

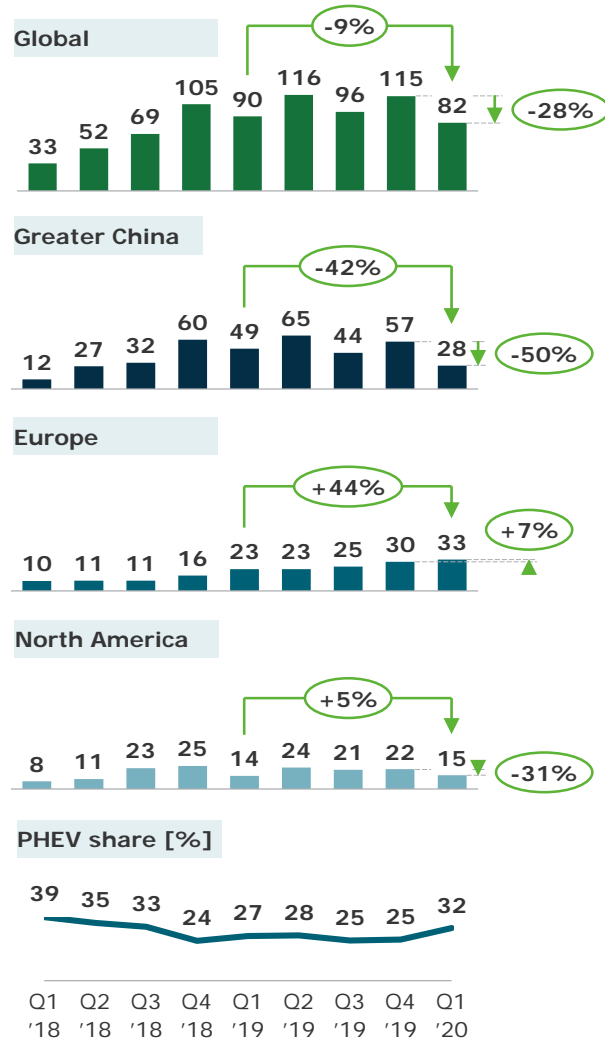
AlixPartners Automotive Electrification Index

Q1 2020



AlixPartners Automotive Electrification Index

E-Range in m miles / PHEV share



Summary Q1 2020

- After a rebound in Q4 '19, the **Automotive Electrification Index crashed by 28% in Q1 '20** and is even below Q1 '19 level, however the EV market share was stable at 2.7%.
- **Greater China with a massive e-Range drop in Q1** due to effect from **mid 2019 subsidy stop and Covid-19 impact**. Greater China's e-Range eroded by 50% from 57m miles in Q4 '19 to 28m miles in Q1 '20. Also on a twelve months basis Greater China's e-Range has dropped by 42%.
- **Europe is the only main region with growing e-Range in Q1 '20** showing a quarterly increase of 7%. **On a twelve months basis, Europe's e-Range** has outperformed all other regions and **increased by 44%**.
- **North America's e-Range has significantly decreased by 31%** from 22m miles in Q4 '19 to 15m miles in Q1 '20. On a twelve months basis, the e-Range has slightly increased by 5%.
- **The PHEV sales share has come back to 32%** due to a stronger decline of BEV sales China and US and its higher share in Europe.
- **Tesla's Model 3 continues to be the best selling EV** with ~30% e-Range contribution. The majority of Model 3 produced is sold in North America (34%) followed by Europe (30%) and Greater China (27%). Model Y production has launched in January, first deliveries in March.

