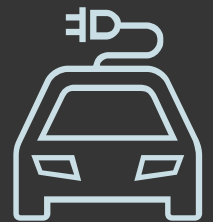


AlixPartners

AlixPartners Automotive- Electrification Index

2018 Summary

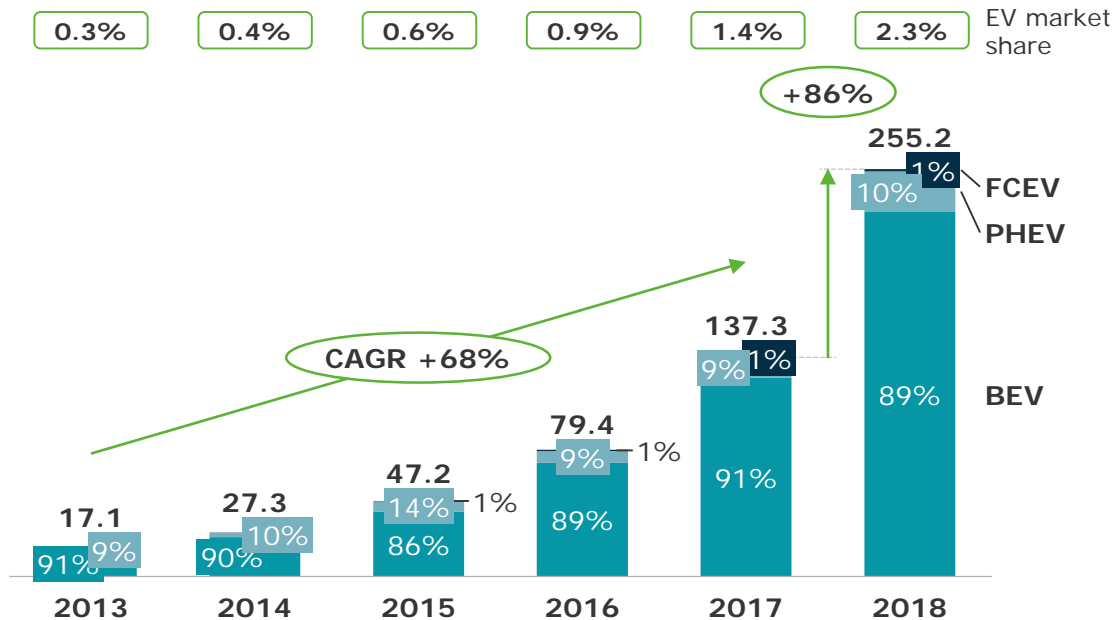


E-Index increased by 86% in 2018 driven by both; strong EV sales and improved range

E-Index 2013 - 2018

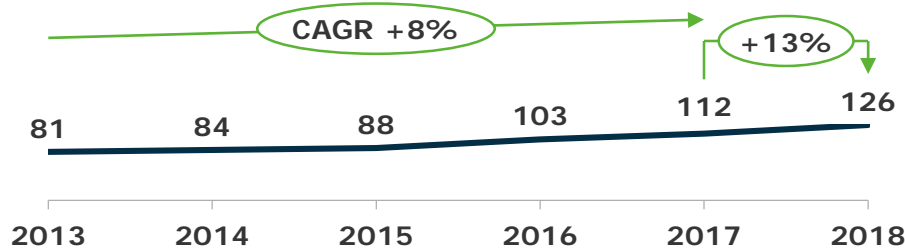
Comments

e-Range in million miles



- E-Index increased by 86% from 137m miles in 2017 to 255m miles in 2018
- 2018 growth rate with 86% above '13-'17 CAGR (68%)
- EV market share made a big step from 1.4% to 2.3% in 2018; almost one out of 40 vehicles is electrified
- Average range per vehicle increased by 13% in 2018
- BEVs are contributing with c. 90% to the e-Range whereas Plug-in-hybrids only contribute c. 10%
- Fuel cell cars still a minority group with low contribution to the e-Range

