



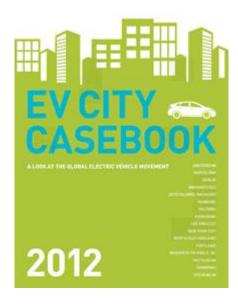
Electric Vehicles Initiative

- Announced at Clean Energy Ministerial, in Washington DC, July 2010
 - Kick-off meeting was held in Paris 29 Sept/1 Oct. 2010
- 8 -> 15 countries: China, Denmark, Finland, France, Germany, <u>India</u>, Italy, Japan, Netherlands, Portugal, South Africa, Spain, Sweden, United Kingdom, United States
 - Together these countries account for 63% of world's vehicle demand, and 83% of projected EV sales in 2010-2020
 - International Energy Agency serves in a facilitator role
- Three primary objectives:
 - Common data collection/analysis efforts
 - Greater RD&D collaboration
 - City forum that links cities within EVI countries
- Recent Events:
 - EVI public/private sector roundtable in Stuttgart, 19 October 2012
 - Clean vehicle public/private roundtable at CEM4 in New Delhi, 17 April 2013
- Upcoming Event:
 - EVI public/private sector infrastructure meetings in Tokyo, June 3-7 2013



EV City Casebook





- Details policies, incentives, programs, and customer behaviors in 16 cities and regions across 9 countries and 3 continents, capturing nearly 30% of existing EVs.
- Presented to ministers at 3rd Clean Energy Ministerial
- Translated into Chinese
- Download at <u>www.bit.ly/EVCityCasebook</u>