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

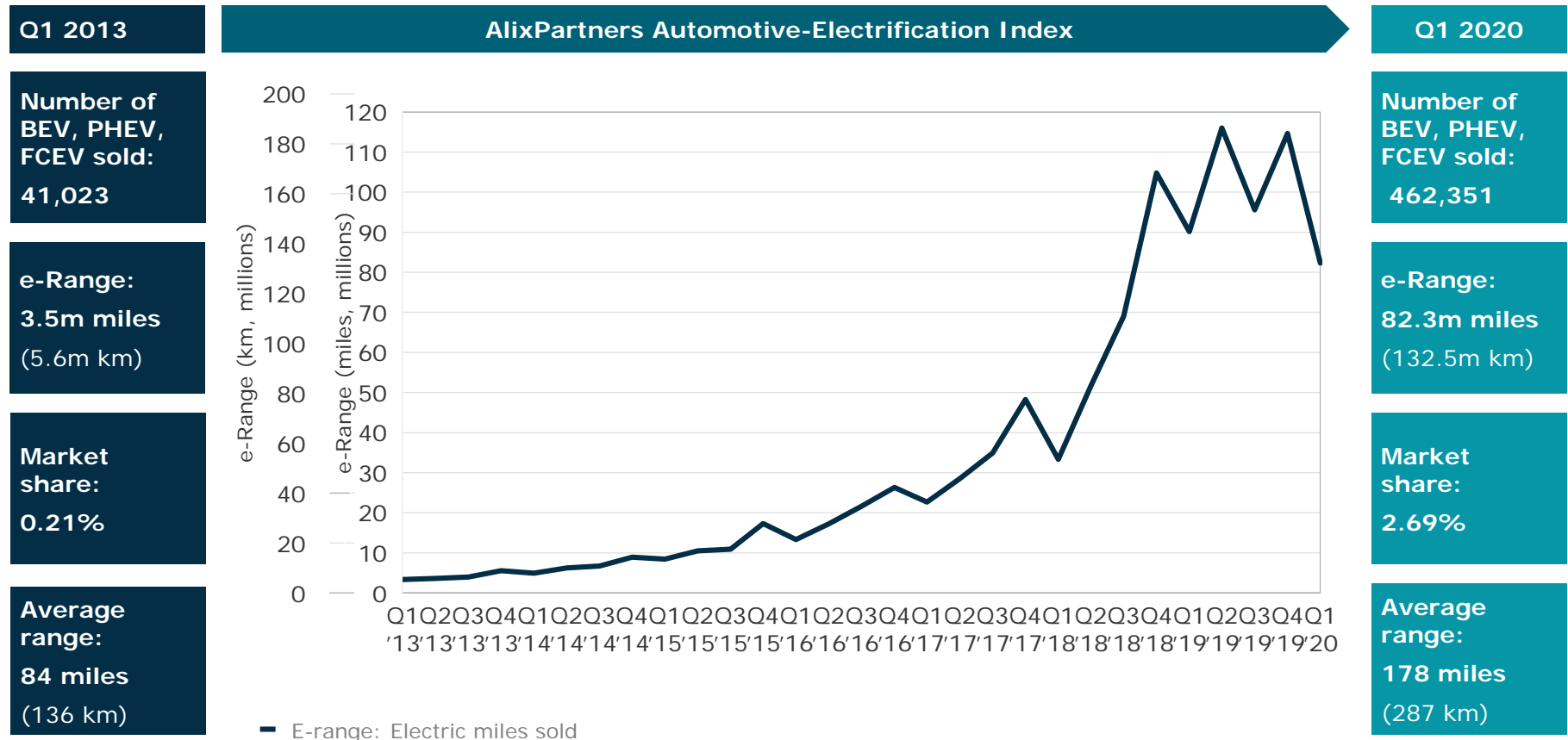
- **Goal:** 'e-Range' as a more meaningful measure than currently exists in the public domain for tracking the progress of electrification in the auto industry globally by region, country, segment and particularly by Automaker
- **Transparency:** Based on public available data and data validated directly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

73 Countries in the Index

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

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

The global e-Range dropped significantly from 115m miles in Q4 '19 to 82m miles in Q1 (-28%)



The e-Range drop was mainly driven by weak BEV (-29%); PHEV less affected (-20%)

