

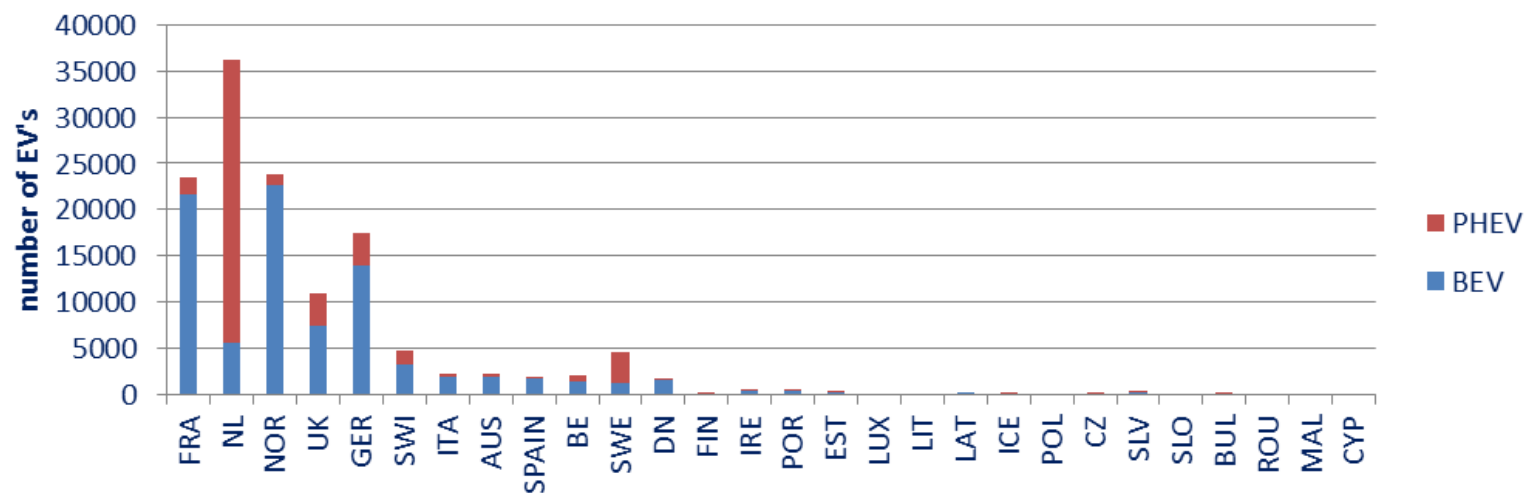


The European Association  
for Electromobility

## European Electric Vehicle Sales 2008 - 2014

Bert Witkamp  
December 19<sup>th</sup>, 2014 – IEVC Florence, Italy

