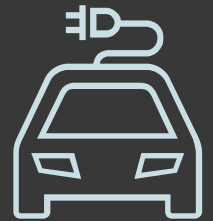


AlixPartners Automotive- Electrification Index

Q1 2018



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

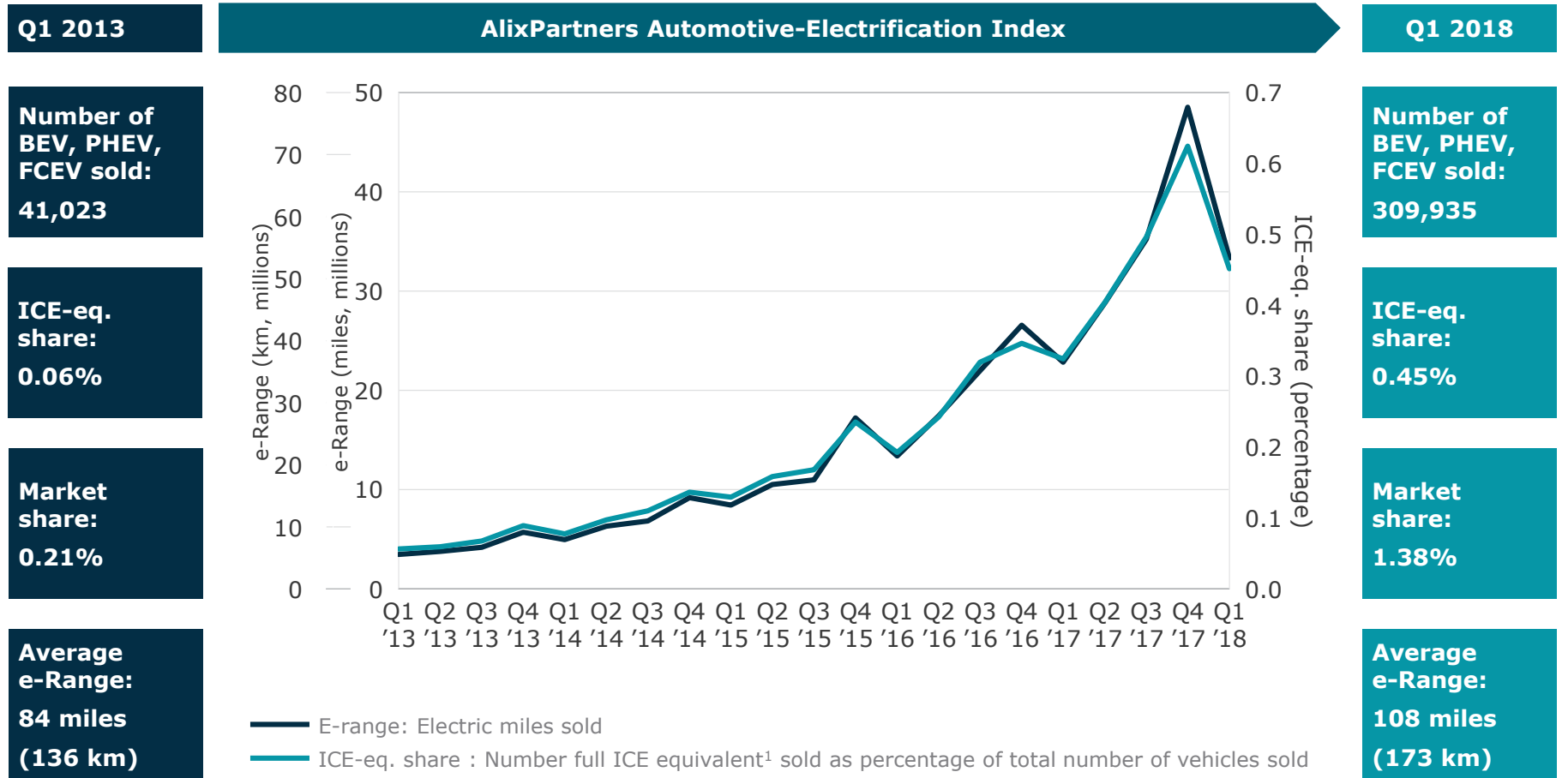
- **Goal:** 'e-Range' as a more meaningful measure than currently exists in the public domain for tracking the progress of electrification in the auto industry globally by region, country, segment and particularly by Automaker
- **Transparency:** Based on public available data and data validated directly 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 Market'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.)