Q1 2013

AlixPartners Automotive-Electrification Index

Q1 2020

Number vehicles sold

BEV 30,430
PHEV 10,593
FCEV -

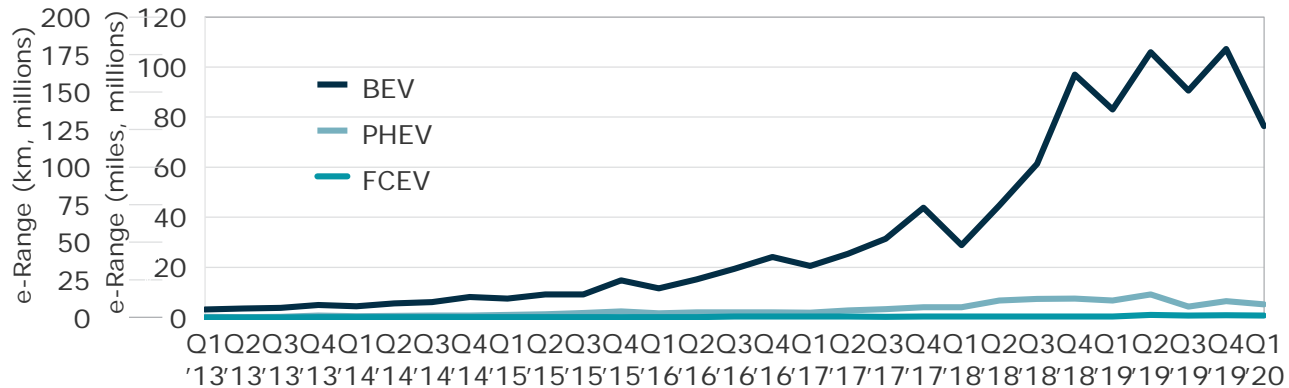
Market share:

BEV 0.16%
PHEV 0.05%

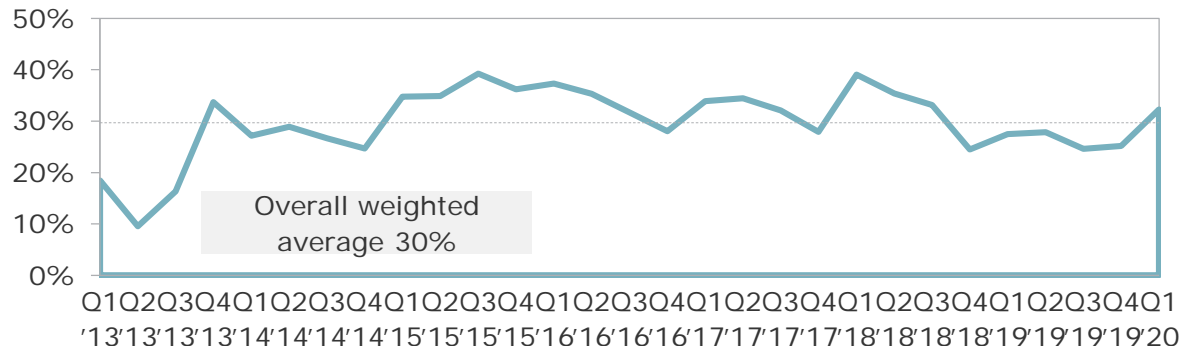
Average e-Range (miles):

BEV 105
PHEV 26

e-Range by propulsion



Share of PHEVs within total number of electric vehicles sold



Number vehicles sold

BEV 311,398
PHEV 149,165
FCEV 1,788

Market share:

