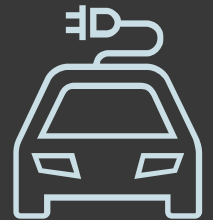


AlixPartners Automotive Electrification Index

Second Quarter 2017



AlixPartners Automotive Electrification Index

e-range

E-RANGE =

Sum of electric range of all electric vehicles (EV) sold

- By automaker, segment, region, and country
- Note: e-range does not include range from internal-combustion-engine (ICE) sources in plug-in hybrids—only the battery range is included
- The e-range attempts to rank the electrically driven range, and as such, does not include non-plug-in hybrids (HEVs) such as the standard Toyota Prius

AlixPartners Automotive Electrification Index

ICE-vehicle equivalent market share

Using e-range data, we can calculate an **ICE-vehicle equivalent market share**

Total number of full-ICE-equivalent-range EVs sold

Total number of vehicles sold (EV and ICE)

- By automaker, segment, region, and country
- Full-ICE-equivalent EVs are defined as the electric range of the vehicle sold divided by 311 miles (500 km)
- Note: to make the EV equivalent to an internal combustion engine vehicle (ICE), the 311-mile (500-km) range approximates an equivalent range between fill-ups for ICE vehicles. Dividing by this factor results in a more illuminating view of overall electrification, as it counts vehicles with high-electric ranges as full alternatives to ICE vehicles and discounts small range city cars or compliance vehicles
- Note: range of the ICE vehicles are not normalized to 311 miles (500 km)—each ICE unit sold is counted as a full vehicle

AlixPartners Automotive Electrification Index

- **Goal:** 'e-range' as a more meaningful measure than currently exists in the public domain for tracking the progress of electrification in the auto industry globally by region, country, segment, and particularly by automaker
- **Transparency:** based on publicly available data and data validated directly by the automakers
- **Sources:**
 - IHS Markit Ltd.: for total sales data (all vehicle types)
 - EV-volumes.com: for electric ranges for battery-electric vehicles (BEVs), plug-in hybrid vehicles (PHEVs), fuel-cell electric vehicles (FCEVs)
 - Automaker- and government-published websites: ditto the above
 - Discussions with automakers to validate ranges, with several automakers updating ranges beyond what was publicly available
- **Vehicle scope:** passenger cars and light trucks (GVW<6 tons), which coincides with IHS Markit's 'light vehicle' definition
- **Sales allocation by automaker:** based on IHS Markit's method for allocating vehicle sales to brands (including for joint ventures, upfitters, post-production customizations, etc.)

61 countries in the index

(where EV sales have taken place/are recordable to date)

AUSTRALIA	ESTONIA	LUXEMBOURG	SLOVENIA
AUSTRIA	FINLAND	MALAYSIA	SOUTH AFRICA
BELGIUM	FRANCE	MALTA	SOUTH KOREA
BERMUDA	GERMANY	MEXICO	SPAIN
BRAZIL	GREECE	MOROCCO	SWEDEN
BULGARIA	HONG KONG	NETHERLANDS	SWITZERLAND
CANADA	HUNGARY	NEW ZEALAND	TAIWAN
CHILE	ICELAND	NORWAY	THAILAND
CHINA	INDIA	POLAND	TURKEY
COLOMBIA	INDONESIA	PORTUGAL	UKRAINE
COSTA RICA	IRELAND	PUERTO RICO	UNITED ARAB EMIRATES
CROATIA	ISRAEL	ROMANIA	UNITED KINGDOM
CYPRUS	ITALY	RUSSIA	UNITED STATES
CZECH REPUBLIC	JAPAN	SAUDI ARABIA	
DENMARK	LATVIA	SINGAPORE	
ECUADOR	LITHUANIA	SLOVAKIA	

e-Range shows the development of electrification more clearly than looking at plug-ins and normal hybrids (e.g. Prius) together