71 Countries in the Index

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

AUSTRALIA	ESTONIA	MACEDONIA	SERBIA
AUSTRIA	FINLAND	MALAYSIA	SINGAPORE
BAHRAIN	FRANCE	MALTA	SLOVAKIA
BELGIUM	GERMANY	MEXICO	SLOVENIA
BERMUDAS	GREECE	MAROCCO	SOUTH AFRICA
BRAZIL	HONG KONG	NETHERLANDS	SOUTH KOREA
BULGARIA	HUNGARY	NEW ZEALAND	SPAIN
CANADA	ICELAND	NORWAY	SWEDEN
CHILE	INDIA	OMAN	SWITZERLAND
CHINA	INDONESIA	PANAMA	TAIWAN
COLOMBIA	IRELAND	PERU	THAILAND
COSTA RICA	ISRAEL	POLAND	TURKEY
CROATIA	ITALY	PORTUGAL	UKRAINE
CYPRUS	JAPAN	PUERTO RICO	UAE
CZECH REP.	JORDAN	QATAR	UK
DENMARK	LATVIA	ROMANIA	USA
ECUADOR	LITHUANIA	RUSSIA	URUGUAY
EGYPT	LUXEMBOURG	SAUDI ARABIA	

Q1 '18 e-Range down by 31% vs Q4 '17; so usual Q1 dip vs prior year Q4 also observed in 2018



¹ Electric range/311miles (500km) defining the equivalent full ICE vehicle shar

e-Range by propulsion; PHEVs 33% share of total EV sold; BEV sales China down 61% in Q1 2018

Q1 2013

AlixPartners Automotive-Electrification Index

Q1 2018

Number vehicles sold

BEV 30,430
PHEV 10,593
FCEV -

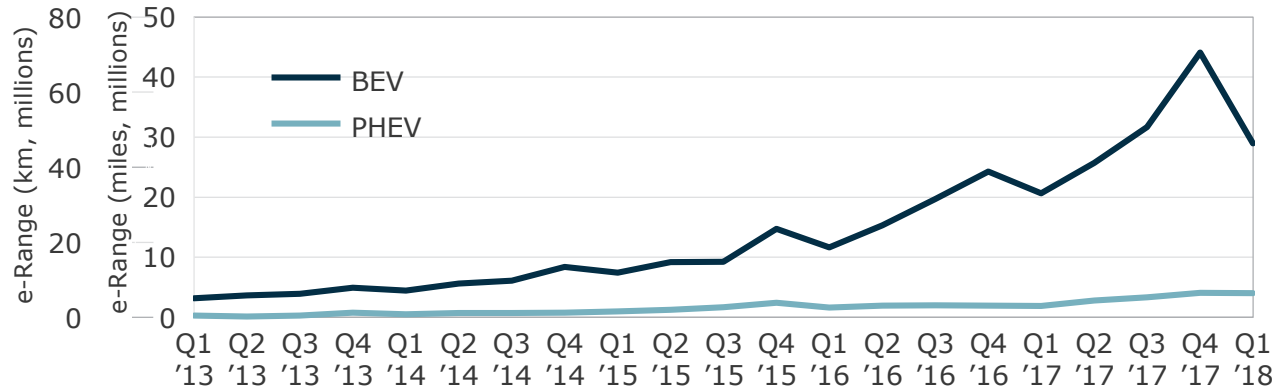
Market share:

