billion)

Agency for Natural Resources and Energy
New and Renewable Energy Division
03-3501-4031

Project Details

Outlines / Purposes

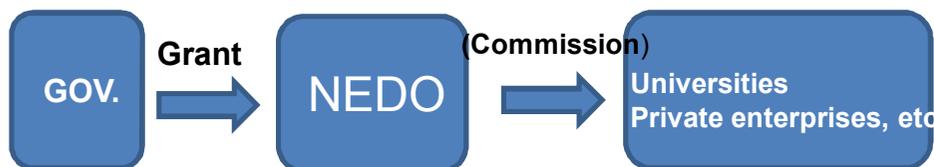
○ Storage batteries for next-generation vehicles have an advantage in technology in Japanese industries and is an important field to maintain its world-leading position in the future. In order to cope with the intensified global competitions with European nations and emerging countries, this project aims to conduct fundamental research to commercialize the innovative storage batteries that could lead to the development of 500Wh/kg storage batteries in 2030; innovate materials for the research; and elucidate response mechanism by utilizing advanced analytical technologies.

○ A highly-advanced analyzer exclusively for storage batteries will be developed by the end of FY2013, innovative storage batteries that could achieve the ultimate goals will be narrowed down.

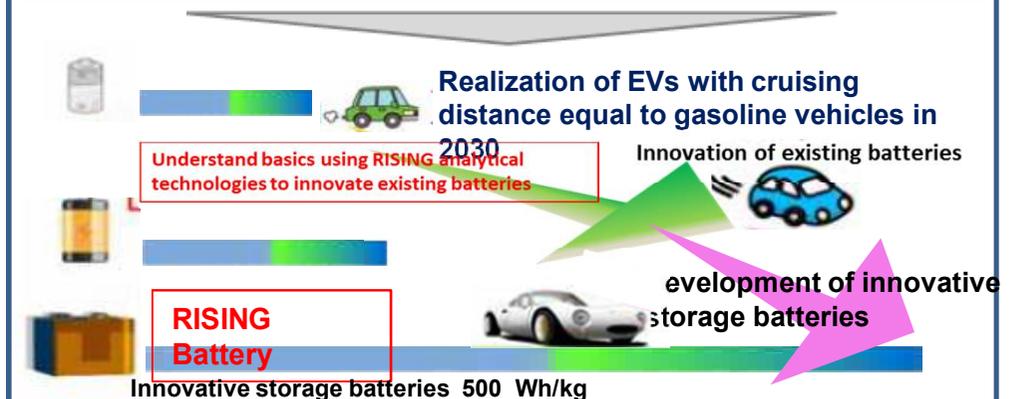
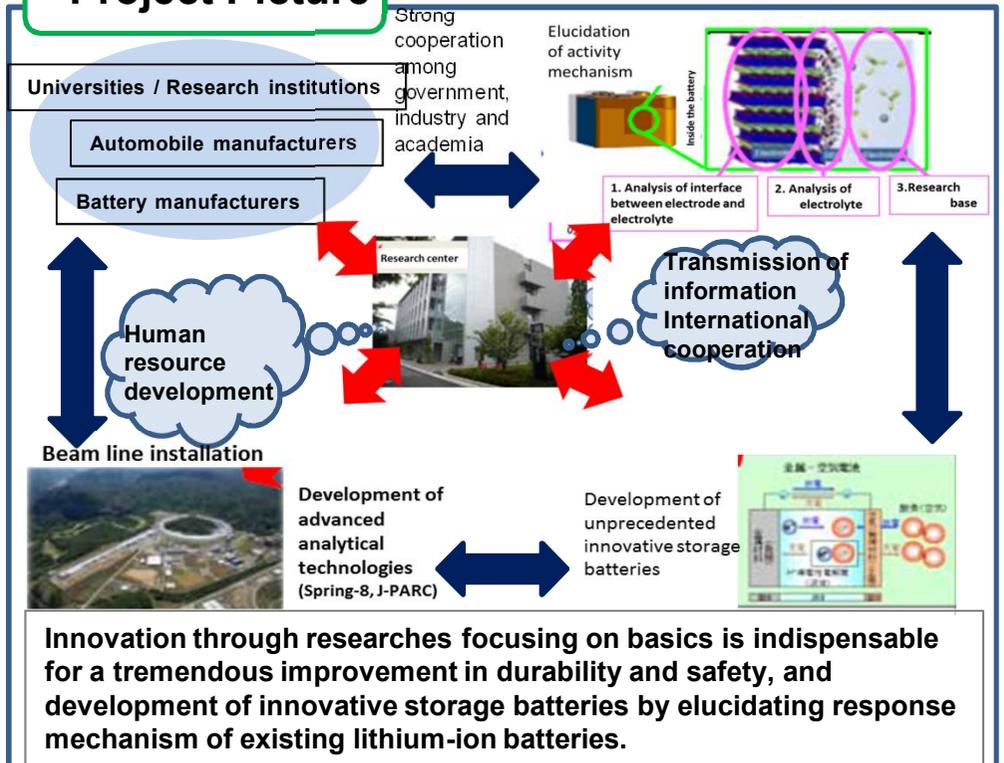
○ In FY2014, the project works on the elucidation of instability mechanism of lithium-ion batteries using the developed analyzer, as well as the establishment of fundamental technologies of innovative storage batteries.