## BEV and PHEV passenger new car registrations Europe, status Q2 2014

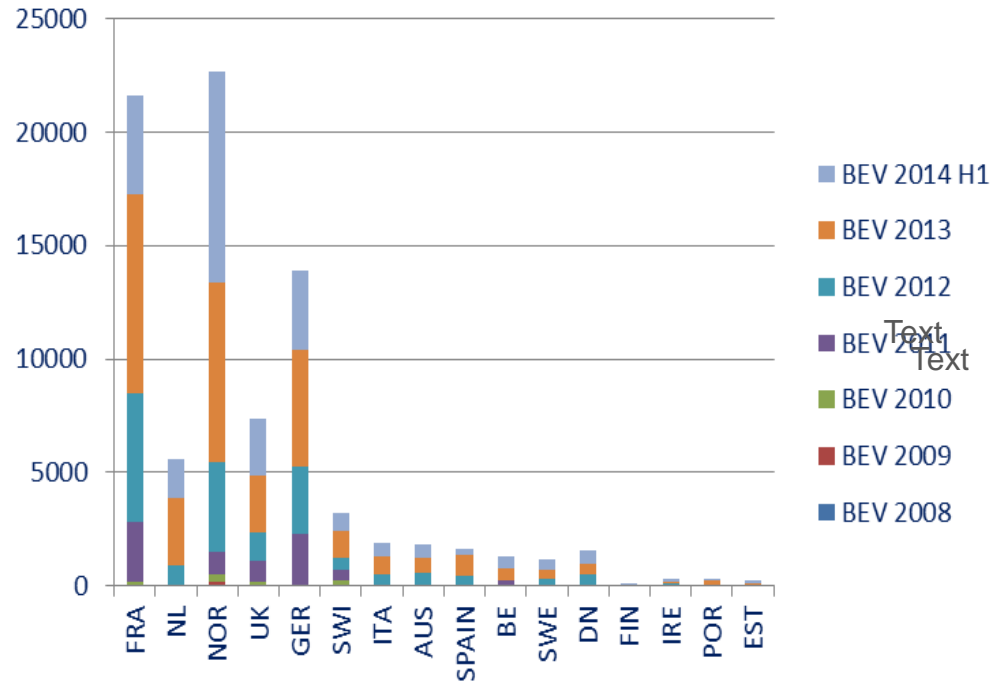


Data sources: several sources per country

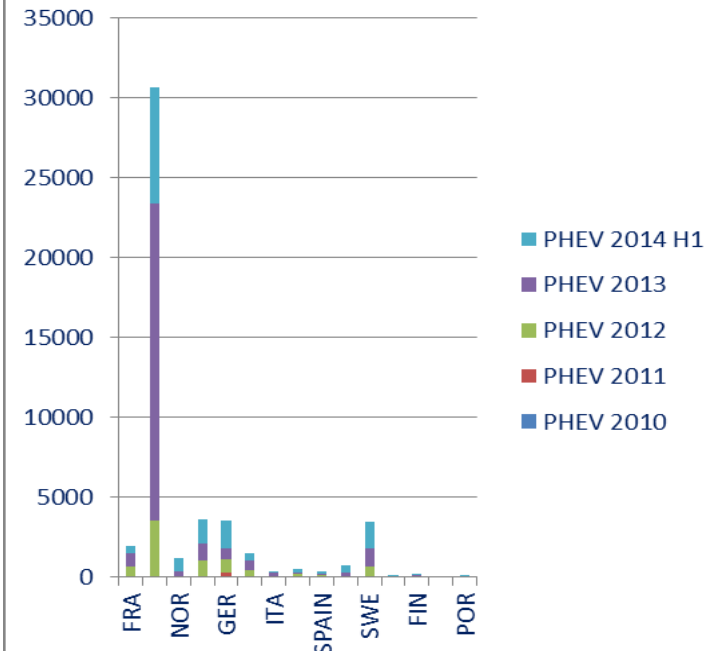
- National registrations data
- AVERE National Sections
- other contacts & internet