BEV 0.16%
PHEV 0.05%

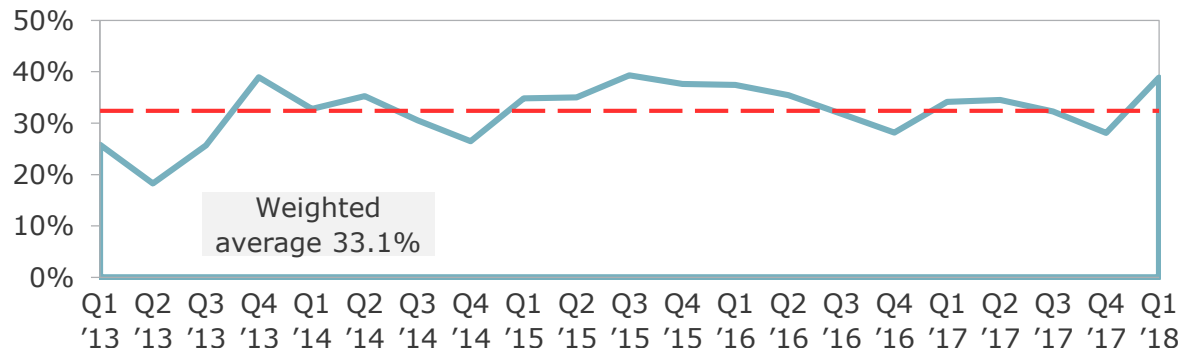
Average e-Range (miles):

BEV 105
PHEV 26

e-Range by propulsion



Share of PHEVs within total number of electric vehicles sold



Number vehicles sold

BEV 188,393
PHEV 120,465
FCEV 1,077

Market share:

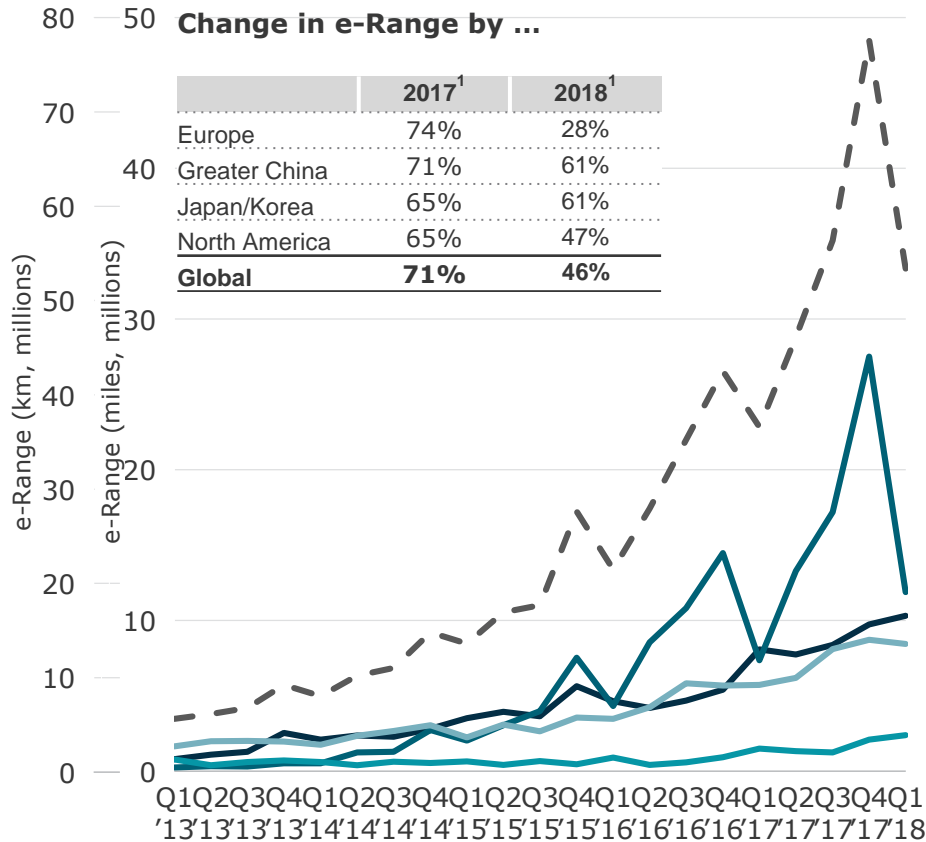
BEV 0.84%
PHEV 0.54%

Average e-Range (miles):