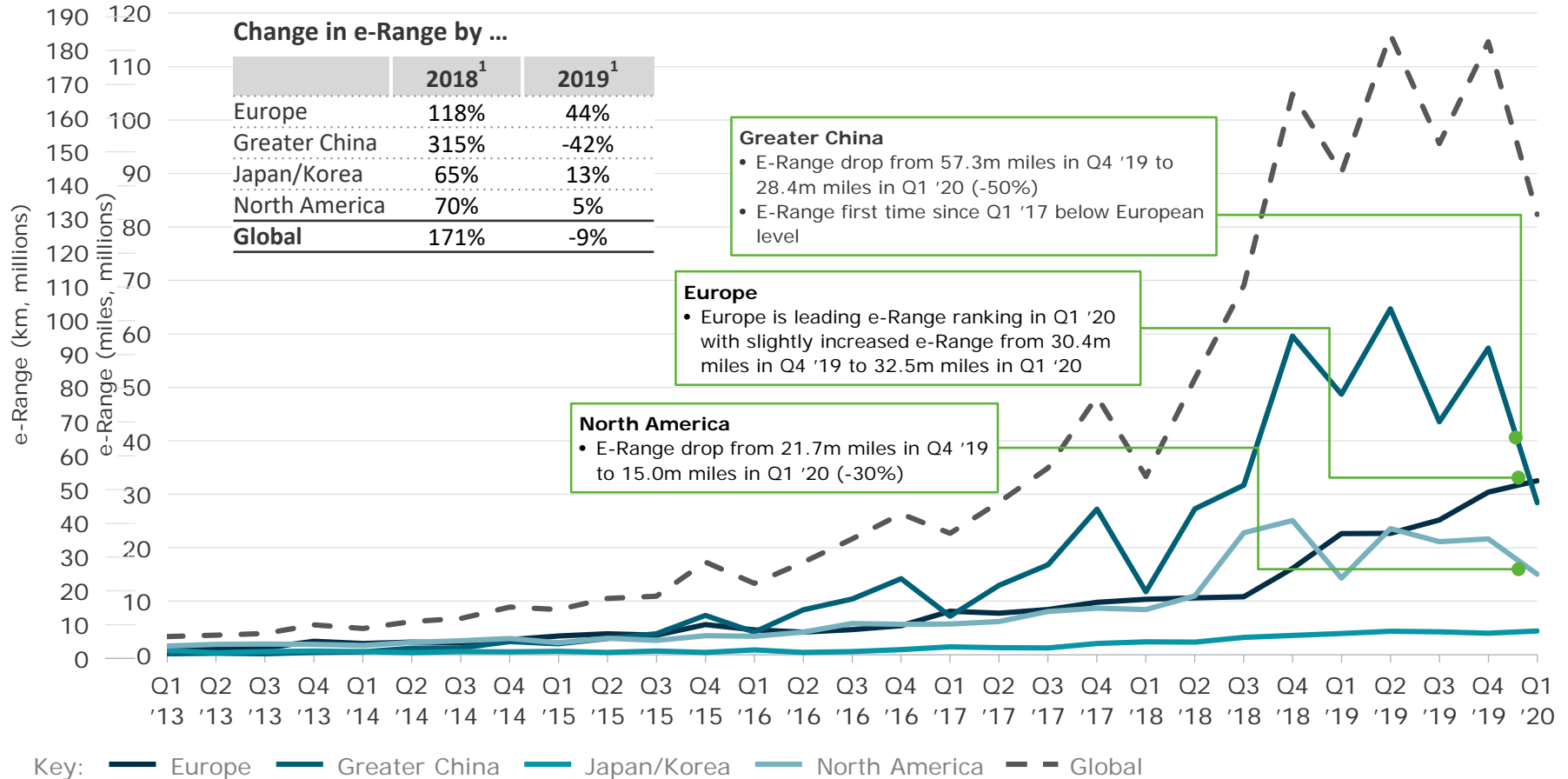
BEV 1.8%
PHEV 0.9%
FCEV 0.0%

Average e-Range (miles):

BEV 245
PHEV 35
FCEV 377

Massive e-Range collapse in China (-50%); first time since Q1 '17 below European level

e-Range: regions by quarter (Q1 '13 to Q1 '20)