# Electric vehicle sales is a very recent development and limited to a few countries only

## FEV/BEV new car sales per country

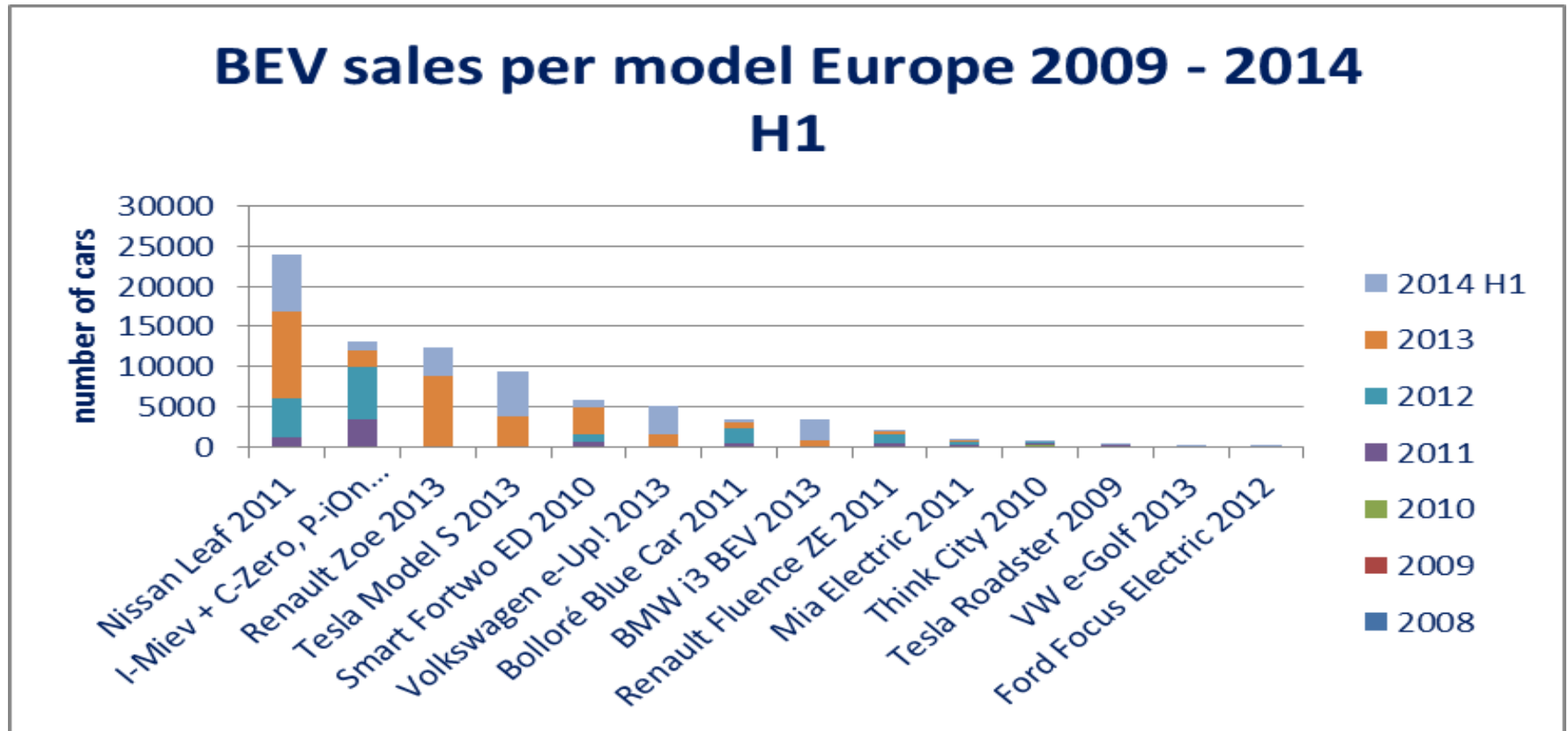


## PHEV + REEV new car sales per country



**A breakthrough has happened in 2012-2013!**

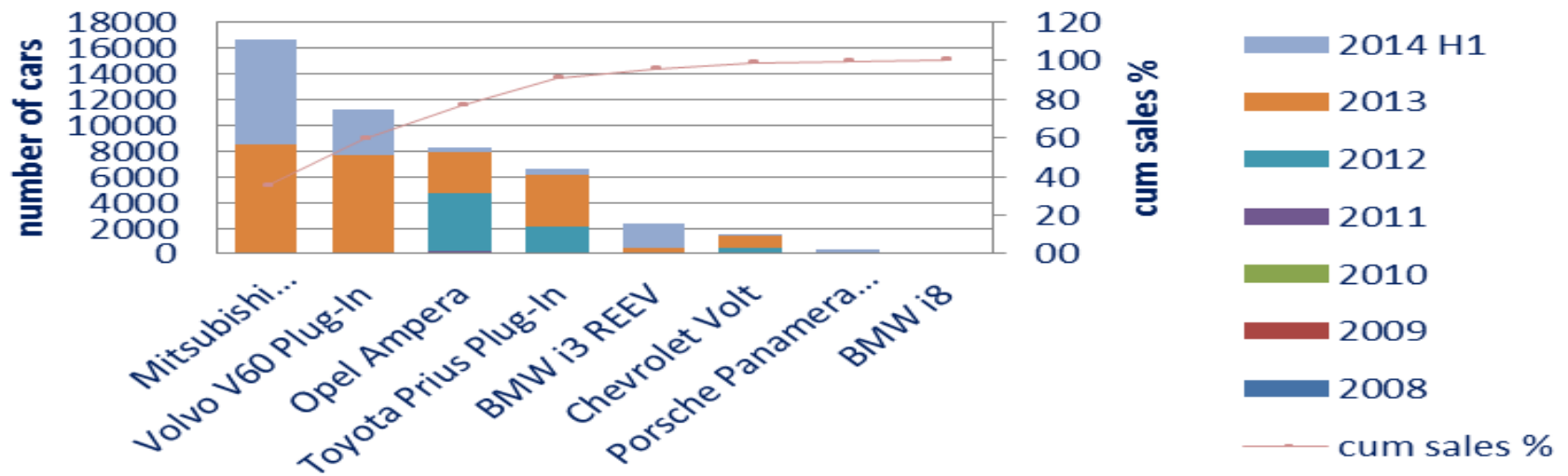
# BEV sales: from EV pioneers to OEM's



- More than 40 models introduced in the market since 2008
- Only 9 models with cumulative sales > 1000
- Many test cars, compliance cars, R&D showcases?!