Average range per vehicle in miles

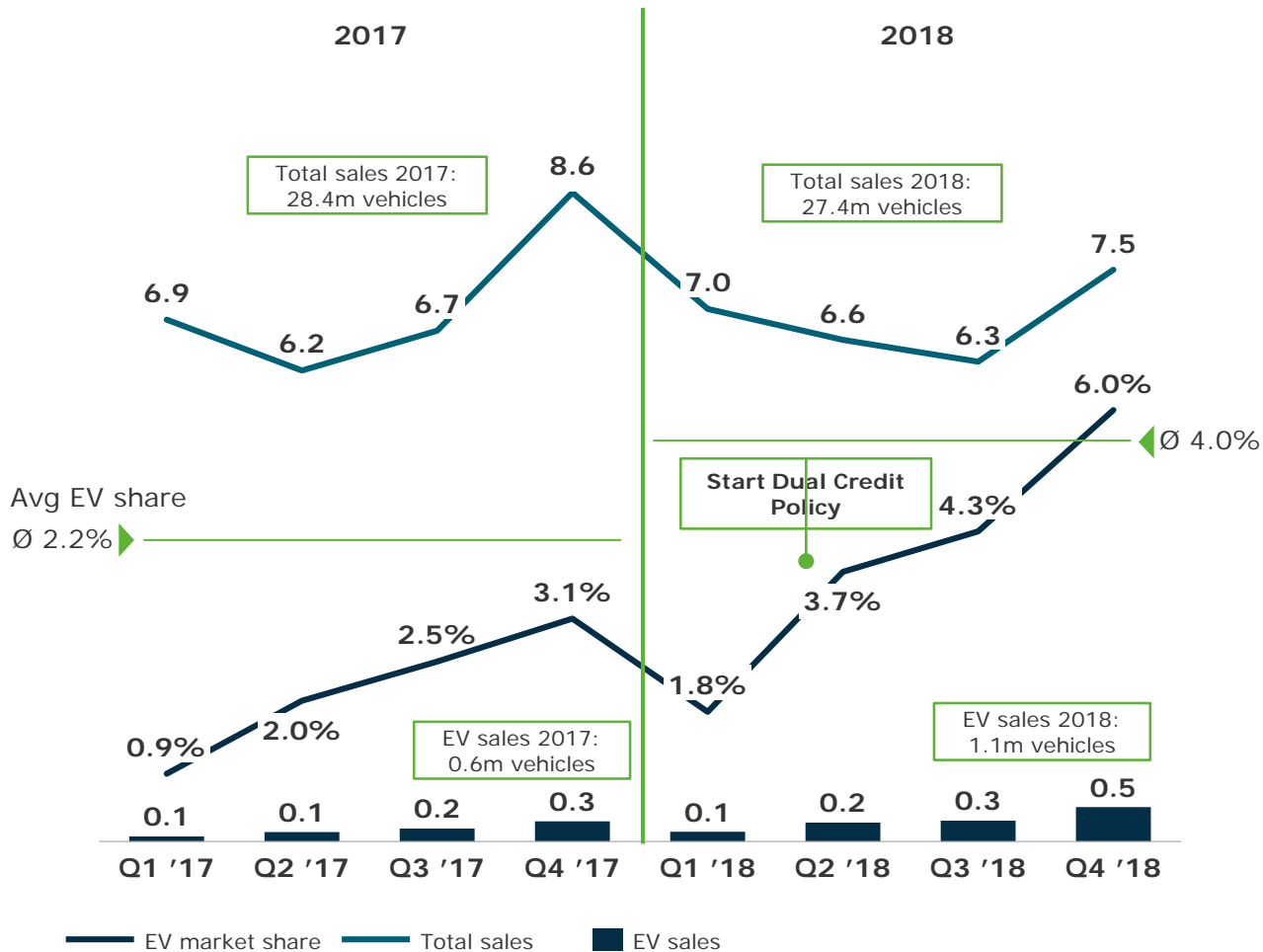


With 6.0% in Q4 and 4.0% for the full year, the EV market share in China almost doubled in 2018

