Weak climate rules put Europe's battery boom at risk

May 2021

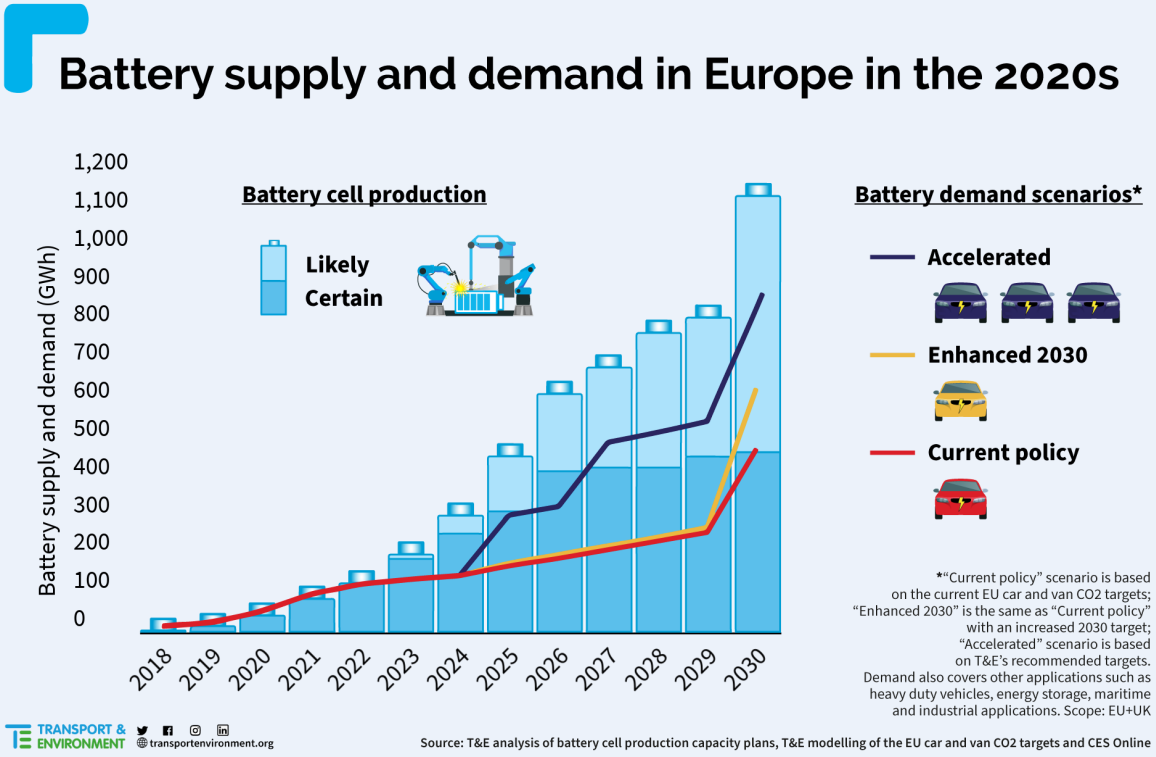
Summary

Battery cell investments are booming in Europe: as of May 2021, 38 battery cell gigafactories are being built or planned in the EU and the UK, securing almost EUR 40bln in investments and 44,000 jobs coming to Europe. Batteries are often referred to as the "new gold" and nations including the United States, China and Indonesia are seeking to capture the battery value chain from materials refining to cell making to recycling. Thanks to its growing domestic electric vehicle market, a pre-existing industrial base and high environmental standards, Europe is now well positioned to capture a large part of this market. Battery investments are booming thanks largely to the rapidly growing electric vehicle (EV) sales seen across Europe in 2020/21, closely mirroring regulatory requirements, notably the EU car CO2 standards. For example in 2020 T&E predicted Volkswagen would sell 9.6% EVs in order to hit its CO2 goals. The final sales share was 9.7%, a 0,1% difference. The EV market is expected to be driven by regulatory requirements for the foreseeable future. This briefing therefore analyses what the current regulations mean for the expected European battery boom.

According to T&E's analysis of publicly available information, 17 out of 38 battery announcements to date have secured full funding (and likely offtake agreements with automotive and energy companies) and include Northvolt in Sweden, LG Chem in Poland, Tesla and CATL in Germany and ACC in France. A further 10 projects have secured partial financing and are in earlier stages of development; these include many projects key to Europe's domestic battery autonomy such as Britishvolt in the UK, Italvolt in Italy, Freyr in Norway and Basquevolt-Nabatt in Spain. If these come online as expected, they will result in 462 GWh of battery capacity produced in Europe by 2025, growing to 1,144 GWh by 2030 (or around a third of expected global production). If all these projects are delivered, the planned battery manufacturing capacity would be sufficient to power around 50% electric car sales in Europe in 2025 (32% BEV) and more than 90% in 2030 (75% BEV). This corresponds to a car CO2 reduction target of 44% in 2025, 62% in 2027 and 91% in 2030. An additional 11 projects - including VW's four gigafactories - have recently been announced but no other data is yet available.