# PHEV: 3 models, REEV: 2 models!

## PHEV sales per model Europe 2009 - 2014 H1



**PHEV and RE-EV:** Few models (13 in total)  
About 2 years on the market only  
NL 2/3 of all sales

# Top 5 BEV sales per year: 80-100% market share

2008 Think 66

2009 Top 5 total: 141 = 100%

Think	93
Mitsubishi I-Miev	
Citroën C-Zero	24
Peugeot iOn	
Tesla Roadster	13
Fiat Fiorino	11

2010 Top 5 total: 546 = 80%

Think	243
Mitsubishi I-Miev	
Citroën C-Zero	100
Peugeot iOn	
Smart For Two	97
Tesla Roadster	74
Mini Electric	50

2011 Top 5 total: 5.699 = 79%

Mitsubishi I-Miev	
Citroën C-Zero	3255
Peugeot iOn	
Nissan Leaf	1132
Smart For Two	511
Renault Fluence	402
Bolloré Bluecar	399

2012 Top 5 total: 15.573 = 96%

Mitsubishi I-Miev	
Citroën C-Zero	6583
Peugeot iOn	
Nissan Leaf	4883
Bolloré Bluecar	1950
Renault Fluence	1211
Smart For Two	946

2013 Top 5 total: 28.887 = 88%

Nissan Leaf	10895
Renault Zoë	8729
Tesla Model S	3877
Smart For Two	3309
Mitsubishi I-Miev	
Citroën C-Zero	2077
Peugeot iOn	

2014 (6 mo.) Top 5 total: 22.435 = 88%

Nissan Leaf	6942
Tesla Model S	5533
VW e-Up!	3602
Renault Zoë	3594
BMW i3 (BEV esi	2764

**Top 5 data show:**

**Only few cars dominate Market (>80%)**

**Rapidly changing domination**

**Only a few models are designed as EV**

- Allows for optimal battery pack design
- Lightweight materials for improved range

**Only limited coverage of overall car segments**

- Overall market share does not say much

# Deep dive all electric vehicle sales in Norway, including imported cars

## Electric Vehicles in Norway: total on the road at July 2014

<b>L</b>		<b>Motor vehicles with less than four wheels</b>
L1e	500	A two-wheeled vehicle with an engine < 50 cm <sup>3</sup> and speed not exceeding 50 km/h.
L2e	157	A three-wheeled vehicle <50 cm <sup>3</sup> and speed not exceeding 50 km/h.
L3e	67	A two-wheeled vehicle > 50 cm <sup>3</sup> or maximum design speed exceeding 50 km/h.
L5e	4	A vehicle with three wheels >50 cm <sup>3</sup> or maximum design speed exceeding 50 km/h.
L6e	227	A vehicle with four wheels <350 kg, excl batteries in case of electric vehicles, speed <45 km/h, and <50 cm <sup>3</sup> ,<4 kW
L7e	1678	A vehicle with four wheels, other than L6, <400 kg (550 kg for vehicles for carrying goods), excl batteries,<15 kW.
<b>M</b>		<b>Power-driven vehicles having at least four wheels and used for the carriage of passengers</b>
M1	29389	Vehicles used for the carriage of passengers <=eight seats in addition to the driver's seat. (Passenger car)
M3	9	Vehicles used for the carriage of passengers, <=eight seats in addition to the driver's seat, and< 5 tonnes. (Bus)
<b>N</b>		<b>Power-driven vehicles having at least four wheels and used for the carriage of goods</b>
N1	733	Vehicles used for the carriage of goods and having a maximum mass not exceeding 3.5 tonnes. (Pick-up Truck)
N2	2	Vehicles used for the carriage of goods and having a maximum mass > 3.5 tonnes but < 12 tonnes. (Commercial Truck)
<b>32766</b>		<b>total all above categories</b>

In addition other categories like off road and special machines available  
In the ned, all information is somewhere!