Q1 2013

AlixPartners Automotive Electrification Index

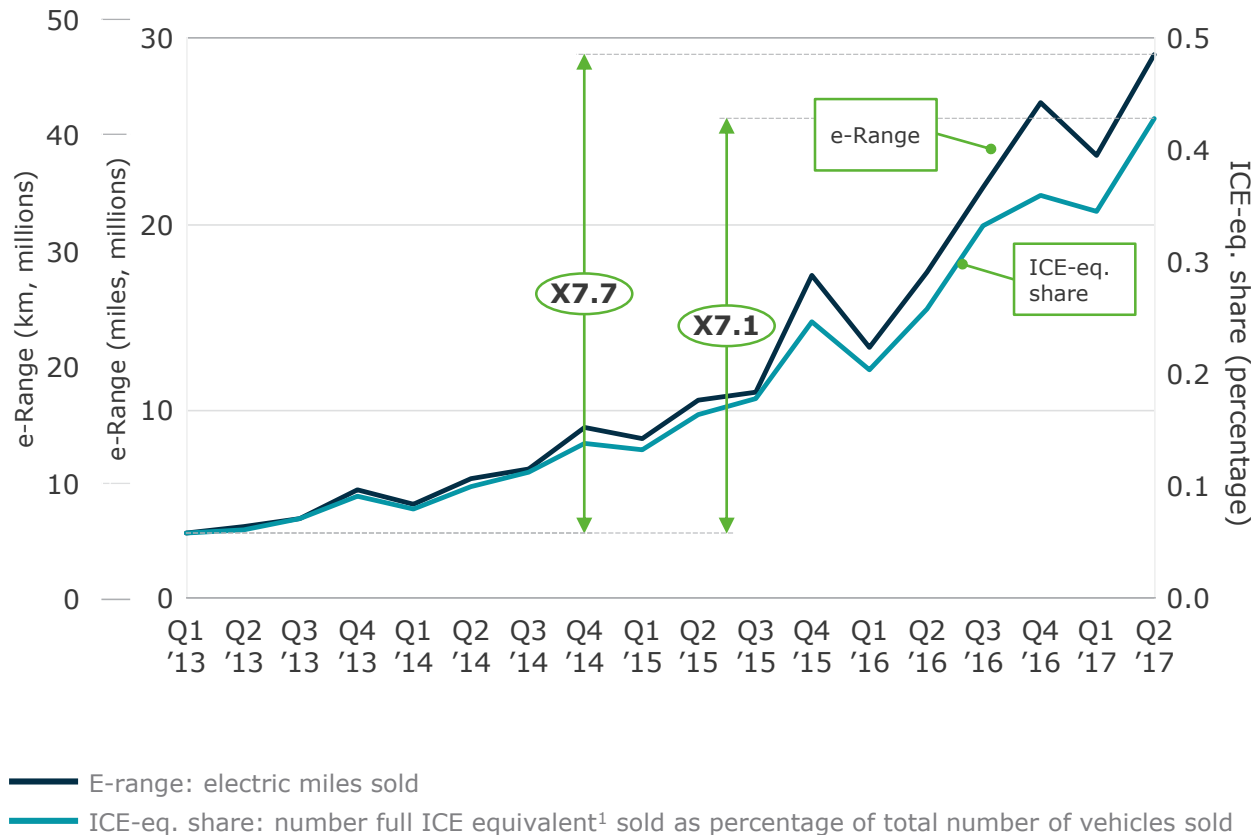
Q2 2017

Number of BEV, PHEV, FCEV sold:
41,023

ICE-eq. share:
0.06%

Market share:
0.21%

Average e-range:
**84 miles
(136 km)**



Number of BEV, PHEV, FCEV sold:
260,411

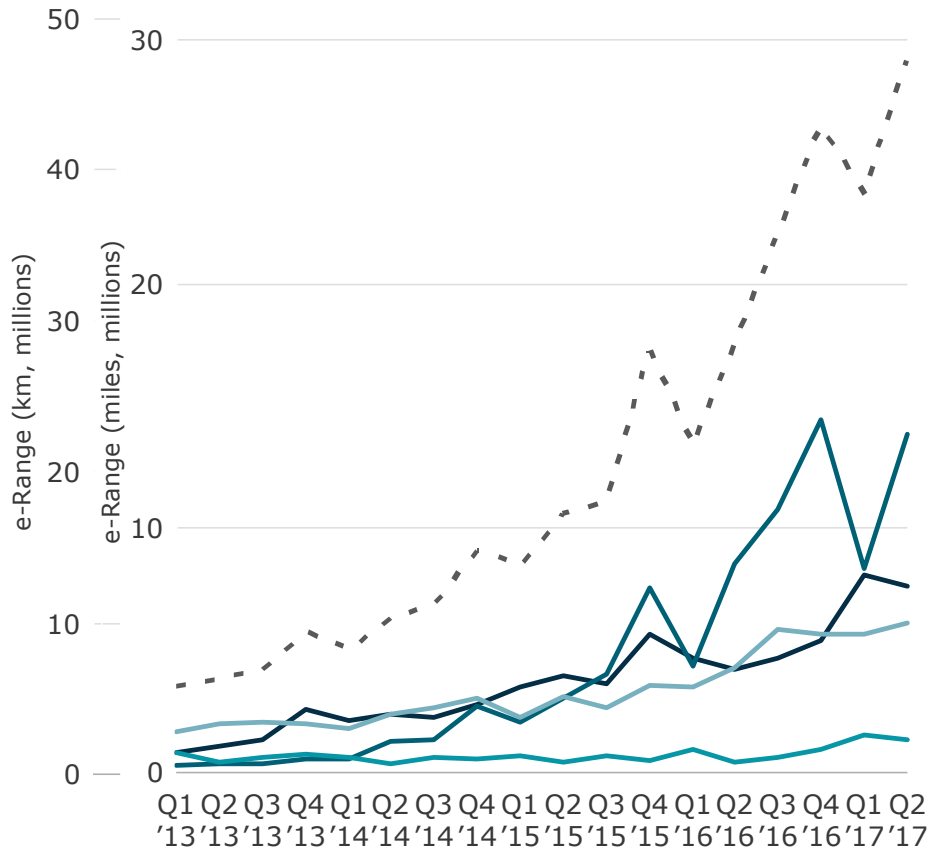
ICE-eq. share:
0.43%

Market share:
1.19%

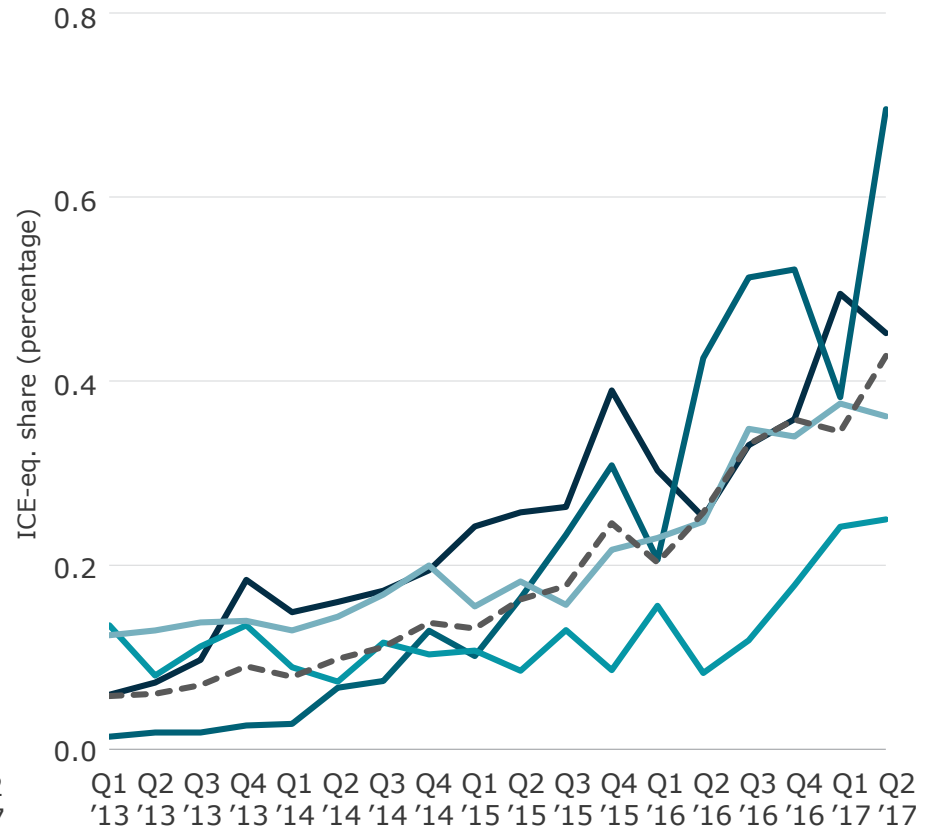
Average e-range:
**112 miles
(180 km)**

e-Range sold by region since 2Q 2013: China has grown the most, while other regions moderately

e-Range: main regions by quarter (Q1 '13 to Q2 '17)



ICE-eq. share: main regions by quarter (Q1 '13 to Q2 '17)



Key: Europe Greater China Japan/Korea North America Global

e-Range by country Q2 2017: China dominant; more than double the US and more than next 10 countries combined

e-Range by country: (2Q 2017)

Rank	Country Q2 '17	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold
1	China	13.83	22.26	121,185
2	United States	5.55	8.93	47,974
3	Norway	1.71	2.75	13,948
4	France	1.59	2.56	10,140
5	Germany	1.22	1.96	12,203
6	Japan	0.94	1.51	14,276
7	United Kingdom	0.86	1.38	10,161
8	Canada	0.50	0.81	4,390
9	Netherlands	0.38	0.61	1,969
10	Sweden	0.35	0.56	4,479
11	South Korea	0.35	0.56	2,775
12	Austria	0.31	0.50	1,777
13	Belgium	0.25	0.41	4,286
14	Switzerland	0.25	0.40	1,624
15	Spain	0.17	0.28	1,688
16	Italy	0.12	0.20	1,331
17	Portugal	0.09	0.15	958
18	Australia	0.09	0.14	445
19	Ukraine	0.06	0.09	790
20	Iceland	0.05	0,08	632
21	Finland	0.05	0.08	662

Rank	Country Q2 '17	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold
22	India	0.03	0.05	430
23	UAE	0.03	0.05	150
24	Luxembourg	0.03	0.05	298
25	New Zealand	0.03	0.05	228
26	Poland	0.02	0.03	136
27	Denmark	0.02	0.03	102
28	Mexico	0.02	0.03	128
29	Slovenia	0.02	0.03	113
30	Singapore	0.01	0.02	90
31	Russia	0.01	0.02	53
32	Hungary	0.01	0.02	101
33	Ireland	0.01	0.02	90