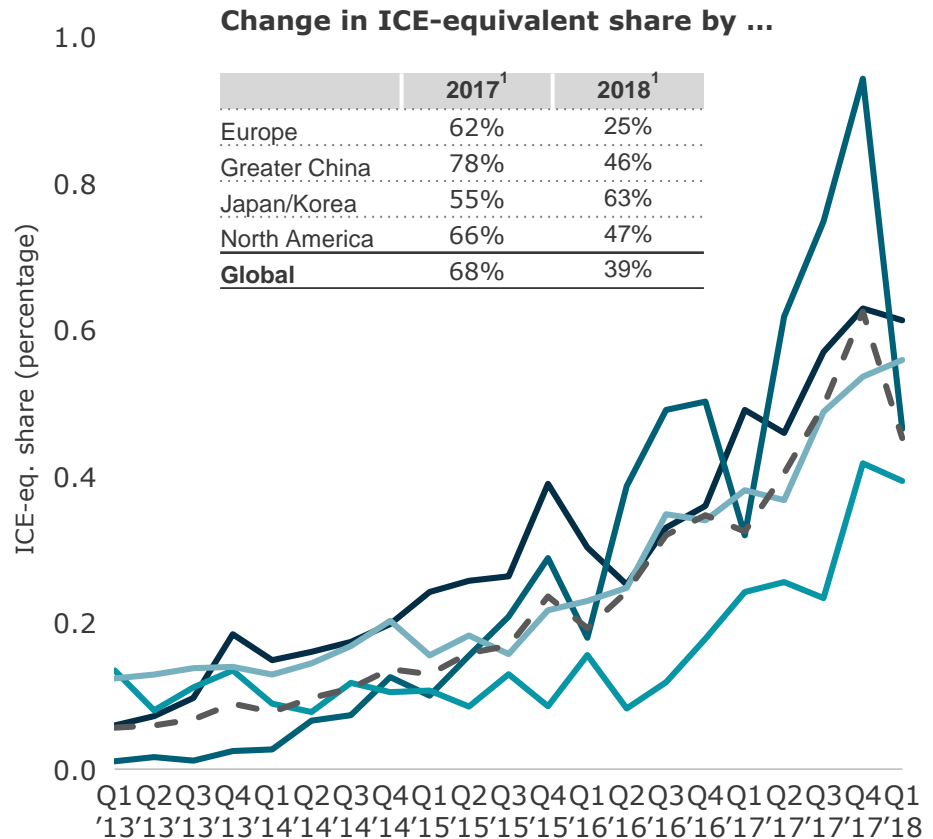
BEV 154
PHEV 33

e-Range and ICE-equivalent growth rates slowed down, especially Greater China and Europe

e-Range: regions by quarter (Q1 '13 to Q1 '18)



ICE-eq. share²: regions by quarter (Q1 '13 to Q1 '18)