# BEV sales Utility and Quadricycles

*data as indication*

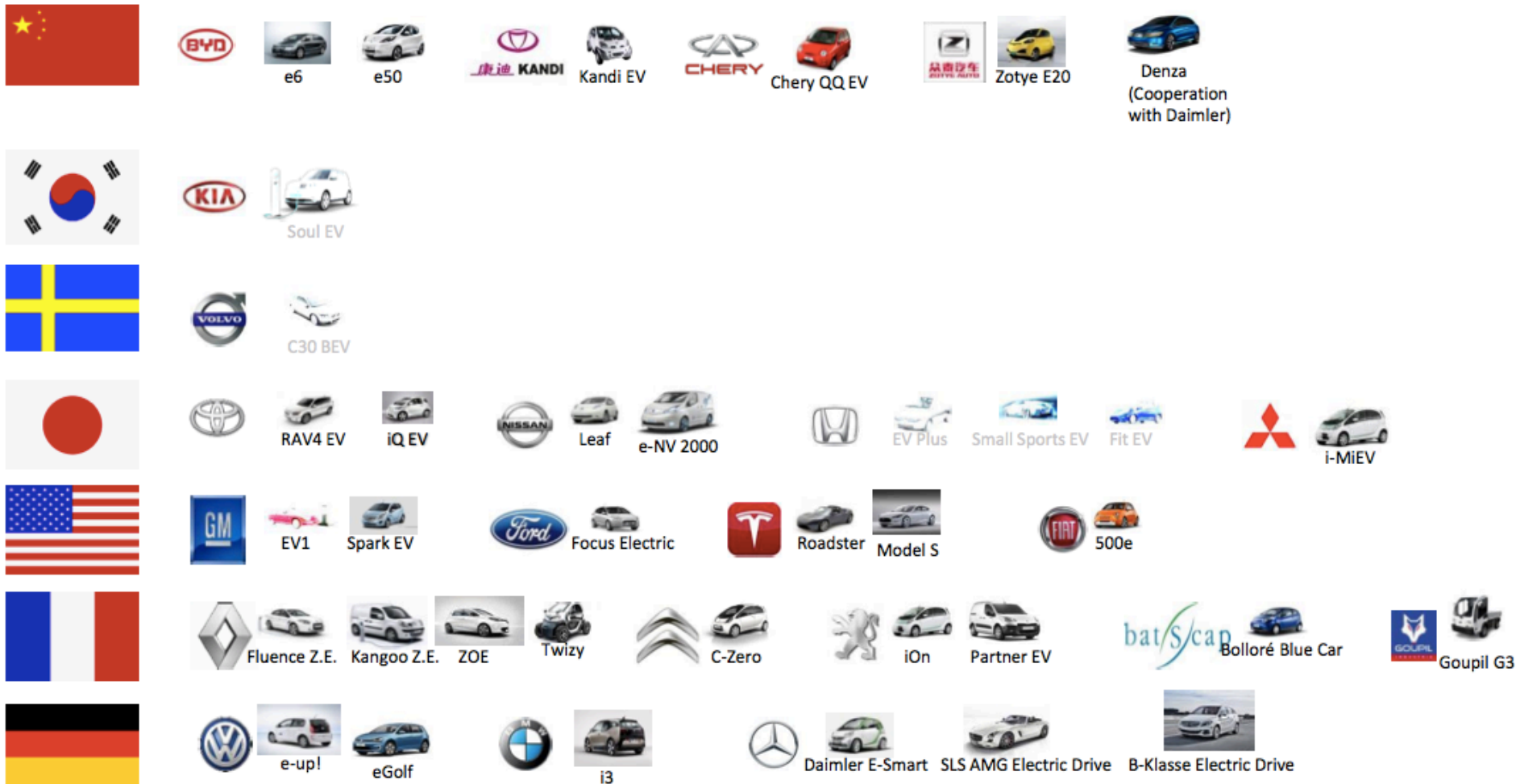
2014	1619 Renault Kangoo ZE	BEV	UTILITY
	101 Nissan e-NV200	BEV	UTILITY
	198 Goupil G3	BEV	UTILITY
	179 Peugeot Partner EV	BEV	UTILITY
	115 Citröen Berlingo EV	BEV	UTILITY
	2212 TOTAL		
	813 Renault Twizy	BEV	QUADRICYCLE
2013	4871 Renault Kangoo ZE	BEV	UTILITY
	516 Goupil G3	BEV	UTILITY
	5387 TOTAL		
	2730 Renault Twizy	BEV	QUADRICYCLE
2012	4300 Renault Kangoo ZE	BEV	UTILITY
	0 Nissan e-NV200	BEV	UTILITY
	4300 TOTAL		
	5527 Renault Twizy	BEV	QUADRICYCLE
TOTAL UTILITY		11899	
TOTAL QUADRICYCLE		9070	

Utility vehicles mainly in France, Twizy in many countries



# Full electric vehicles 2014

*In the USA about 250 different car models are on sale*



# Development of BEV sales in Europe in phases !

## 1) **Early adopters and selected OEM's: 2008 – 2011:**

- ▶ Nissan, Mitsubishi, Mercedes (Smart), Renault, Mia , Think, Tesla
- ▶ 200 EV's in 2009, +/- 900 in 2010 and around 7.500 in 2011
- ▶ Less than 10 models up to 2010, around 20 models in 2011 (including test / compliance / publicity cars from other automakers)

