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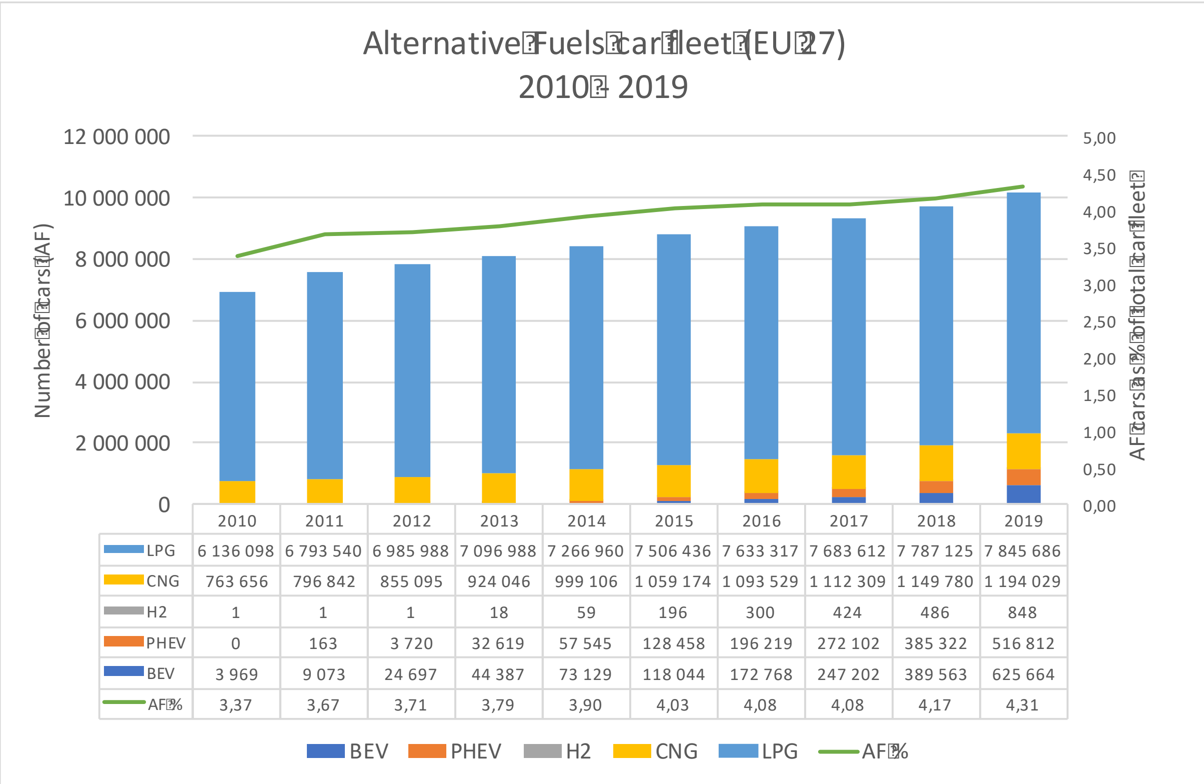
Analysis: A look back at 10 years of Alternative Fuels cars in the EU (27)

The EU and its member states have been promoting the use of Alternative Fuels (AF) for transport for a long period and here we look back to what this has meant for the AF fleets of passenger cars in the EU.