Key: — Europe — Greater China — Japan/Korea — North America — Global

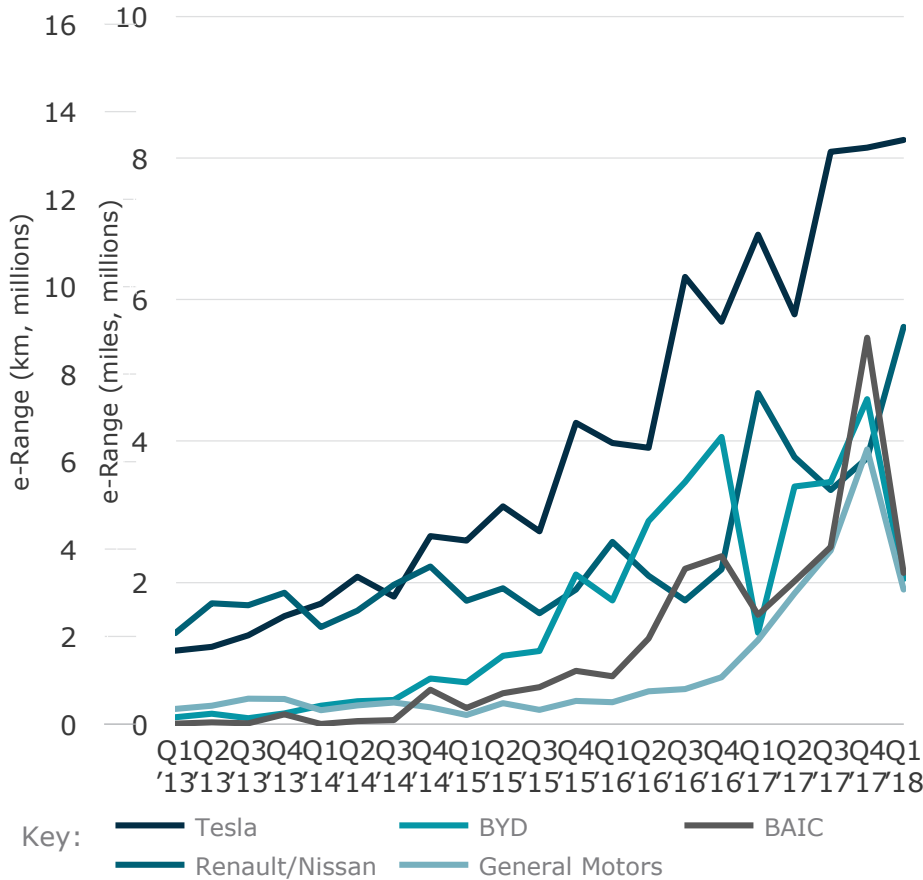
¹ Change Q1 previous year to Q1 particular year

² Electric range/311miles (500km) defining the equivalent full ICE vehicle shar

Renault/Nissan strong in Q1 2018, Chinese OEMs and GM weak; China poor result

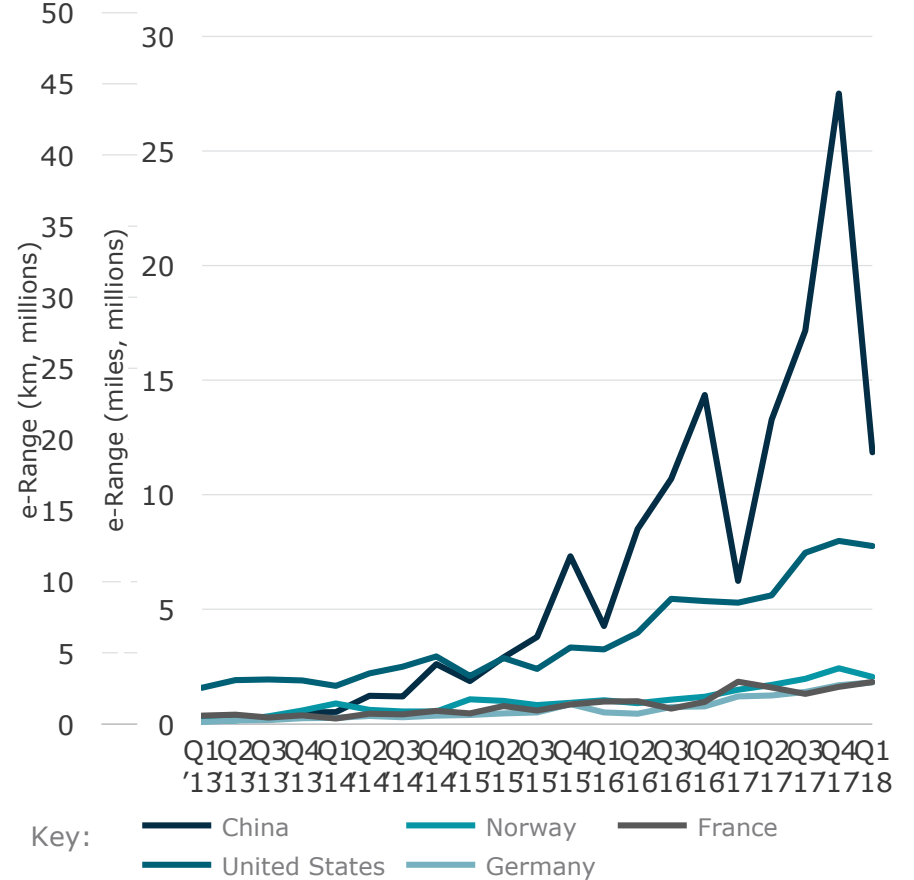
e-Range: Top 5 OEMs by quarter (Q1 '13 to Q1 '18)