## 2) **Followers in 2012 – 2014: VW, BMW, GM (Opel), Ford**

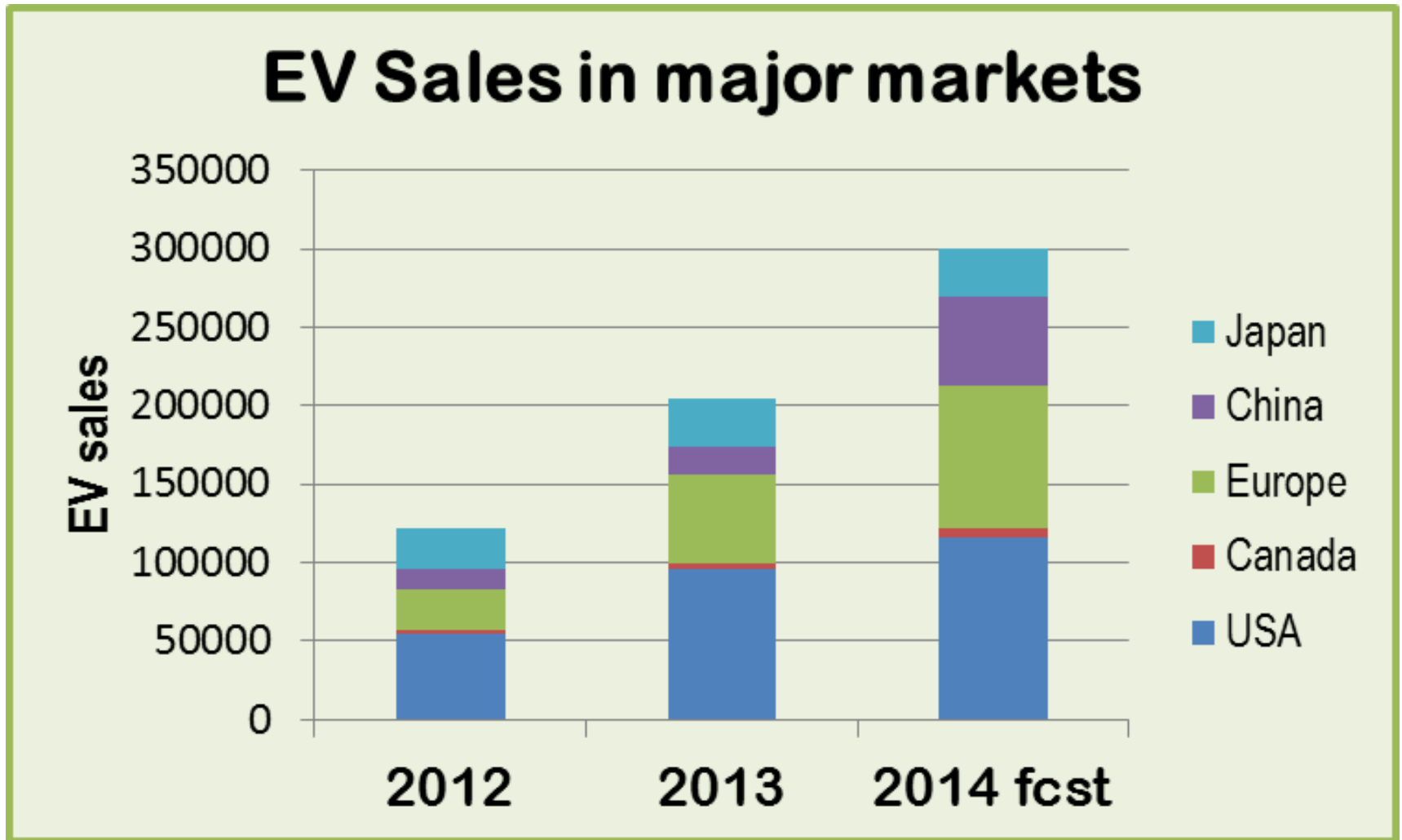
- ▶ Smaller SME's disappear with exception of Tesla, early OEM's strengthen position mostly
- ▶ 2012: 16k, 2013: 33k, 2014 H1: 26k BEV sales
- ▶ Number of OEM and models increasing
- ▶ Incentives to stimulate further product and market development?