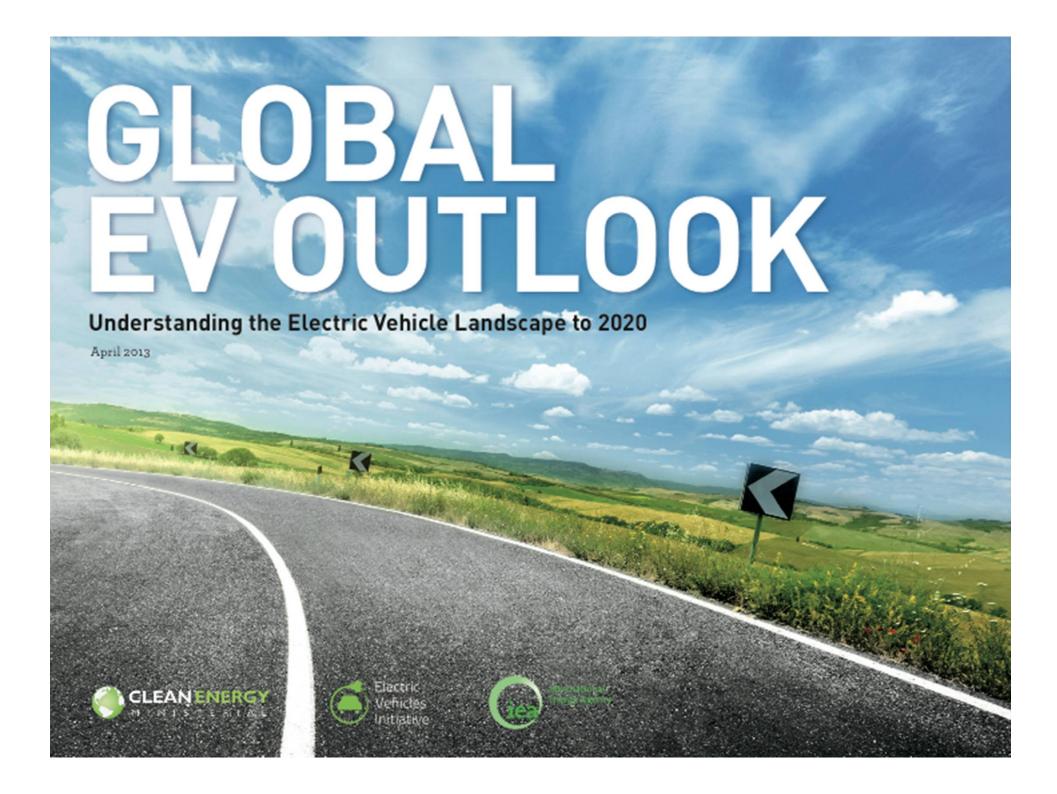














GLOBAL EV OUTLOOK

Understanding the Electric Vehicle Landscape to 2020

- ✓ The Global EV Outlook (GEO) is the collective effort of two years of primary data gathering and analysis by EVI's 15 member governments and the IEA.
- ✓ EVI countries represent a reliable bellwether for global EV progress.
- ✓ EVI countries accounted for more than 90% of world EV stock at the end of 2012.
- ✓ Members include 8 of the 10 largest auto markets in the world and are projected to account for 83 % of EV sales between now and 2020.



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GEO's Findings...

- ✓ The GEO finds that global EV sales more than doubled between 2011 and 2012, exceeding the 100,000 sales milestone, and that world EV stock stood at above 180,000 at the end of 2012.
- ✓ However, this still represents only 0.02% of total passenger car stock, underscoring the distance EVs still have to go.

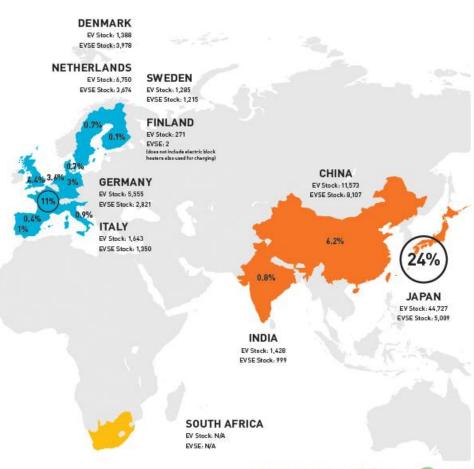
ELECTRIC VEHICLES INITIATIVE (EVI)

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

UNITED KINGDOM UNITED STATES EV Stock: 71,174 EVSE Stock: 15,192 PORTUGAL Approximate Percentage of Global Electric Vehicle Stock, 2012 (Total EV Stock = 180,000+) EV Stock: Cumulative Registration/Stock of Electric Vehicles, 2012 EVSE Stock: Non-Residential "Slow" and "Fast" Electric Vehicle Supply Equipment (EVSE) Stock, 2012 Electric vehicles are defined in this report as passenger car plug-in hybrid electric vehicles (PHEV), battery electric vehicles (BEV), and fuel cell electric vehicles (FCEV). See the Glossary on page 41 for more information.

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).

The Electric Vehicles Initiative (EVI) is a multi-government policy forum dedicated to accelerating the introduction and



0 2013 Global EV Outlook, OECD/IEA, 5 rue de la Fédération, 75735 Paris Cadez 15, France. Please refer to the full report for complete notice of copyright



EV Stock: 8,183

FRANCE

SPAIN EV Stock: 787 EVSE Stock: 705

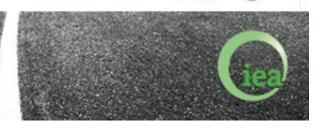
EV Stock: 1,862

EVSE Stock: 1,350

EV Stock: 20,000

EVSE Stock: 2,100

EVSE Stock: 2,866



Vehicles

CLEAN ENERGY

A BRIEF HISTORY OF **ELECTRIC VEHICLES**

From Europe to North America to Asia, the history of electric mobility is a demonstration of the world's persistent ingenuity and adaptation in transportation. The future of electric mobility — still to be written will stand, in part, on the achievements and lessons learned from these earlier periods.

1832-39

Robert Anderson, of Scotland, builds the

first prototype electric-powered carriage.