China - total vehicle sales, EV sales and EV share Q1 2017 – Q4 2018

Comments

in million vehicles



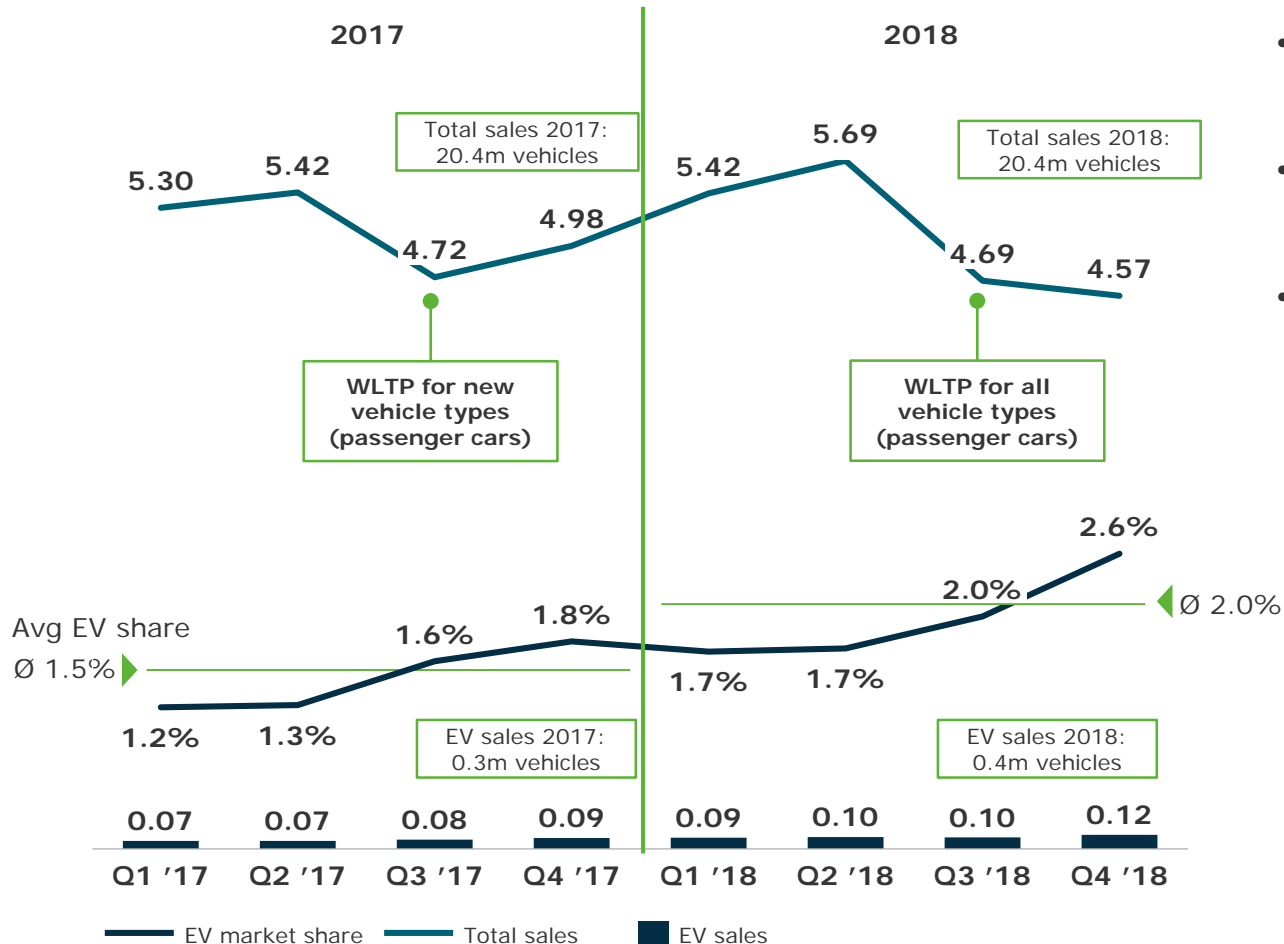
- Declining overall vehicle sales China (from 28.4m vehicles in 2017 down to 27.4m vehicles in 2018)
- EV market share almost doubled to 4.0% in 2018 and 6.0% in Q4 2018 driven by strong EV sales and contrast to overall vehicle sales
- China subsidies – aiming to boost demand for EVs - already significantly reduced during the course of 2018; continued reduction of governmental support until the beginning of 2019
- Dual credit policy for NEVs – aiming to boost supply of EVs - started in April 2018