The question is whether the market for electric cars and vans - key driver for the investments - will grow on par with the battery plans to date. T&E developed a number of scenarios to compare the supply of and demand for batteries in Europe up to 2030. The first one looks at the current policies,

notably the current car and van CO2 targets, which will account for the biggest bulk of battery demand in the 2020s. Then we also compare this to the expected increase of the 2030 cars target to -50%. The final scenario looks at the accelerated uptake of electric vehicles aligned with the EU's 2050 net zero goal. The results show a startling discrepancy between the ambition of investors compared to European lawmakers.



Under the current policies overall demand for battery cells will be a mere 174 GWh in 2025, rising to 485 GWh in 2030 when a more ambitious CO2 standard finally enters into force. This is a direct result of a weak CO2 standard in 2025-2029, meaning carmakers do not have to substantially increase production and sales of electric cars until 2030. Even when only fully funded battery factories are considered, this is only two-thirds of the planned battery capacity on average between 2022 and 2030. **The surplus problem is most acute in the mid- to late-2020s peaking at 227 GWh in 2026.** Raising the 2030 CO2 standard only will do nothing to solve this problem.

When both the fully and partially financed projects are considered, **the planned battery capacity is almost triple the minimum demand in 2025-2030 in the current policies scenario,** underlining just how unambitious the current CO2 standards are. While some of this excess can be exported, the logistics and sufficient supply in other major markets make it an unrealistic route for all the underutilised capacity. With the current vehicle CO2 regulations failing to provide the backstop for an adequate EV market, such high levels of overcapacity would not be sustainable and put up to 27bln from the investments committed so far and thousands of jobs at risk.

Much of the excess battery supply is solved in the Accelerated scenario, which includes raising the 2025 CO2 standard to -25% reduction and setting an additional 2027 target of -40%. In this case, the expected battery market is much closer to the ramping up supply in the 2020s. Should only the fully funded projects so far (17) be completed, a battery shortage would occur in 2027, growing to 391 GWh in 2030, creating offtake opportunities for the newer (10) projects. Should all the projects materialise, the surplus of battery cells in 2030 is significantly lower than in the current policies scenario. This is comfortably within a margin that can be filled with either faster than expected electric car sales when they reach price parity, or through exports once EU companies gain experience in the battery manufacturing business.

This shows how important one policy - cars & vans CO2 regulation - is for the entire new industry of batteries. The conclusion is clear: the current EV regulations are underselling Europe's battery potential. Unless the EU changes course it risks missing out on EUR 40Bln of battery investment and associated value added and jobs. The Commission's expected plan to increase demand for EVs only in 2030 would not significantly change this outlook. To provide higher degrees of investment certainty more aggressive policies are required, especially between 2025 and 2029.

Europe's battery love affair

Transport and energy - two of Europe's largest CO2 emitters - have to reduce their emissions to zero, by having zero emissions powertrains and relying on green electricity. Sustainable rechargeable batteries, mostly lithium-ion today, are central to that, by supporting the grid as storage for variable renewables and powering the electric motor of battery electric cars, vans and trucks. In the case of road transport, in order to achieve the goals of the Paris Agreement and Europe's Green Deal, the last new car or van with a conventional engine - including hybrids - should be sold by 2035 at the very latest[1] and replaced with 100% emissions-free (i.e. electric) sales.

This is why some refer to batteries as the new gold. Countries across the world from the US, to China, Japan and (more recently) Indonesia are making huge efforts to capture the battery value chain. From mining of battery metals such as lithium and nickel to cathode and cell making, the potential and stakes are high: jobs, investments and strategic autonomy in a pivotal technology for the economy's decarbonisation.