1834

German engineer Andreas Flocken builds the first four-wheeled electric car.

1897

The first commercial electric vehicles enter the New York City taxi fleet. The carmaker, Pope Manufacturing Co., becomes the first large-scale EV manufacturer in the United States.

1899

The "La Jamais Contente," built in France, becomes the first electric vehicle to travel over 100 km per hour.

1900

Electricity-powered cars become the Thomas Davenport, of the United States, top-selling road vehicle in the United invents and installs the first direct current electrical motor in a car that operates States, capturing 28% of the market. on a circular electrified track.

The petrol-powered Ford Model T is introduced to the market.

1909

William Taft becomes the first U.S. President to purchase an automobile, a Baker Electric.

The electric starter, invented by Charles Kettering, obviates the need for the hand-crank, making it easier for more people to drive petrol-powered cars.

GLOBAL EV STOCK REACHES HISTORICAL PEAK OF 30,000

1930s

By 1935, EVs become all-but-extinct combustion engine (ICE) vehicles and availability of cheap petrol.

Oil rationing in Japan leads carmaker Tama to release a 4.5hp electric car with a 40V lead acid battery.

The U.S. Congress introduces legislation recommending electric vehicles as a means of reducing air pollution.

1973

The OPEC oil embargo causes high

1976

the "PREDIT" programme accelerating EV RD&D.

To comply with California's Zero Emission Vehicle (ZEV) requirements of 1990, General Motors produces and begins leasing the EV1 electric car.

1997

the world's first commercial hybrid car. 18,000 are sold in the first production year.

Oil prices reach more than USD 145 per barrel.

2010

The BEV Nissan LEAF is launched.

The world's largest electric car sharing service, Autolib, is launched in Paris with a targeted stock of 3,000 EVs.

GLOBAL EV STOCK REACHES NEW HISTORICAL PEAK OF 50,000

French government fleet consortium commits to purchase 50,000 EVs over four years.

Nissan LEAF wins European Car of the Year award.

2012

The PHEV Chevrolet Volt outsells half the car models on the U.S. market.

GLOBAL EV STOCK EXCEEDS 180,000



1851-1900

1901-1950

1951-2000

High oil prices and pollution cause

2001-

THE THIRD AGE Public and private sectors recommit to vehicle electrification.

THE BEGINNING The earliest electric vehicles are invented in Scotland and the United States.

THE FIRST AGE

Electric vehicles enter the marketplace and find broad appeal.

THE BOOM & BUST

EVs reach historical production peaks only to be displaced by petrol-powered cars.

THE SECOND AGE

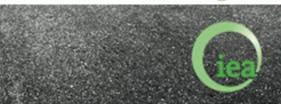
renewed interest in electric vehicles.

Sources: Curtis D. Anderson and Judy Anderson, Electric and Hybrid Care. A History, McFarland and Company, 2015; burnacesergy journal.com; pbs. org/now/shows/233/electric-se-timeline.
8 2015 Global EV Outlook, OECD/EA, 9 rus de la Fédération, 75759 Paris Cedez 15, France. Please refer to the full report for complete notice of copyright.