Conditions

(eligible entities, eligible acts, subsidy rates, etc.)



Project Picture



EV & PHV Town Concept

- EV & PHV Town Concept is a model project for a demonstration experiment to diffuse EVs & PHVs on a full scale.
- In order to create initial demand for EVs and PHVs, it is necessary to intensively **develop charging infrastructure** and foster public awareness. With these in mind, local governments that were pioneering in efforts to diffuse EVs and PHVs were selected as model areas.
- Each EV & PHV Town tries to establish its own diffusion model by intensely introducing EVs and PHVs and improving environment through cooperation with local businesses, aiming to make **the diffusion models spread throughout the nation**.



Clarified challenges and measures

- Three challenges in charging infrastructure development, extracted from EV & PHV Town Initiatives
- "Promotion Project to Develop Charging Infrastructure for Next-generation Vehicles" based on the challenges.

Challenge 1: Necessity of systematic and efficient development

- Absence of efficient development methods
- Few opportunities for local governments to be involved toward systematic development

Challenge 2: Installation of normal chargers

- Difficult to install in collective housing such as condominiums
- Important to diffuse normal chargers that are compatible and users can use without concerns.

Challenge 3: Securement of users' convenience

- Cluttered and confusing information to vehicle users
- Billing business

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Measures against Challenge 1

- Local governments should suggest a **model plan**, an idea of efficient and systematic development of chargers.

- Local governments will draw up "**Vision for Charger Installation**" in the Promotion Project to Develop Charging Infrastructure for Next-generation Vehicles. The subsidy rates for those that matches will be raised.

Measures against Challenges 2&3

- For collective housing such as condominiums, installation cost will be eligible for the subsidy.
- For sophisticated chargers such as those equipped with billing functions, higher subsidy limit will be applied.

Outline of Promotion Project to Develop Charging Infrastructure for Next-generation Vehicles

1. Budget Amount and Project Period

Budget Amount: ¥100.5 billion (FY2012 Supplementary Budget)

Period of Application Acceptance: March 19, 2013 – February 27, 2015

Performance Report (Final): No later than October 30, 2015 (For those in category 3: April 28, 2017
/Different deadline applies for each application.)