¹ Change Q1 previous year to Q1 particular year

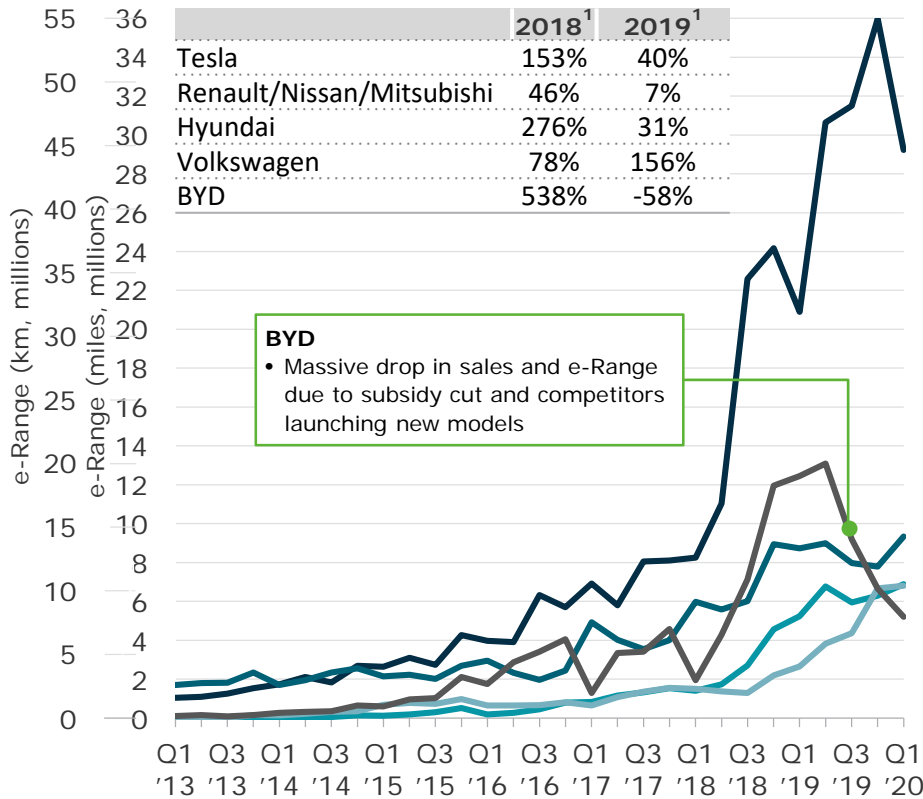
VW Group accelerates e-Range growth; BYD lost almost 2/3 of its e-Range since Q2 '19

e-Range: Major 5 OEMs by quarter (Q1 '13 to Q1 '20)

e-Range: Major 5 countries by quarter (Q1 '13 to Q1 '20)

Change in e-Range by ...

	2018 ¹	2019 ¹
Tesla	153%	40%
Renault/Nissan/Mitsubishi	46%	7%
Hyundai	276%	31%
Volkswagen	78%	156%
BYD	538%	-58%