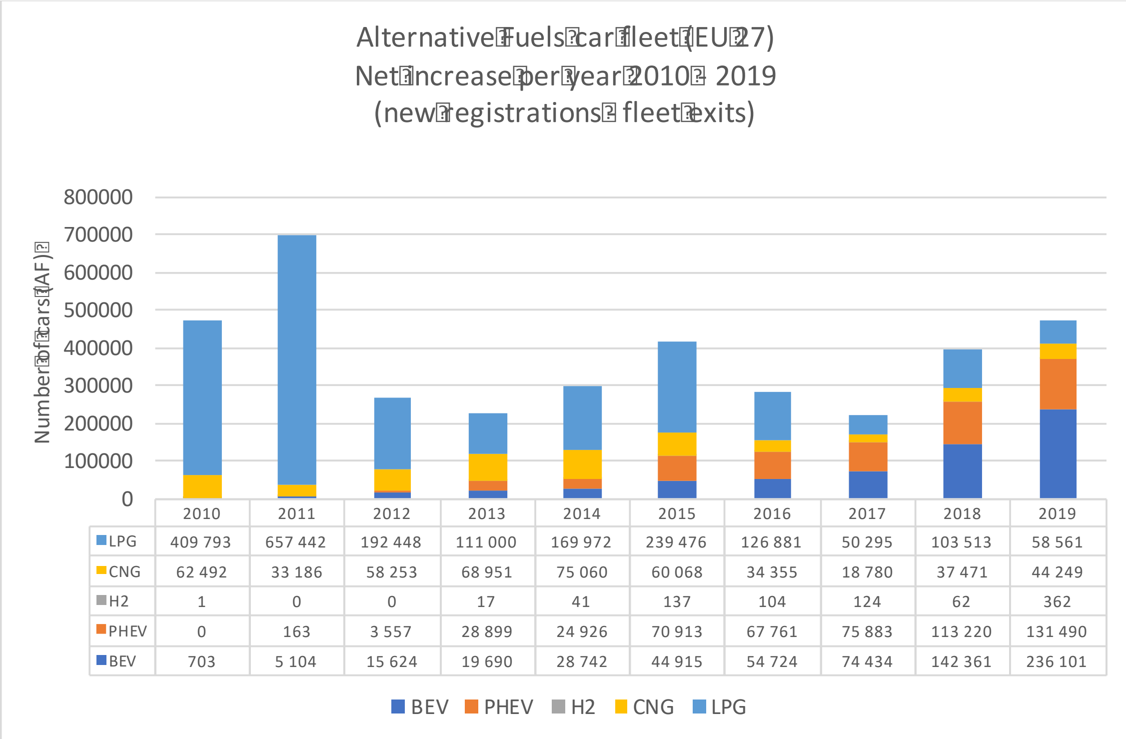
The total AF passenger car (M1) fleet is increasing slowly, representing 4.3% of the total car fleet in 2019, up from 3.4% in 2010 with the overall car fleet having grown 15% (31 million) in the same period. LPG had 89% market share of AF cars in 2010 with the remainder being CNG. In 2019, LPG is still 77% of the AF fleet, CNG 12% and EV's make up 11% (figure 1).



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
LPG	6 136 098	6 793 540	6 985 988	7 096 988	7 266 960	7 506 436	7 633 317	7 683 612	7 787 125	7 845 686
CNG	763 656	796 842	855 095	924 046	999 106	1 059 174	1 093 529	1 112 309	1 149 780	1 194 029
H2	1	1	1	18	59	196	300	424	486	848
PHEV	0	163	3 720	32 619	57 545	128 458	196 219	272 102	385 322	516 812
BEV	3 969	9 073	24 697	44 387	73 129	118 044	172 768	247 202	389 563	625 664
AF %	3,37	3,67	3,71	3,79	3,90	4,03	4,08	4,08	4,17	4,31

Figure 1 Alternative Fuels car fleet 2010 - 2019 for the different AFs for transport (LPG, NG, electricity, hydrogen) and the share of AF cars as part of the total car fleet EU27 (205 million in 2010 increasing to 236 in 2019; source ACEA, Eurostat, EAFO.)