34	Czech Republic	0.01	0.02	121
35	Slovakia	0.01	0.02	119
36	Hong Kong	0.01	0.02	91
37	Taiwan	0.01	0.02	45
38	Malaysia	0.01	0.01	55
39	Latvia	0.01	0.01	34
40	Turkey	0.01	0.01	38
41	South Africa	-	-	41
42	Israel	-	-	44

e-Range by country Q2 2017: China dominant; more than double the US and more than next 10 countries combined (cont'd)

e-Range by country: (2Q 2017)

Rank	Country Q2 '17	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold
43	Cyprus	-	-	25
44	Lithuania	-	-	14
45	Chile	-	-	25
46	Indonesia	-	-	7
47	Romania	-	-	49
48	Estonia	-	-	16
49	Greece	-	-	14
50	Colombia	-	-	18
51	Brazil	-	-	12
52	Thailand	-	-	30
53	Bulgaria	-	-	1
54	Bermuda	-	-	0
55	Costa Rica	-	-	0
56	Croatia	-	-	0
57	Ecuador	-	-	0
58	Malta	-	-	0
59	Morocco	-	-	0
60	Puerto Rico	-	-	0
61	Saudi Arabia	-	-	0
Global		29.01	46.72	260,411

Using the e-range data, ICE-equivalent share by country Q2 2017: smaller European countries with high buying power stand out