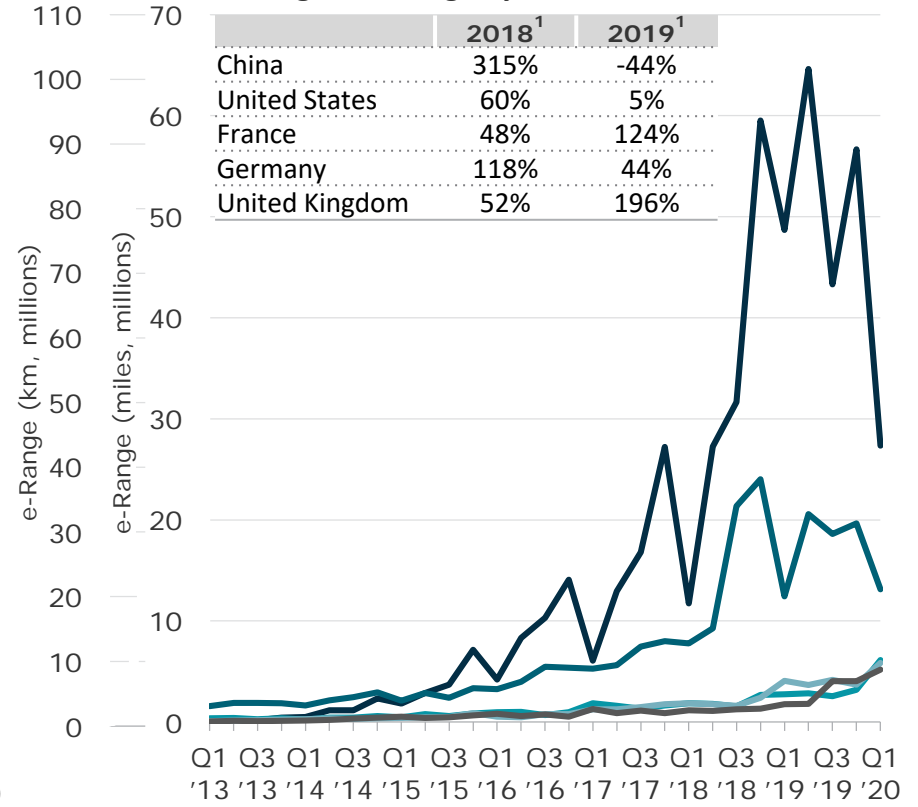


Key:
■ Tesla ■ Hyundai ■ BYD
■ Renault/Nissan/Mitsubishi ■ Volkswagen

¹ Change Q1 previous year to Q1 particular year

Change in e-Range by ...

	2018 ¹	2019 ¹
China	315%	-44%
United States	60%	5%
France	48%	124%
Germany	118%	44%
United Kingdom	52%	196%



Key:
■ China ■ France ■ United Kingdom
■ United States ■ Germany

Despite a massive drop in e-Range, China and USA are still ranked #1 and #2

e-Range by country: Q1 2020

Rank Q1 '20	Rank Q4 '19	Rank Q1 '19	Country	e-Range (miles, millions)	e-Range (km, millions)	% of total e-Range
1	1	1	China	27.35	44.02	33.2
2	2	2	United States	13.12	21.11	15.9
3	6	5	France	6.13	9.86	7.4
4	5	4	Germany	5.83	9.39	7.1
5	4	9	United Kingdom	5.18	8.34	6.3
6	7	3	Norway	4.07	6.55	4.9
7	8	10	South Korea	2.66	4.28	3.2
8	3	7	Netherlands	1.94	3.12	2.4
9	12	11	Sweden	1.89	3.05	2.3
10	9	8	Canada	1.83	2.94	2.2
11	10	6	Japan	1.79	2.88	2.2
12	16	18	Italy	1.08	1.74	1.3
13	15	13	Spain	0.94	1.51	1.1
14	14	15	Belgium	0.89	1.43	1.1
15	11	12	Switzerland	0.83	1.34	1.0
16	13	21	Australia	0.78	1.26	1.0
17	19	16	Portugal	0.68	1.09	0.8
18	18	19	Denmark	0.63	1.02	0.8
19	17	14	Austria	0.61	0.98	0.7
20	20	50	Taiwan	0.56	0.90	0.7

Rank Q1 '20	Rank Q4 '19	Rank Q1 '19	Country	e-Range (miles, millions)	e-Range (km, millions)	% of total e-Range
21	21	37	Hong Kong	0.50	0.80	0.6
22	24	17	Ireland	0.43	0.70	0.5
23	53	41	United Arab Emirates	0.36	0.58	0.4
24	22	20	Finland	0.33	0.53	0.4
25	29	25	Iceland	0.26	0.43	0.3
26	27	31	Israel	0.23	0.38	0.3
27	31	22	Poland	0.13	0.20	0.2
28	23	26	New Zealand	0.12	0.20	0.2
29	38	30	Thailand	0.12	0.19	0.1
30	26	23	Hungary	0.11	0.18	0.1
31	28	35	Mexico	0.11	0.18	0.1
32	36	33	Czech Republic	0.10	0.16	0.1
33	30	24	Luxembourg	0.10	0.15	0.1
34	34	57	India	0.09	0.14	0.1
35	25	28	Romania	0.07	0.12	0.1
36	35	36	Slovenia	0.07	0.11	0.1
37	37	27	Singapore	0.04	0.06	0.0
38	33	32	Colombia	0.04	0.06	0.0
39	32	34	Ukraine	0.03	0.04	0.0
40	43	38	Russia	0.03	0.04	0.0