EV market share in Europe slightly increased to 2.6% in Q4 and 2.0% for the full year 2018

Europe - total vehicle sales, EV sales and EV share Q1 2017 – Q4 2018

Comments

in million vehicles



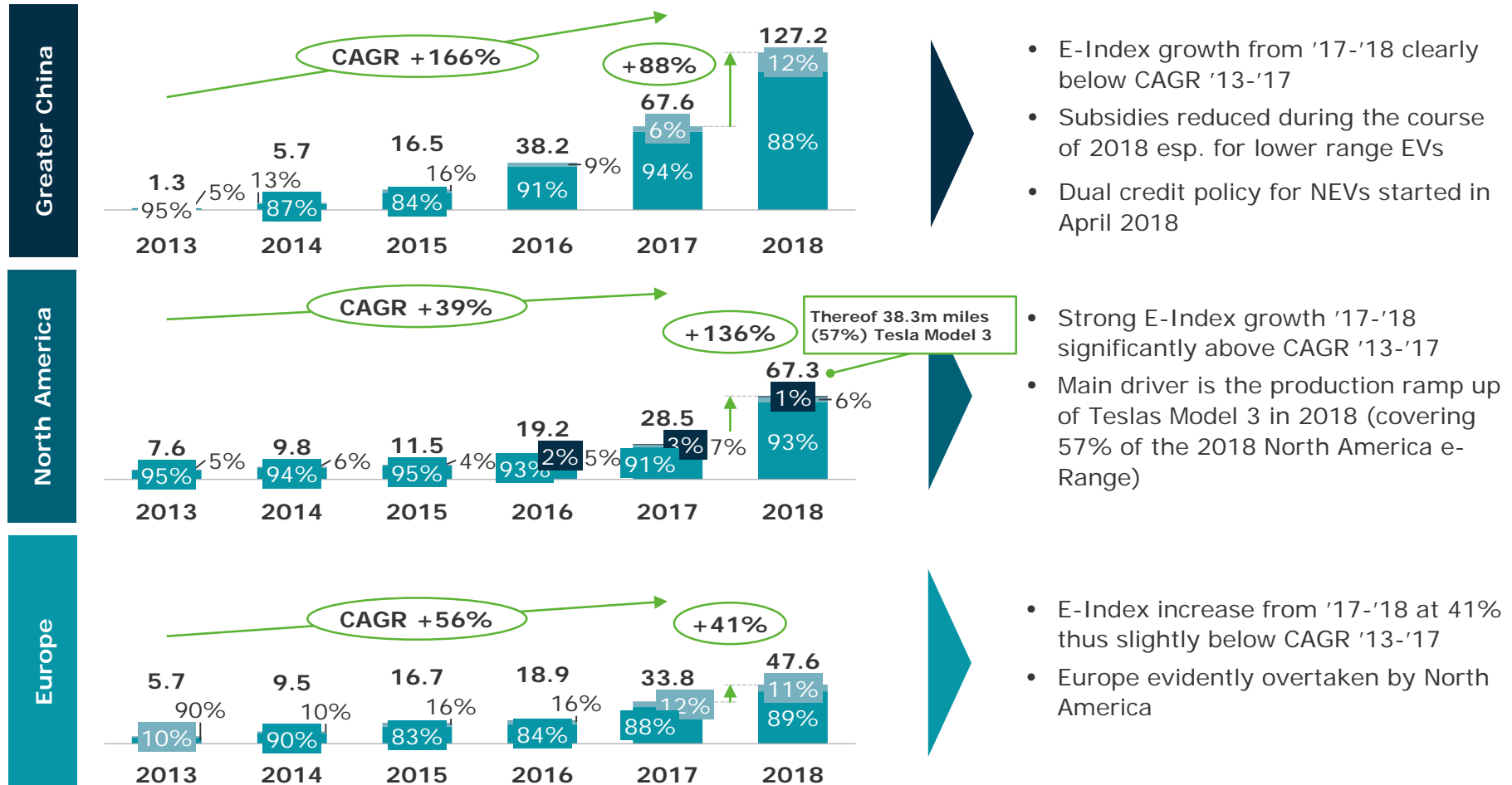
- EV sales on a yearly basis increased from 301k in 2017 to 406k in 2018 (+35%)
- Total vehicle sales constant in Europe 2018 vs 2017; EV market share in line with increasing EV sales numbers
- Launch of new electric vehicles delayed by OEMs due to WLTP introduction/testing capacities