2. Eligibility and Subsidy Rate

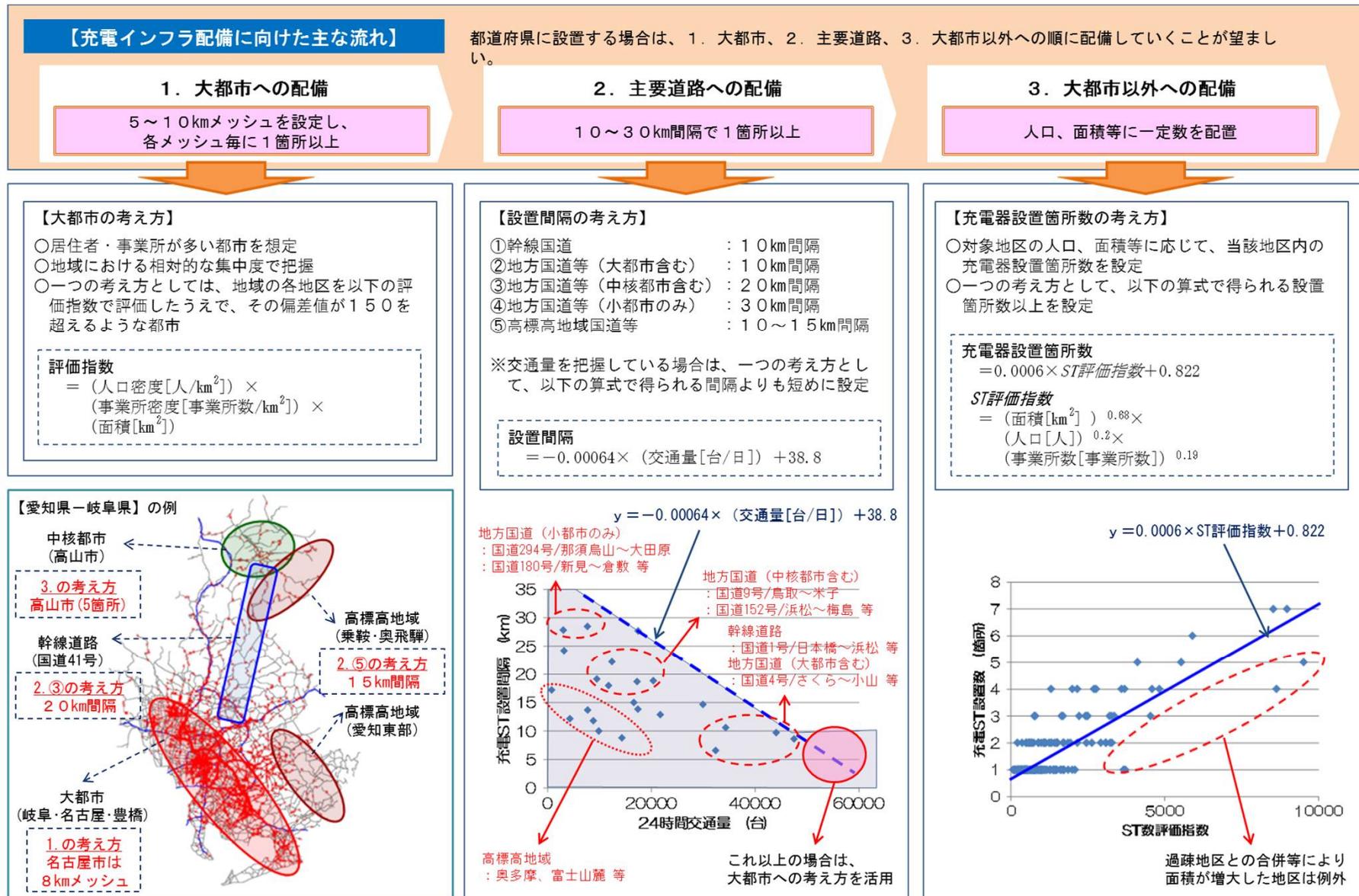
(Depending on the 4 categories below, those newly purchasing/installing chargers will be subsidized.)

Category	Outline	Eligibility	Subsidy Rate
Category 1	Installation of chargers based on the vision for charger development drawn up by local governments, and with the public nature *	Charger Purchasing Cost Installation Cost	2/3
Category 2	Installation of charges not based on the vision, but with the public nature *	Charger Purchasing Cost Installation Cost	1/2
Category 3	Installation of chargers in car parks of multi-unit housing/monthly car parks	Charger Purchasing Cost Installation Cost	
Category 4	Other installation of chargers than abovementioned	Charger Purchasing Cost	

*"Public Nature" must meet all the following requirements. (Category 1 and 2 are eligible.)

1. Chargers are located where anyone can freely access from entrance facing public roads.
2. Use of chargers is not limited to users of other services (e.g. eating & drinking).
3. Users are not limited. (If chargers are available upon payment of the fee on the site, it is regarded as meeting this requirement.)

(Reference) Model Plan for developing charging infrastructure



(注) 本モデルプランは、「クリーンエネルギー自動車等導入促進対策費補助金」の交付を受けて、一般社団法人次世代自動車振興センターが一般財団法人電力中央研究所に委託した「充電ステーション最適配置に関する解析調査」を元に、経済産業省が作成したものです。当該調査結果はある前提をおいた上で電欠発生率を最小化するために実施したシミュレーションに基づくものであり、本モデルプランを満たしていても必ずしも実際は電欠率がゼロとなるとは限らない点にご注意ください。
 また、一つのシミュレーション結果に基づくものに過ぎないため、これ以外の考え方を否定するものではありません。

Vision drawn up by the Okinawa Prefectural Government

○Basic Idea of the Vision

⇒Conduct the development of charging infrastructure for EVs to be able to move around throughout the prefecture with the two schemes of “**Path Development Corresponding to EV Users’ flow**” and “**Area Development Covering the Entire Prefecture.**”

1. Path Development

- Install in Road Stations
 - Install along national roads and major local roads
 - Install every 10km to 30km depending on the traffic per 24 hours.
1. Road Stations 7 spots
 2. National Roads 29 spots
 3. Prefectural Roads 28 spots

Total 64 spots

If applications duplicate in a certain path, install in the order of 1. Road Station
2. National Road and 3. Prefectural Road.