Change in e-Range by ...



e-Range: Top 5 countries by quarter (Q1 '13 to Q1 '18)

Change in e-Range by ...



e-Range by country Q1 2018: Top 15 countries cover 96% of global e-Range, thereof China 36%

e-Range by country: Q1 2018

Rank Q1 '18	Rank Q1 '16	Country	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold	Rank Q1 '18	Country	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold
1	1	China	11.85	19.08	126,529	21	Ireland	0.07	0.11	593
2	2	United States	7.76	12.50	56,158	22	Denmark	0.06	0.09	992
3	3	Norway	2.06	3.31	16,505	23	Hungary	0.05	0.08	484
4	5	Japan	1.89	3.04	18,273	24	New Zealand	0.04	0.07	319
5	4	France	1.84	2.96	12,544	25	Iceland	0.04	0.07	740
6	7	Germany	1.81	2.92	17,587	26	Poland	0.04	0.06	346
7	6	United Kingdom	1.15	1.86	14,479	27	Malaysia	0.03	0.05	1,120
8	8	Netherlands	0.90	1.46	4,550	28	Israel	0.03	0.05	949
9	10	Canada	0.65	1.04	6,884	29	Czech Republic	0.03	0.05	209
10	19	South Korea	0.50	0.80	4,353	30	Romania	0.03	0.05	230
11	11	Sweden	0.42	0.67	6,345	31	Luxembourg	0.02	0.04	225
12	9	Switzerland	0.35	0.56	2,327	32	Ukraine	0.02	0.04	218
13	12	Austria	0.34	0.54	2,308	33	Slovenia	0.02	0.04	193
14	13	Belgium	0.29	0.47	4,097	34	United Arab Emirates	0.02	0.03	68
15	14	Spain	0.28	0.46	2,595	35	Mexico	0.02	0.03	103
16	15	Italy	0.18	0.29	1,942	36	Singapore	0.01	0.02	64
17	18	Portugal	0.17	0.28	1,573	37	Turkey	0.01	0.02	52
18	16	Australia	0.15	0.23	831	38	Slovakia	0.01	0.02	125
19	22	Finland	0.07	0.12	1,487	39	Colombia	0.01	0.01	102
20	23	India	0.07	0.11	904	40	Lithuania	0.01	0.01	51

e-Range by country Q1 2018: Top 15 countries cover 96% of global e-Range, thereof China 36%

e-Range by country: Q1 2018

Rank Q1 '18	Country	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold
41	Bulgaria	0.01	0.01	54
42	Hong Kong	0.00	0.01	18
43	South Africa	0.00	0.01	34
44	Taiwan	0.00	0.01	18
45	Costa Rica	0.00	0.01	68
46	Latvia	0.00	0.01	30
47	Russia	0.00	0.01	24
48	Greece	0.00	0.01	52
49	Jordan	0.00	0.00	11
50	Estonia	0.00	0.00	20
51	Cyprus	0.00	0.00	30
52	Serbia	0.00	0.00	13
53	Brazil	0.00	0.00	17
54	Thailand	0.00	0.00	22
55	Indonesia	0.00	0.00	4
56	Uruguay	0.00	0.00	10
57	Chile	0.00	0.00	6
58	Croatia	0.00	0.00	3
59	Malta	0.00	0.00	3
60	Ecuador	0.00	0.00	8