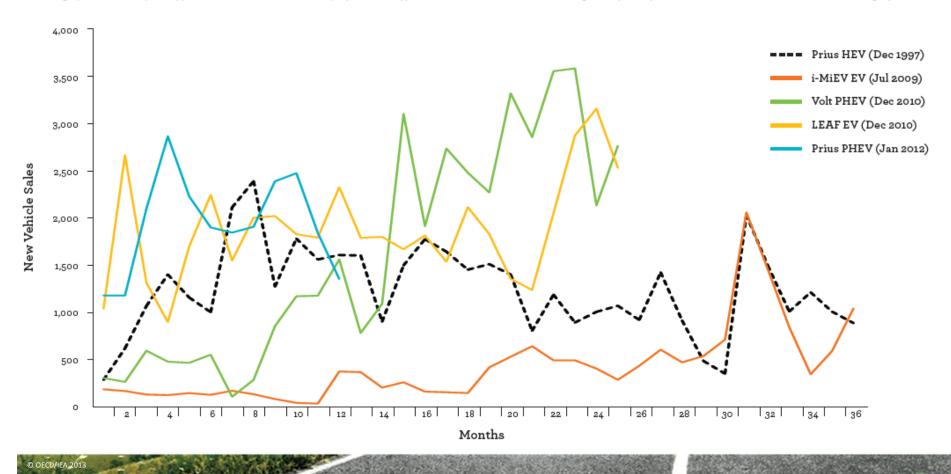




Sales Since Market Introduction

(updated through December 2012).

Source: EVI, MarkLines Database, Nissan, Toyota, hybridcars.com. Note: Date indicates when model was first released. Different models were released at different times in various locations, but this graph is an attempt to approximate worldwide market deployment. All types of a model have been included, e.g. the Opel Ampera counts as sales under the Volt PHEV category.



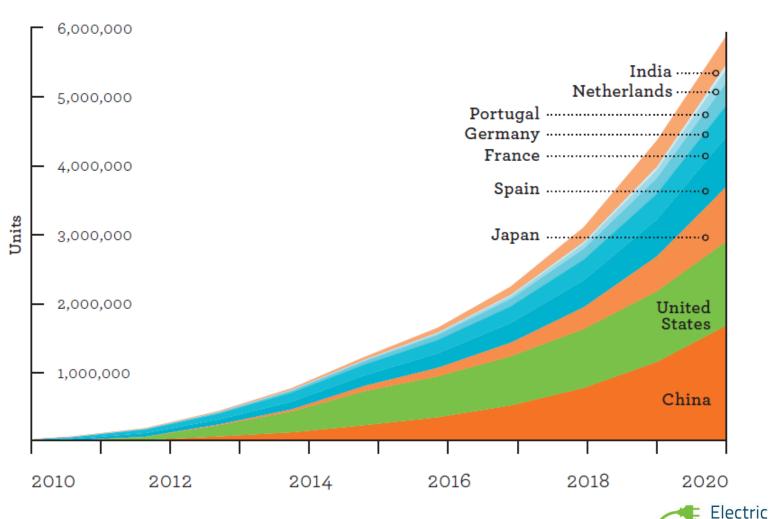
Progress in Sales and Battery Cost Reductions





National PHEV/EV Sales Targets of EVI Members

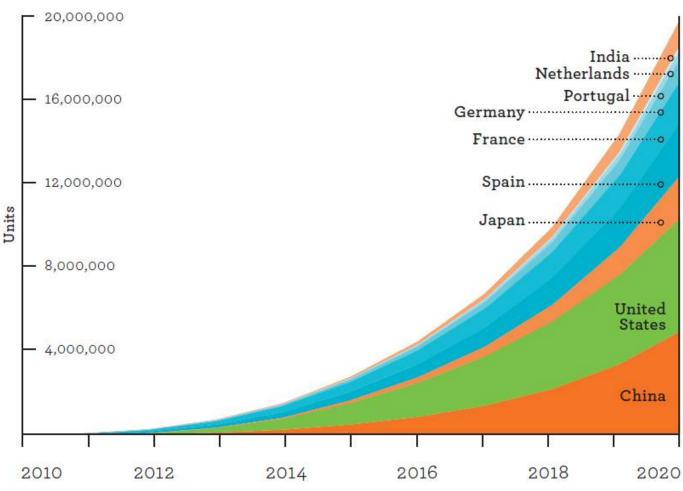
Source: EVI.