## 3) ***After 2016 – 2017: Preparation of policies, legislation to stimulate OEM's to produce and sell EV's??***

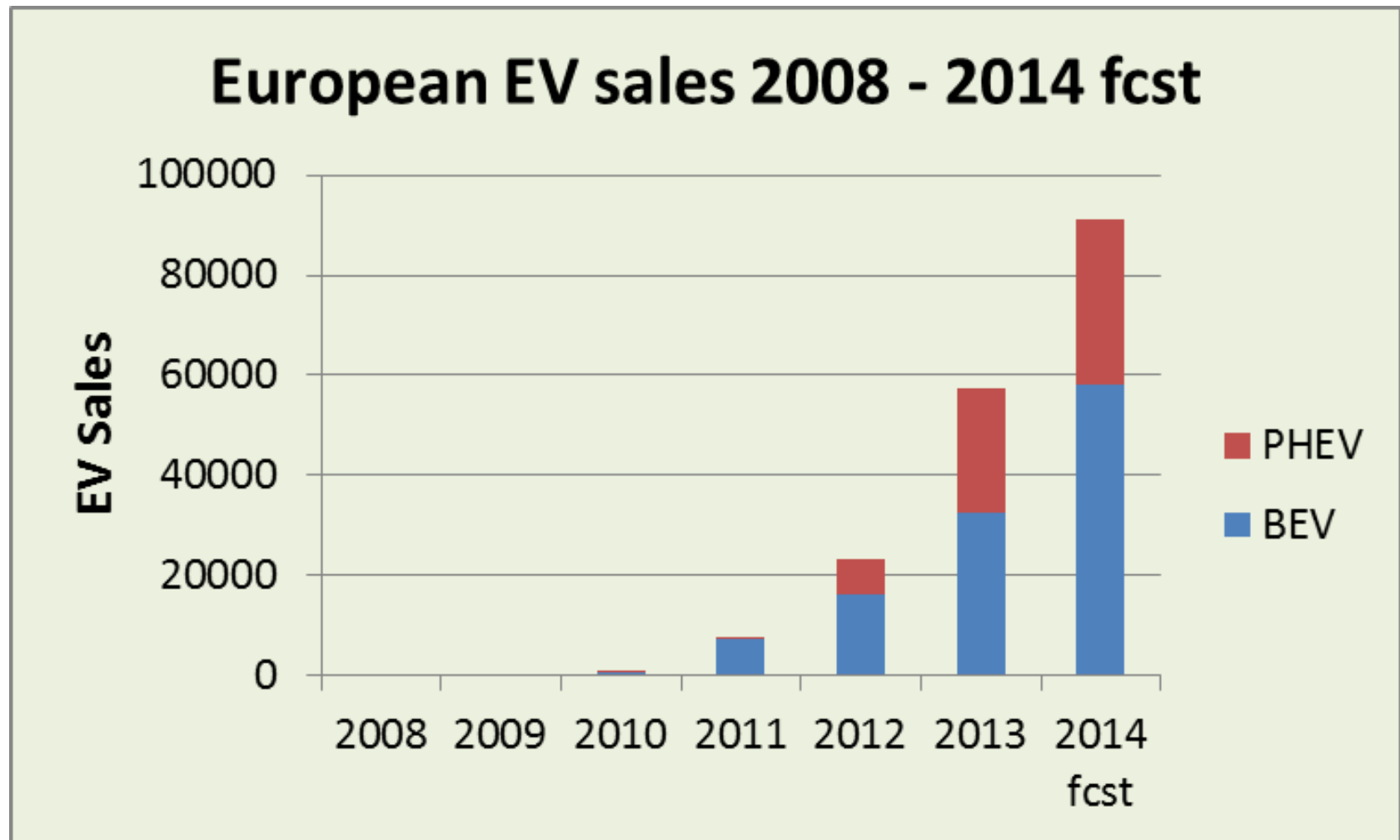
**300 km+ models for mid and top segments introduced**