Supposed Facilities
Road Stations, Gas Stations, Convenience Stores, Car Dealers, etc.

2. Area Development

- Install at total of **163 spots**: 148 spots calculated based on the idea of the “development in non-large cities” from the government’s model plan and 15 spots based on municipalities intentions.

Breakdown of 15 spots

6 spots in Ishigaki City and 1 in Nakagusuku Village
⇒ Tourist destinations

6 spots in Nanjo City ⇒ For disaster prevention

2 spots in Taketomi ⇒ To install evenly over stretching islands

Supposed Facilities

Public Facilities, Hotels/inns, tourism facilities, shopping centers, hospitals, restaurants, etc.

(Reference) Actions in the Private Sector in response to the Governments Actions

JTB

JTB Corporate Sales announced they have 1,000 normal EV/PHV chargers. (12/9)

AEON

AEON announced the installation of approx. 1,150 chargers over its approx. 500 stores. (7/19)

3 NEXCO & Tokyo Metropolitan Expwy

Drew up a vision for charging infrastructure development at SAs/PAs on expressways (-12/20)

Materialize “Japan without Running Out of Electricity”

Promotion Project to Develop Charging Infrastructure for Next-generation Vehicles

Budget Amount: ¥100.5 billion

Four auto manufacturers' support for the development of charging infrastructure

NISSAN MOTOR COMPANY



TOYOTA

HONDA
The Power of Dreams

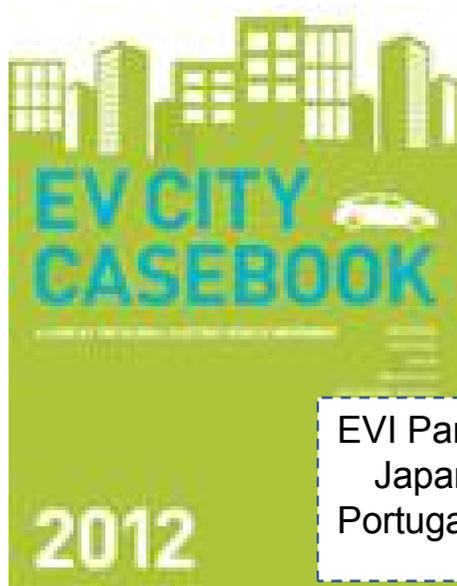


Inter-governmental cooperation

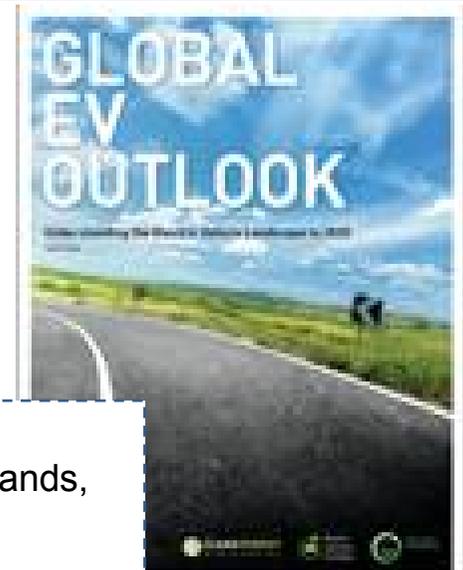
○EVI (Electric Vehicles Initiatives) is a forum for global cooperation on the development and deployment of electric vehicles. The establishment of the forum was proposed by the U.S. and China during the 1st Clean Energy Ministerial (CEM) in July 2010 and agreed.

Major Activities

1. EV Pilot City Program: Select pilot cities for demonstration experiments and share with EVI members. From Japan, **Kanagawa Prefecture** and **Nagasaki Prefecture** are registered.
2. Strategic public investment in EV innovation: For efficient public investment in EV related matters, member countries share information on the current R&D investment levels and roadmaps.
3. Information sharing on targets and best practices: IEA (Secretariat) takes initiatives in information gathering and sharing on diffusion targets/policies, charger information, consumer behaviors, etc., and then publish a **Data Book**.