Vehicles Initiative



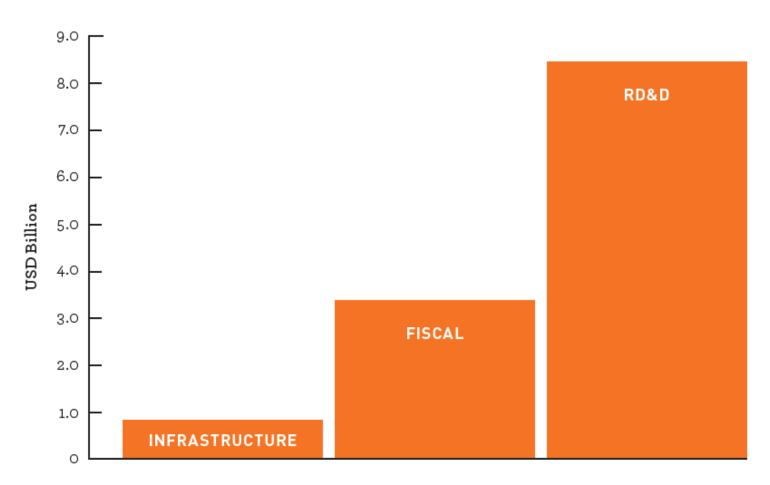
National PHEV/EV Stock Targets of EVI Members







EV Spending by EVI Countries, 2008-2012 [by category]



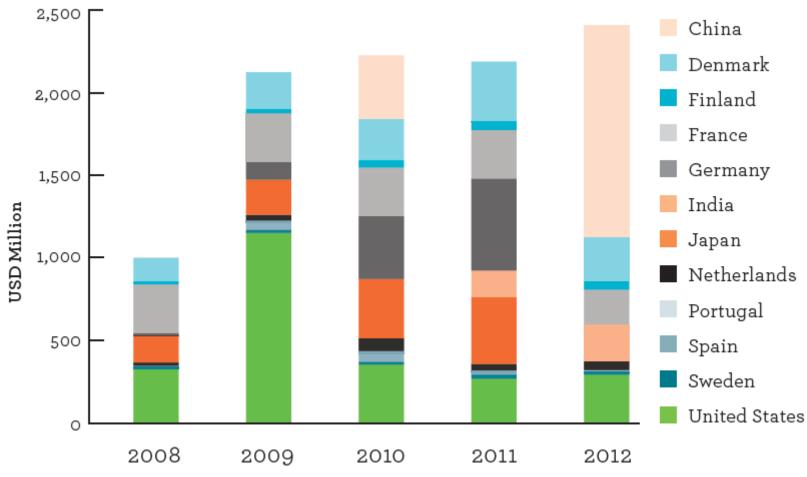




RD&D Spending by EVI Countries

Source: EVI.

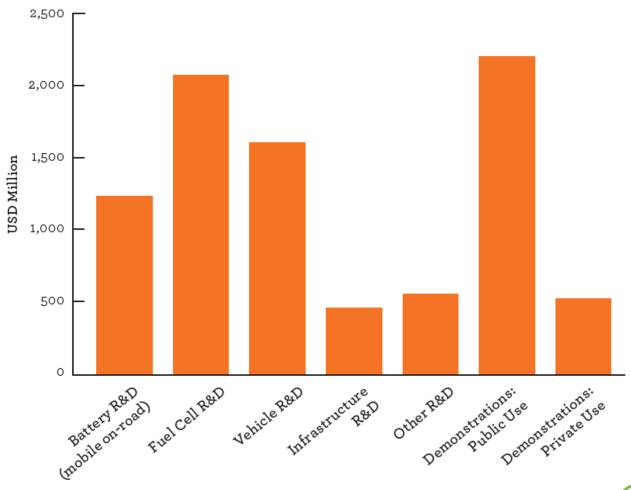
Note: Missing countries indicate incomplete data.