Rank Q1 '18	Country	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold
61	Oman	0.00	0.00	16
62	Morocco	0.00	0.00	2
63	Macedonia	0.00	0.00	6
64	Saudi Arabia	0.00	0.00	8
65	Panama	0.00	0.00	1
66	Qatar	0.00	0.00	1
67	Bahrain	0.00	0.00	1
68	Peru	0.00	0.00	1
69	Bermuda	0.00	0.00	0
70	Puerto Rico	0.00	0.00	0
71	Egypt	0.00	0.00	0
	Global	33.34	53.66	309,935

ICE-equivalent share by country Q1 2018: China fell from 1% (Q4 2017) back to 0.5%

ICE-eq. share¹ by country: Q1 2018

Rank Q1 '18	Rank Q1 '16	Country	ICE-eq. share (%)	Number EV sold
1	1	Norway	15.5%	16,505
2	8	Iceland	2.5%	740
3	4	Netherlands	1.8%	4,550
4	3	Switzerland	1.4%	2,327
5	6	Sweden	1.3%	6,345
6	5	Austria	1.1%	2,308
7	7	France	0.9%	12,544
8	19	Portugal	0.8%	1,573
9	14	Germany	0.6%	17,587
10	12	United States	0.6%	56,158
11	15	Finland	0.6%	1,487
12	18	Canada	0.5%	6,884
13	10	Belgium	0.5%	4,097
14	17	Luxembourg	0.5%	225
15	16	China	0.5%	126,529
16	28	Hungary	0.5%	484
17	11	UK	0.5%	14,479
18	13	Japan	0.4%	18,273
19	30	New Zealand	0.4%	319
20	9	Ukraine	0.4%	218
21	33	South Korea	0.4%	4,353
22	25	Slovenia	0.3%	193
23	22	Denmark	0.3%	992
24	21	Lithuania	0.3%	51
25	35	Romania	0.3%	230

Rank Q1 '18	Country	ICE-eq. share (%)	Number EV sold
26	Latvia	0.3%	30
27	Ireland	0.3%	593
28	Spain	0.2%	2,595
29	Singapore	0.2%	64
30	Bulgaria	0.2%	54
31	Hong Kong	0.2%	18
32	Australia	0.2%	831
33	Czech Republic	0.1%	209
34	Slovakia	0.1%	125
35	Israel	0.1%	949
36	Estonia	0.1%	20
37	Italy	0.1%	1,942
38	UAE	0.1%	68
39	Serbia	0.1%	13
40	Poland	0.1%	346
41	Malaysia	0.1%	1,120
42	Colombia	0.1%	102
43	Macedonia	0.0%	6
44	Greece	0.0%	52
45	Uruguay	0.0%	10
46	India	0.0%	904
47	Turkey	0.0%	52
48	Taiwan	0.0%	18
49	Croatia	0.0%	3
50	South Africa	0.0%	34

Rank Q1 '18	Country	ICE-eq. share (%)	Number EV sold
51	Ecuador	0.0%	8
52	Mexico	0.0%	103
53	Oman	0.0%	16
54	Chile	0.0%	6
55	Russia	0.0%	24
56	Morocco	0.0%	2
57	Thailand	0.0%	22
58	Brazil	0.0%	17
59	Bahrain	0.0%	1
60	Saudi Arabia	0.0%	8
61	Qatar	0.0%	1
62	Peru	0.0%	1
63	Indonesia	0.0%	4
64	Bermuda	0.0%	0
65	Costa Rica	0.0%	68
66	Cyprus	0.0%	30
67	Egypt	0.0%	0
68	Jordan	0.0%	11
69	Malta	0.0%	3
70	Panama	0.0%	1
71	Puerto Rico	0.0%	0
	Global	0.5%	309,935