ICE-eq. share by country: 2Q 2017

Rank	Country Q2 '17	ICE-eq. share (%)	Number EV sold	Rank	Country Q2 '17	ICE-eq. share (%)	Number EV sold	Rank	Country Q2 '17	ICE-eq. share (%)	Number EV sold
1	Norway	11.47	13,948	22	South Korea	0.23	2,675	43	India	0.01	430
2	Iceland	1.59	632	23	Slovenia	0.22	113	44	Russia	0.01	53
3	Netherlands	0.97	1,969	24	Singapore	0.18	90	45	Chile	0.01	25
4	Austria	0.95	1,777	25	Ireland	0.17	90	46	Colombia	0.01	18
5	Sweden	0.94	4,479	26	Slovakia	0.14	119	47	Turkey	0.01	38
6	Ukraine	0.87	790	27	UAE	0.14	150	48	Mexico	-	83
7	Switzerland	0.86	1,624	28	Spain	0.13	1,688	49	Thailand	-	30
8	France	0.72	10,140	29	Hungary	0.13	101	50	Bulgaria	-	1
9	China	0.71	121,185	30	Lithuania	0.11	14	51	Brazil	-	12
10	Luxembourg	0.58	298	31	Denmark	0.09	102	52	Bermuda	-	0
11	Belgium	0.46	4,286	32	Australia	0.09	445	53	Costa Rica	-	0
12	Finland	0.44	662	33	Estonia	0.07	16	54	Croatia	-	0
13	United Kingdom	0.41	10,161	34	Italy	0.07	1,331	55	Cyprus	-	0
14	United States	0.40	47,974	35	Poland	0.05	136	56	Ecuador	-	0
15	Portugal	0.38	958	36	Czech Republic	0.05	121	57	Indonesia	-	0
16	Germany	0.38	12,203	37	Taiwan	0.03	45	58	Malta	-	0
17	Latvia	0.34	34	38	Romania	0.02	49	59	Morocco	-	0
18	Hong Kong	0.32	91	39	Israel	0.02	44	60	Puerto Rico	-	0
19	Canada	0.27	4,390	40	Malaysia	0.02	55	61	Saudi Arabia	-	0
20	Japan	0.26	14,276	41	Greece	0.02	14				
21	New Zealand	0.24	228	42	South Africa	0.01	41				
									Global	0.43	260,411

e-Range by automaker Q2 2017: Tesla tops; China has 5 of top 10; GM and Nissan show fruits of past EV commitments

e-Range by automaker: 2Q 2017

Rank	OEM Q2 '17	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold
1	Tesla	6.11	9.84	21,746
2	Renault/Nissan	3.73	6.00	21,746
3	BYD	3.34	5.38	26,548
4	BAIC	2.02	3.25	17,451
5	General Motors	1.64	2.64	12,347
6	Geely	1.33	2.14	12,623
7	BMW	1.26	2.03	20,026
8	Zhidou	1.24	2.00	12,894
9	Jianghuai	1.20	1.92	7,774
10	Hyundai	1.14	1.84	9,289
11	Volkswagen	1.05	1.69	16,171
12	Toyota	0.76	1.23	16,862
13	Chery	0.75	1.21	8,288
14	Zotye	0.75	1.21	8,158
15	Jiangling	0.46	0.73	5,914
16	Changan	0.45	0.72	4,801
17	PSA	0.31	0.51	1,822
18	Daimler	0.30	0.48	8,126
19	Dongfeng	0.24	0.39	2,411
20	Mitsubishi	0.24	0.38	6,738
21	SAIC	0.21	0.34	7,175

Rank	OEM Q2 '17	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold
22	FCA	0.20	0.32	3,328
23	Ford	0.16	0.26	5,840
24	Honda	0.08	0.13	220
25	Mahindra & Mahindra	0.03	0.05	430
26	Hawtai	0.03	0.05	371
27	Guangzhou Auto	0.02	0.02	296
28	Soueast	-	-	54
29	Lifan	-	-	20
30	Hainan Automobile	-	-	661
31	Sichuan Yema	-	-	234
32	Yulon	-	-	45
33	Other	-	-	2
Global		29.01	46.72	260,411