Breakdown of RD&D Spending by EVI Countries 2008-2012 [by category]



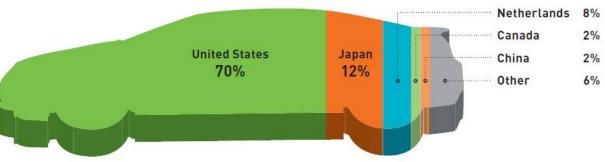




2012 World Sales, by Country

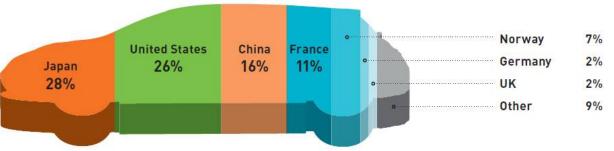
Source: EVI, MarkLines Database.

PHEV Sales



■ United States 38,585 ■ Japan 6,528 ■ Netherlands 4,331 ■ Canada 1,288 ■ China 1,201 ■ Other 3,266

BEV Sales

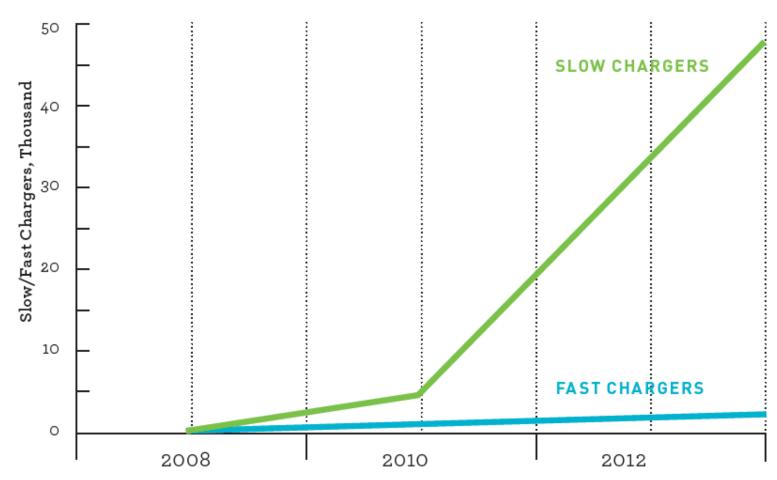


	Japan	15,937
	United States	14,592
	China	8,733
	France	6,067
	Norway	3,883
	Germany	1,294
	United Kingdom	1,167
\equiv	Other	5,009