1st Clean Energy Ministerial Talk (July 20, 2010, Washington DC)



EVI Participating nations:

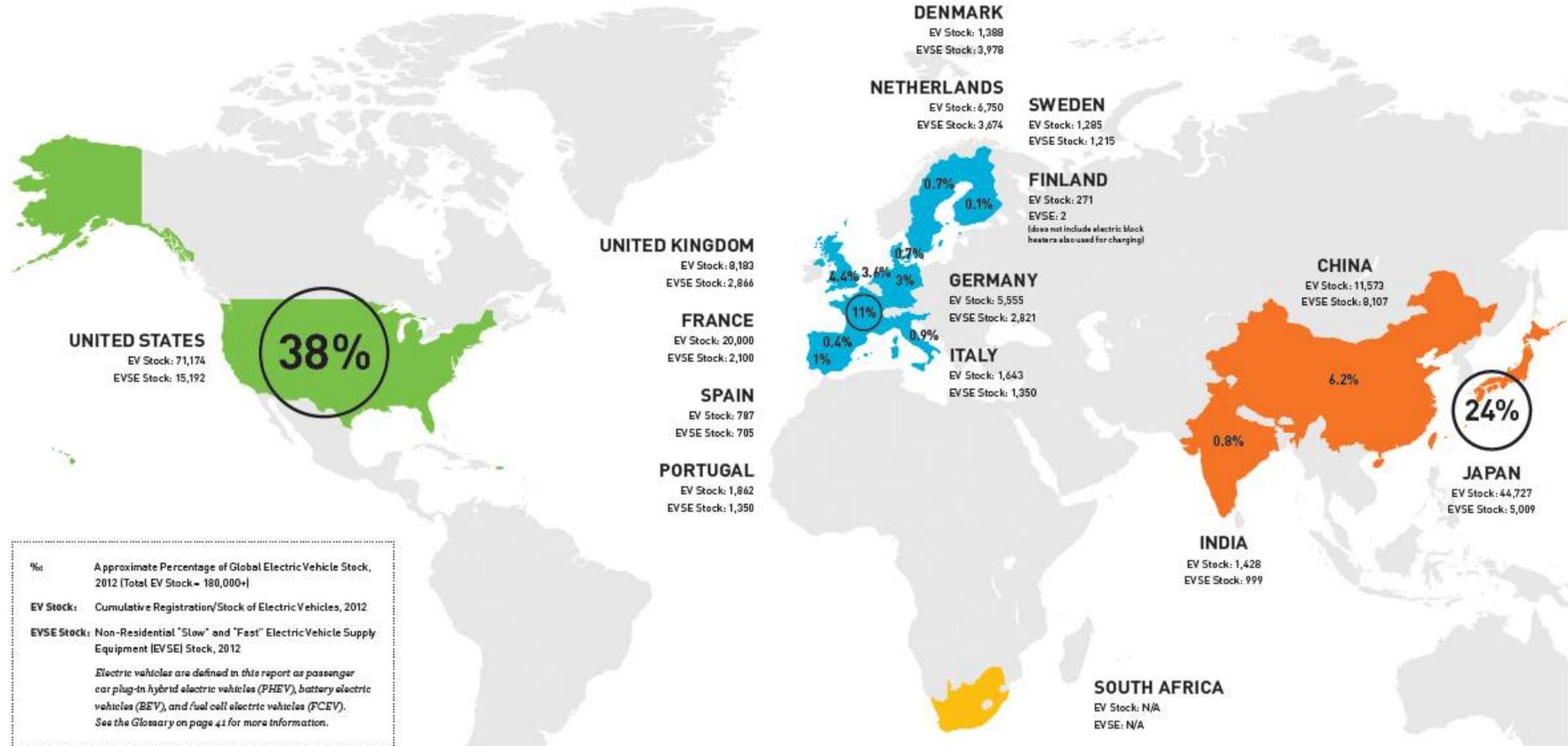
Japan, China, Denmark, Finland, France, Germany, India, Netherlands, Portugal, South Africa, Spain, Sweden, U.K., U.S.A., Italy

Situation of the Diffusion in the world

ELECTRIC VEHICLES INITIATIVE (EVI)

EVI MEMBER COUNTRIES HELD OVER 90% OF WORLD ELECTRIC VEHICLE (EV) STOCK IN 2012

The Electric Vehicles Initiative (EVI) is a multi-government policy forum dedicated to accelerating the introduction and adoption of electric vehicles worldwide. EVI is one of several initiatives launched in 2010 under the Clean Energy Ministerial, a high-level dialogue among energy ministers from the world's major economies. EVI currently includes 15 member governments from Africa, Asia, Europe, and North America, as well as participation from the International Energy Agency (IEA).



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