¹ Electric range/311miles (500km) defining the equivalent full ICE vehicle shar

e-Range by automaker Q1 2018: Renault/Nissan overtook BAIC & BYD; now #2

e-Range by automaker: Q1 2018

Rank Q1 '18	Rank Q1 '16	OEM	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold	Rank Q1 '18	OEM	e-Range (miles, millions)	e-Range (km, millions)	Number EV sold
1	1	Tesla	8.26	13.29	29,932	21	Guangzhou Auto	0.28	0.45	3,139
2	2	Renault/Nissan	5.61	9.04	33,975	22	Lifan	0.24	0.38	1,826
3	5	BAIC	2.14	3.44	21,284	23	Zotye	0.21	0.34	2,147
4	3	BYD	2.05	3.30	28,543	24	Hainan Automobile	0.21	0.34	1,418
5	9	General Motors	1.90	3.06	12,924	25	PSA	0.18	0.29	1,827
6	4	BMW	1.68	2.71	27,875	26	Dongfeng	0.16	0.25	860
7	6	Volkswagen	1.51	2.43	19,422	27	FCA	0.12	0.19	2,364
8	12	Hyundai	1.35	2.17	15,063	28	Ford	0.10	0.17	3,268
9	7	Jianghuai	1.16	1.86	10,760	29	Soueast	0.09	0.14	938
10	14	Chery	0.85	1.37	8,505	30	Fujian Motor Industry	0.08	0.12	909
11	18	Toyota	0.71	1.14	12,612	31	TATA	0.07	0.12	1,631
12	11	Geely	0.63	1.02	11,422	32	Mahindra & Mahindra	0.03	0.05	454
13	34	Hawtai	0.59	0.96	4,129	33	Great Wall	0.02	0.04	182
14	13	Daimler	0.59	0.95	11,779	34	Brilliance Auto	0.00	0.00	9
15	15	Jiangling	0.57	0.92	6,476	35	FAW	0.00	0.00	35
16	20	SAIC	0.54	0.86	13,462	36	Other	-	-	155
17	45	Zhidou	0.41	0.67	4,195					
18	24	Changan	0.35	0.56	3,069		Global	33.34	53.66	309,935
19	8	Mitsubishi	0.34	0.55	9,719					
20	28	Honda	0.32	0.51	3,627					

ICE-equivalent share of OEMs: 4 traditional OEMs in top 20, others are Tesla and Chinese OEMs

ICE-eq. share¹ by automaker: Q1 2018

Rank Q1 '18	Rank Q1 '16	OEM	ICE-eq. share (%)	Number EV sold	Average range (miles)
1	1	Tesla	88.78%	29,932	276
2	-	Zhidou	31.82%	4,195	99
3	-	Hawtai	23.27%	4,129	144
4	-	Fujian Motor Ind.	13.44%	909	85
5	2	BYD	6.07%	28,543	72
6	5	BAIC	3.69%	21,284	100
7	-	Hainan Automobile	3.55%	1,418	147
8	4	Lifan	3.40%	1,826	129
9	7	Chery	2.48%	8,505	100
10	8	BMW	0.88%	27,875	60
11	3	Zotye	0.86%	2,147	99
12	9	Renault/Nissan	0.80%	33,975	165
13	10	SAIC	0.80%	13,462	40
14	12	Soueast	0.76%	938	93
15	13	Guangzhou Auto	0.60%	3,139	89
16	11	Geely	0.38%	11,422	55
17	6	Mitsubishi	0.37%	9,719	35
18	23	Changan	0.36%	3,069	113
19	19	General Motors	0.30%	12,924	147
20	14	Daimler	0.27%	11,779	50
21		Hyundai	0.27%	15,063	89
22		Dongfeng	0.22%	860	182
23		Volkswagen	0.18%	19,422	78
24		Toyota	0.09%	12,612	56
25		TATA	0.09%	1,631	45
26		Honda	0.08%	3,627	87
27		PSA	0.08%	1,827	98
28		Mahindra & Mahindra	0.07%	454	70
29		FCA	0.03%	2,364	49
30		Great Wall	0.03%	182	124
31		Ford	0.02%	3,268	32
32		Brilliance Auto	0.00%	9	0
33		FAW	0.00%	35	0
34		Jianghuai	0.00%	10,760	108
35		Jiangling	0.00%	6,476	88
36		Other	-	155	-
Global			0.65%	309,935	108

¹ Electric range/311miles (500km) defining the equivalent full ICE vehicle shar