Non-Residential EVSE Growth in EVI Countries

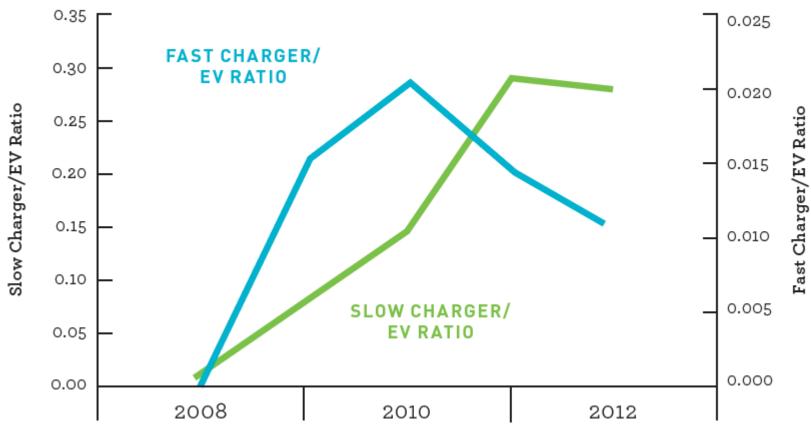






Non-Residential EVSE/EV Ratio

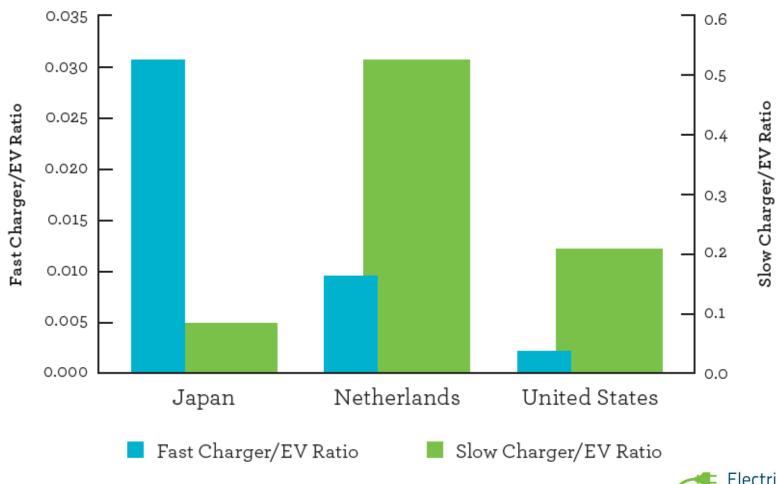
[EVI Countries]







Different EVSE Deployment Profiles, 2012







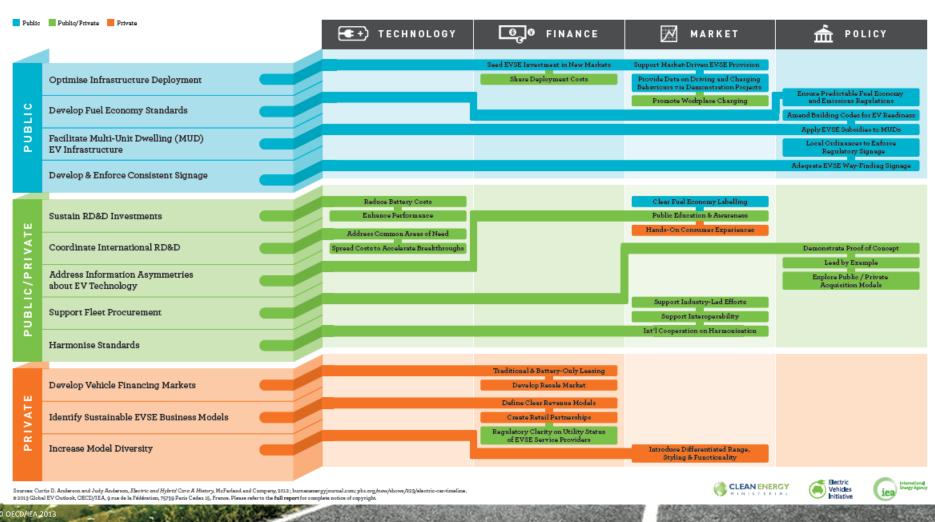
Challenges and Opportunities

- ✓ Significant technological, financial, market, and policy challenges remain.
- ✓ Will require a broad and coordinated effort among all relevant public and private stakeholders in order to address them.
- ✓ The GEO presents an **Opportunity Matrix** that outlines several opportunities for governments and industry to assist in the move toward the 20 million by 2020 goal.
- ✓ Identifies which sectors are best suited to take the lead in the areas of technology, finance, market, and policy.



OPPORTUNITY MATRIX: PATHWAYS TO 2020

There are several actions that can help the world put at least 20 million electric vehicles on the road by 2020. Stakeholders will play different roles. Every action does not have to happen in every country, and no one country or sector can do everything on its own. The Electric Vehicles Initiative (EVI) will continue to facilitate coordination and communication to address the challenges of vehicle electrification, and align priorities among the key EV stakeholders worldwide. This Opportunity Matrix identifies which sectors are best suited to take the lead in the four areas of need: 1) technology, 2) finance, 3) market, and 4) policy. More importantly, it also identifies opportunities for the public and private sectors to work together.







Thank you! / Arigato gozaimasu! Tali.Trigg@iea.org

For more information, please visit:

www.iea.org/topics/transport/

electricvehiclesinitiative/

and

www.cleanenergyministerial.org/EVI