Despite a massive drop in e-Range, China and USA are still ranked #1 and #2

e-Range by country: Q1 2020

Rank Q1 '20	Rank Q4 '19	Rank Q1 '19	Country	e-Range (miles, millions)	e-Range (km, millions)	% of total e-Range
41	52	47	Chile	0.03	0.04	-
42	45	42	Croatia	0.02	0.04	-
43	50	46	Slovakia	0.02	0.04	-
44	41	52	Brazil	0.02	0.03	-
45	44	39	Bulgaria	0.02	0.03	-
46	46	45	Turkey	0.02	0.03	-
47	39	49	Costa Rica	0.02	0.03	-
48	40	48	Malta	0.02	0.03	-
49	47	51	Greece	0.02	0.03	-
50	59	40	Jordan	0.01	0.02	-
51	49	43	Lithuania	0.01	0.02	-
52	42	29	Malaysia	0.01	0.01	-
53	56	56	Estonia	0.01	0.01	-
54	48	44	South Africa	0.01	0.01	-
55	54	54	Latvia	0.01	0.01	-
56	64	61	Puerto Rico	0.01	0.01	-
57	58	55	Cyprus	-	0.01	-
58	60	59	Serbia	-	0.01	-
59	55	62	Uruguay	-	-	-
60	57	53	Indonesia	-	-	-

Rank Q1 '20	Rank Q4 '19	Rank Q1 '19	Country	e-Range (miles, millions)	e-Range (km, millions)	% of total e-Range
61	61	58	Morocco	-	-	-
62	62	64	Egypt	-	-	-
63	65	63	Oman	-	-	-
64	63	60	Ecuador	-	-	-
65	51	66	Panama	-	-	-
66	67	67	Qatar	-	-	-
67	68	68	Bahrain	-	-	-
68	66	65	Saudi Arabia	-	-	-
69	70	73	Peru	-	-	-
70	69	70	Tahiti	-	-	-
71	73	71	Bermuda	-	-	-
72	71	69	Monaco	-	-	-
73	72	72	Sri Lanka	-	-	-
Global				82.31	132.47	100.0

Tesla dominating the E-Index with a contribution of ~35%; Hyundai and Volkswagen catching up

e-Range by automaker: Q1 2020

Rank Q1 '20	Rank Q4 '19	Rank Q1 '19	OEM	e-Range (miles, millions)	e-Range (km, millions)	% of total e-Range
1	1	1	Tesla	29.23	47.04	35.5
2	3	3	Renault/Nissan*	9.33	15.02	11.3
3	6	4	Hyundai	6.88	11.07	8.4
4	4	11	Volkswagen	6.79	10.94	8.3
5	5	2	BYD	5.21	8.39	6.3
6	25	28	PSA**	2.96	4.76	3.6
7	9	9	SAIC	2.91	4.69	3.5
8	10	10	BMW	2.46	3.96	3.0
9	8	7	General Motors	2.41	3.88	2.9
10	7	20	Guangzhou Auto	2.40	3.86	2.9
11	2	5	BAIC	1.78	2.87	2.2
12	14	21	NEXTEV	1.09	1.76	1.3
13	20	27	Daimler	1.06	1.71	1.3
14	11	6	Geely	1.04	1.67	1.3
15	19	18	TATA	0.90	1.46	1.1
16	18	19	WM Motor	0.82	1.32	1.0
17	21	25	Toyota	0.81	1.31	1.0
18	16	12	Changan	0.73	1.18	0.9
19	17	8	Great Wall	0.53	0.85	0.6
20	13	15	Chery	0.47	0.75	0.6