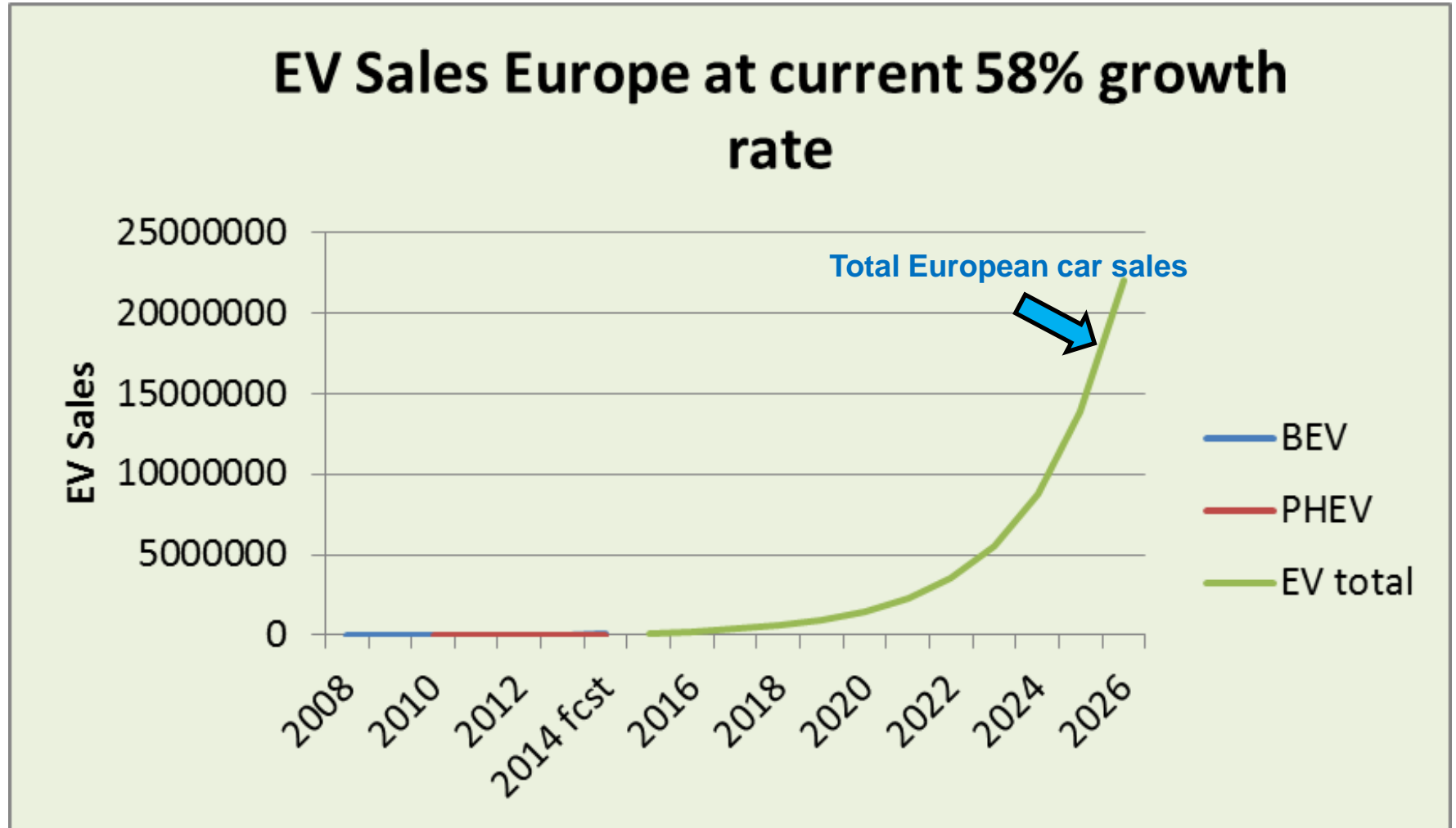
# EV global sales: China fastest growth in 2014



Europe will grow at almost 60% in 2014



# In 2025 all cars sold are EV's?



Often heard: “Electric Vehicles are small urban vehicles serving a niche market”: *and what about Tesla?*

***Tesla has already shattered many of the industry’s deep-rooted convictions...***

- That it is almost impossible for a newcomer to break into the automotive business
  - Tesla became the #2 EV seller in the U.S. in 2013
- That practical EVs must be limited to a range of 100-150 miles
  - Tesla designed and produced a >240-mile EV, which is 2-3X the range achieved by everyone else
- That EVs are more suitable as small urban vehicles
  - Tesla is producing and selling a large luxury EV
- That EVs are hard to sell and that customers will not pay extra \$ for them
  - In 2013, in the U.S., Tesla sold more \$90k+ sedans than well-established brands such as Mercedes and BMW
- That EVs imply a financial loss for carmakers
  - Tesla almost broke even during the first year of mass production

# EV and a USA electricity generators view

*Edison Electric Institute (June 2014): Transportation Electrification*

- ▶ **“Electrification Is Our Biggest Opportunity”**
- ▶ **“Electric Utilities Need Transportation Electrification”**
  - ▶ Time of Use: Off-peak price signals incent EV users to change behavior and shift load to the extent possible, minimizing grid impacts.
  - ▶ Increasingly, EVs have built in smart charging capabilities that can delay the onset of charging to preset off-peak times.
  - ▶ Current tariffs offer rates as low as 3-4¢/kWh off-peak to EV users.
- ▶ **An analysis of 17 US EV tariffs, compiled by the EV Project, revealed a 70% difference in kWh cost from peak to off-peak.**
- ▶ **Research from the Pacific Northwest National Laboratory states that approximately 160 million vehicles could be powered solely from existing off-peak generating capacity.**

# A VISION from industry

- ▶ FedEx Chairman and CEO Fred Smith states:

“Early results confirm that the costs of operating and maintaining electric vehicles are significantly less than those for traditional internal combustion-engine vehicles. In some cases we’ve achieved savings of 70% to 80%.

What we need to protect our nation is the environment to **create in a few short years an entirely new transportation system with millions, and then tens of millions of electric cars and trucks.”** (2011)