ICE-equivalent share of each automaker's volume: A large gap between Tesla and the Chinese versus the traditional industry

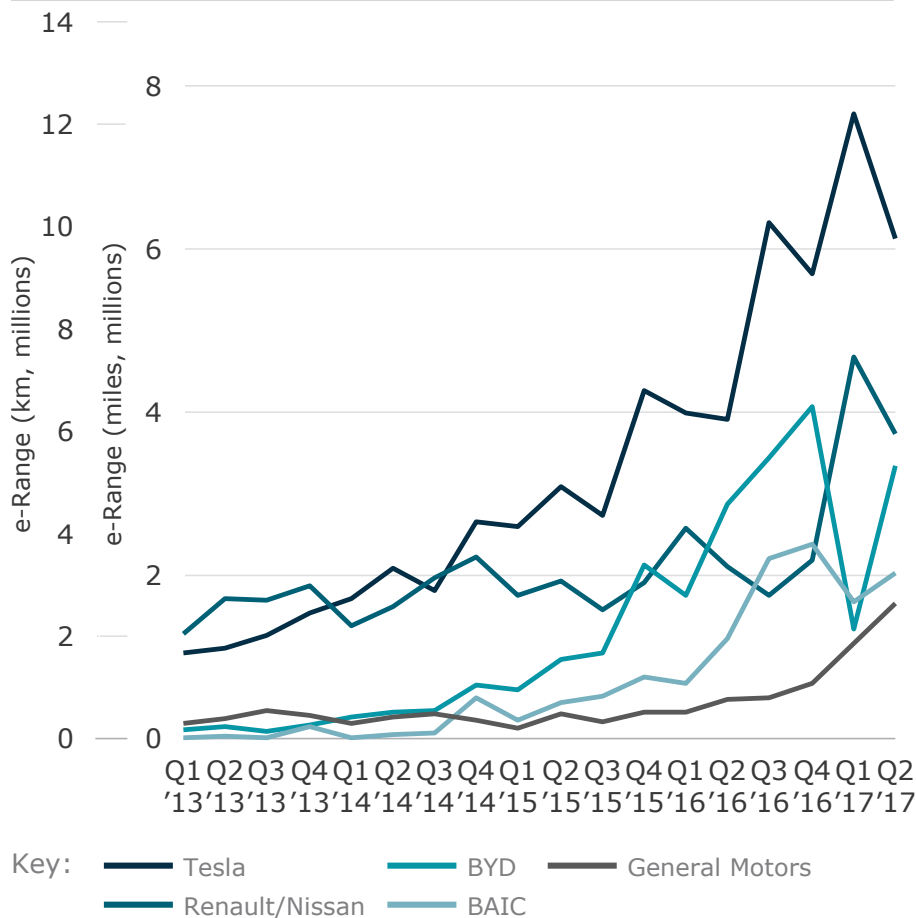
ICE-eq. share by automaker: 2Q 2017

Rank	OEM Q2 '17	ICE-eq. share (%)	Number EV sold	Average range (miles)
1	Tesla	90.45	21,692	281
2	Zhidou	31.00	12,894	96
3	BYD	12.42	26,548	126
4	Zotye	5.72	8,158	92
5	BAIC	2.54	17,451	116
6	Chery	2.02	8,288	91
7	Jianghuai	1.83	7,774	154
8	Jiangling	1.27	5,914	77
9	Geely	1.11	12,623	105
10	BMW	0.65	20,024	63
11	Changan	0.57	4,801	93
12	Renault/Nissan	0.56	21,629	171
13	Hawtai	0.52	371	85
14	SAIC	0.48	7,175	30
15	Dongfeng	0.42	2,411	99
16	Mitsubishi	0.37	6,737	35
17	General Motors	0.35	12,347	133
18	Hyundai	0.22	9,289	123
19	Daimler	0.14	8,126	37
20	Volkswagen	0.13	16,169	65
21	Toyota	0.10	16,861	45