*incl. Mitsubishi, ** incl. Opel

Rank Q1 '20	Rank Q4 '19	Rank Q1 '19	OEM	e-Range (miles, millions)	e-Range (km, millions)	% of total e-Range
21	33	37	Ford	0.38	0.62	0.5
22	23	26	Hozon EV	0.37	0.60	0.5
23	22	22	Xpeng EV	0.35	0.56	0.4
24	15	24	FAW	0.34	0.55	0.4
25	12	16	Dongfeng	0.24	0.39	0.3
26	28	13	Jianghuai	0.17	0.28	0.2
27	27	17	Jiangling	0.14	0.23	0.2
28	24	29	Honda	0.13	0.20	0.2
29	30	48	Guoji Zhijun	0.10	0.16	0.1
30	32	36	FCA	0.06	0.09	0.1
31	29	31	Fujian Motor	0.05	0.08	0.1
32	39	38	StreetScooter	0.03	0.04	-
33	47	30	Zotye	0.03	0.04	-
34	41	42	Yulon	0.02	0.04	-
35	26	55	Jianghuai-VW	0.02	0.03	-
36	35	39	Sichuan Yema	0.02	0.03	-
			Other	0.03	0.04	-
Global				82.31	132.47	100.0

Model 3 best selling EV followed by Renault Zoe and Nissan Leaf; Model Y (#15) launched in Q1

Top 30 EV models in Q1 2020 ranked by e-Range contribution

Rank Q1 '20	Rank Q4 '19	Rank Q1 '19	Model	Segment	% of e-Range
1	1	1	Tesla Model 3	D	29.7
2	12	8	Renault Zoe EV	B	5.0
3	4	3	Nissan Leaf EV	C	4.7
4	7	31	Audi e-Tron Quattro EV	SUV-D	3.9
5	8	7	Hyundai Kona EV	SUV-B	3.0
6	37	32	BYD Qin Pro EV	D	2.7
7	13	18	VW e-Golf EV	C	2.6
8	3	256	GAC Trumpchi Aion S EV	D	2.4
9	6	11	Tesla Model X	SUV-E	2.3
10	138	305	Peugeot e-208 EV	B	2.3
11	20	20	Chevrolet Bolt EV	B	2.2
12	9	117	SAIC MG EZS EV	D	2.0
13	29	19	Kia Niro EV	SUV-C	1.9
14	11	12	Tesla Model S	E	1.8
15	-	-	Tesla Model Y	SUV-D	1.7

Rank Q1 '20	Rank Q4 '19	Rank Q1 '19	Model	Segment	% of e-Range
16	10	10	BMW i3 EV / EREV	B	1.6
17	2	5	BJEV EU260/300 EV	C	1.6
18	15	9	SAIC Roewe Ei5 EV	C	1.3
19	14	224	Nio ES6 EV	SUV-D	1.3
20	17	264	BYD Song Pro EV	SUV-D	1.1
21	16	2	BYD Yuan EV	SUV-B	1.1
22	25	25	Jaguar i-Pace EV	SUV-D	1.0
23	23	24	Weltmeister EX5 EV	SUV-C	1.0
24	56	50	Kia Soul EV	C	0.8
25	31	33	Hyundai Ioniq Electric EV	C	0.7
26	26	218	BYD e2 EV	C	0.7
27	97	227	DS-3 Crossback EV	SUV-B	0.7
28	32	75	Hyundai Nexo FCEV	SUV-C	0.6
29	28	17	Great Wall Ora R1 EV	A	0.6
30	5	14	Baojun E100 EV	A	0.6
			Others	-	17.1
Total					100.0

- In total 262 EV models sold globally in Q1 2020
- Top 30 EV models make up 83% of the total e-Range
- First European EV model ranked #2