In 2018 North America outperformed mainly due to Tesla's Model 3; Europe down to rank 3

E-Index development main regions '13-'18

Comments

e-Range in million miles

■ FCEV
 ■ PHEV
 ■ BEV


- E-Index growth from '17-'18 clearly below CAGR '13-'17
 - Subsidies reduced during the course of 2018 esp. for lower range EVs
 - Dual credit policy for NEVs started in April 2018
- Strong E-Index growth '17-'18 significantly above CAGR '13-'17
 - Main driver is the production ramp up of Teslas Model 3 in 2018 (covering 57% of the 2018 North America e-Range)
- E-Index increase from '17-'18 at 41% thus slightly below CAGR '13-'17
 - Europe evidently overtaken by North America

Tesla's models leading global e-Range ranking and contributing 26% to total e-Range

Top 15 Models 2018 by e-Range

e-Range in million miles

Rank 2018	Rank 2017	Model	Greater China	North America	Europe	Japan/Korea	South Asia	Middle East/Africa	South America	Total per model	% of total e-Range
1	-	Tesla Model 3		38,3						38,3	15,0%
2	1	Tesla Model S	1,9	7,4	5,7	0,1	0,4	0,0	0,0	15,5	6,1%
3	2	Tesla Model X	2,2	6,6	3,1	0,0	0,2	0,0	0,0	12,2	4,8%
4	5	Nissan Leaf		2,2	6,3	3,6			0,0	12,2	4,8%
5	3	Renault Zoe	0,0		9,8		0,0	0,0	0,0	9,9	3,9%
6	4	BJEV EC180	8,8							8,8	3,4%
7	7	BYD e5	8,8						0,0	8,8	3,4%
8	-	BYD Yuan	6,8							6,8	2,7%
9	14	BJEV EU260/300	6,5							6,5	2,5%
10	6	Chevrolet Bolt	0,0	4,9	0,0	1,1		0,0	0,0	6,1	2,4%
11	10	Geely Emgrand	4,9							4,9	1,9%
12	8	BMW i3	0,1	0,7	3,9	0,1	0,0	0,0	0,0	4,9	1,9%
13	-	SAIC Roewe Ei5	4,9							4,9	1,9%
14	46	BJEV EX200/260	4,7							4,7	1,8%
15	11	VW e-Golf		0,3	4,0		0,0			4,3	1,7%
Top 15 e-Range region			49,6	60,4	32,9	5,0	0,7	0,1	0,1	148,7	58,3%
<i>in %</i>			39,0%	89,8%	69,1%	43,3%	50,1%	50,3%	49,6%	58,3%	
Others e-Range region			77,6	6,9	14,7	6,6	0,7	0,1	0,1	106,5	
Total e-Range region			127,2	67,3	47,6	11,6	1,3	0,2	0,1	255,2	

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