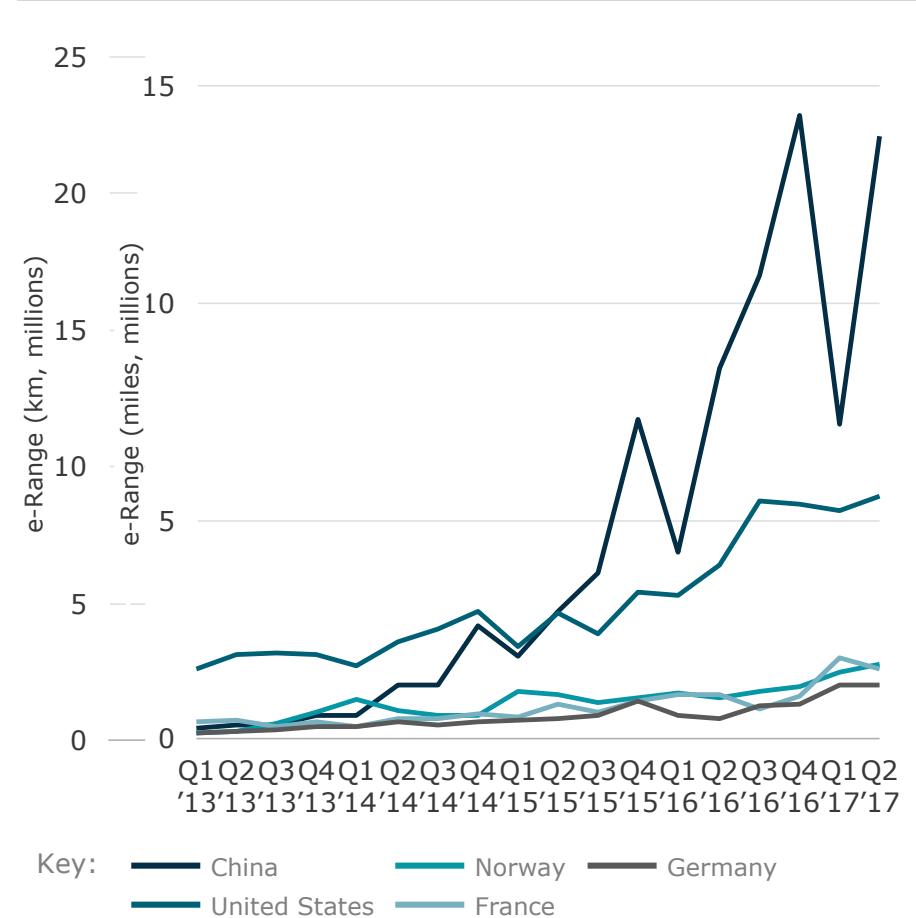
Rank	OEM Q2 '17	ICE-eq. share (%)	Number EV sold	Average range (miles)
22	PSA	0.10	1,822	172
23	Mahindra & Mahindra	0.08	430	78
24	FCA	0.05	3,328	59
25	Guangzhou Auto	0.04	296	52
26	Ford	0.03	5,840	28
27	Honda	0.02	220	374
28	Soueast	0.02	54	35
29	Lifan	0.01	20	78
30	Hainan Automobile	0.00	661	n.a.
31	Sichuan Yema	0.00	234	n.a.
32	Yulon	0.00	45	n.a.
33	Other	0.02	2	155
Global		0.43	260,411	112

Chinese are gaining ground with General Motors and Renault-Nissan showing results from their commitment to electrification

e-Range: Top five OEMs by quarter (Q1 '13 to Q2 '17)



e-Range: Top five countries by quarter (Q1 '13 to Q2 '17)



For more information, please contact:

MARK WAKEFIELD

Managing Director, Global Co-lead, Automotive & Industrial
Detroit
mwakefield@alixpartners.com

ELMAR KADES

Managing Director, Global Co-lead, Automotive & Industrial
Munich
ekades@alixpartners.com

ANDREW BERGBAUM

Managing Director
London
abergbaum@alixpartners.com

KOICHI KAWAGUCHI

Managing Director
Tokyo
kkawaguchi@alixpartners.com

QIAN XU

Director
Shanghai
qxu@alixpartners.com

AlixPartners
when it really
matters