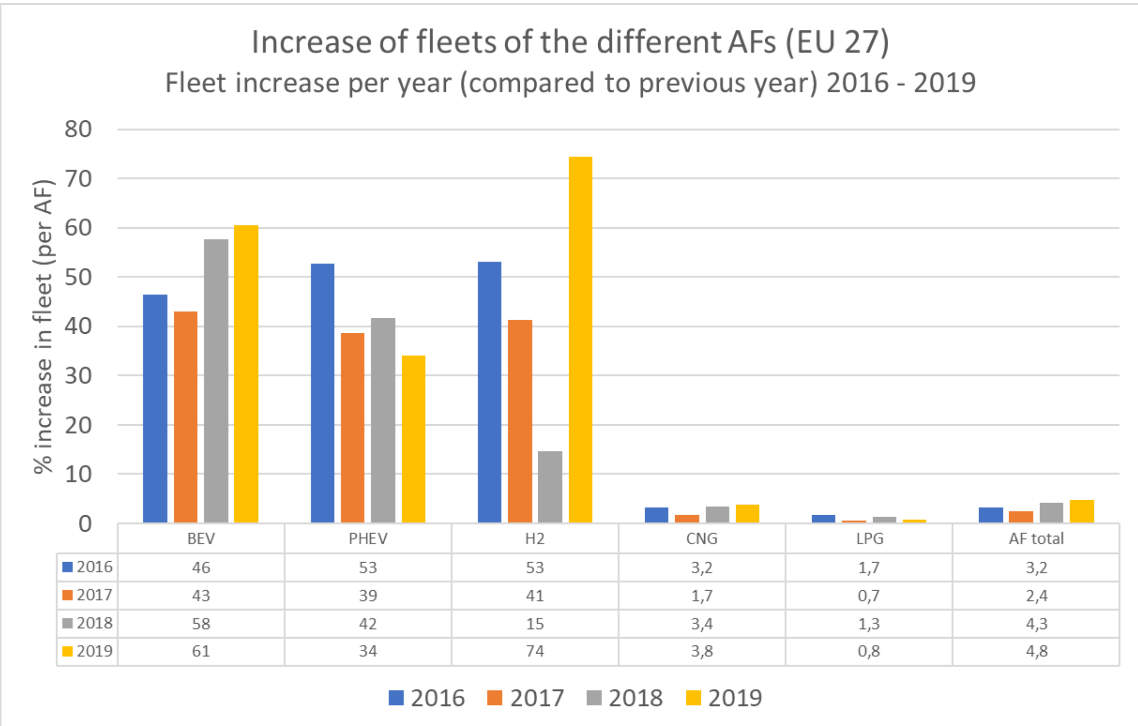
In figure 2, the annual AF fleet increase is shown over the period 2010-2019. For all AFs, with the exception of LPG, the increase comes from the registration of new cars. The LPG fleet increases through new registrations as well as conversion of cars ("aftermarket"). In 2019, 78% of the increase has come from EVs.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
LPG	409 793	657 442	192 448	111 000	169 972	239 476	126 881	50 295	103 513	58 561
CNG	62 492	33 186	58 253	68 951	75 060	60 068	34 355	18 780	37 471	44 249
H2	1	0	0	17	41	137	104	124	62	362
PHEV	0	163	3 557	28 899	24 926	70 913	67 761	75 883	113 220	131 490
BEV	703	5 104	15 624	19 690	28 742	44 915	54 724	74 434	142 361	236 101

Figure 2 Annual net increase of the AF fleet per AF 2010-2019.

In figure 3, the annual increase as a % of the fleet of the year before is given. For the LPG and CNG the fleet increase over the period 2016-2019 is limited to 1 to 3% per year. For EVs and FCEVs the increase is 30-60% per year. AS LPG and CNG represent most of the AF fleet, the overall AF fleet is also increasing with a low one digit number only.



	BEV	PHEV	H2	CNG	LPG	AF total
2016	46	53	53	3,2	1,7	3,2
2017	43	39	41	1,7	0,7	2,4
2018	58	42	15	3,4	1,3	4,3
2019	61	34	74	3,8	0,8	4,8

Figure 3 The fleet increase per AF per year for the period 2016-2029.
The increase is in % compared to the fleet size of the year before.

Concentration of AF fleets in countries

The alternative fuel LPG has been present in the market since decades and had already a substantial fleet in 2010. Poland and Italy have the largest fleets representing 70% of the EU27 fleet in 2010 and in 2019. CNG is the second AF already present in the market in 2010 but concentrated in Italy which held 87% of the CNG car fleet in 2010, in 2019 Italy still had 81% market share. As the use of LPG and to a lesser extent CNG as fuel for cars is a mature technology, a substantial number of cars will exit the fleet and the net increase of the fleets will be significantly less than the new registrations (and conversions for LPG). The concentration for EVs is also significant: top 3 countries BEV (France, Germany, Netherlands) have 68% of the EU27 fleet, for PHEV the top 3 (Germany, Netherlands, Sweden) this is 61%. The FCEV car fleet is still very small with less than a thousand, concentrated in a few countries as well.