Europe realised the strategic importance of batteries some years back, and due to its strong industrial base, large domestic market, and high social and environmental standards is well placed to be one of the leaders. The market for electric vehicles - a key offtake route for the battery cell manufacturers - was largest by volume globally in 2020 thanks to the EU car and van CO2 targets that require the automotive industry to produce and sell electric cars. This has brought many Asian companies such as CATL and LG Chem to set up battery factories in Europe. On the industrial side, the European Battery Alliance, launched in 2017 and supported by key European governments, aims to ensure that European companies capture the entire battery value chain from upstream to downstream and final disposal and recycling. Dozens of industrial projects in the battery ecosystem announced by European companies to date are a manifestation of the success of this strategy. The fact that high social and environmental standards are in the DNA of many European companies makes Europe the leader in the global race to produce cleanest and greenest products.

This shows that supply-side policies aimed at boosting the electric vehicle market in Europe also bring the supply chain and investments into domestic manufacturing of batteries. But are the 2025/2030 goals on par with Europe's battery potential? This briefing analyses the supply and demand for battery cells in Europe up to 2030 to find out if the current climate regulations on automakers are up to scratch.

A recent BNEF report for T&E concluded price parity with combustion engine cars is possible by 2026, but only if sufficient numbers of EVs are produced and sold. In other words, for EVs to become a purely market driven phenomenon, they require strong policy support over the coming five years.

[1] Incremental improvements to existing ICE vehicles will not achieve the required emissions reductions as there is a limit to the efficiency improvements possible and it is not possible to produce low and zero carbon fuels cost-effectively, sustainably and in the quantities required.
Transport & Environment (2018). *How to decarbonise European transport by 2050.* Link

Battery supply in Europe so far

As of May 2021, 38 battery cell gigafactories are being built or planned in the EU and the UK. T&E has analysed all 38 projects to calculate the expected European cell supply (in GWh) based on the projects' public plans and announcements. We have divided the projects into those where the financing appears to have been secured (and offtake agreements with OEMs and others likely signed), and those where only partial financing is reported or initial commitments just announced. It should be noted that much of this data is not easily available, so this analysis is based on publicly available information and is on the conservative side, e.g. the battery production capacity is assumed to plateau between the announced expansion dates given by companies, and no production was assumed in the absence of clearly defined production plans .

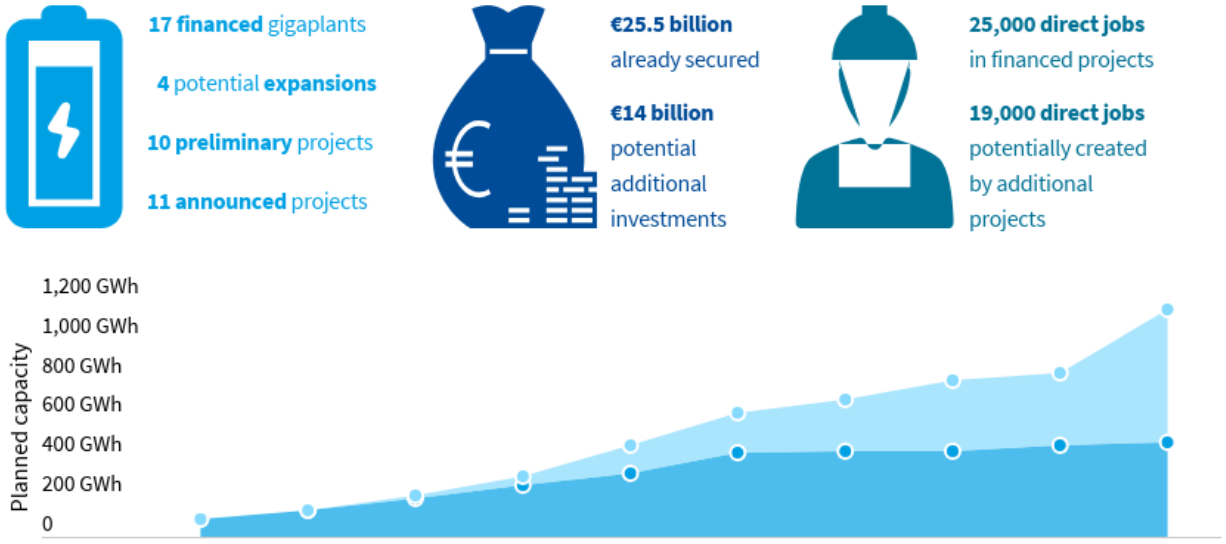


Figure 1: European battery investments, jobs, and capacity until 2030

Out of 38 gigafactories in Europe to date:

- 17 projects have secured funding, estimated to be worth €25.5 billion. This includes private as well as public funding, e.g. Tesla's Berlin gigafactory which received €1.2 billion in German federal and state support, or the French and European support for the Automotive Cells Company (ACC). These include projects by Asian companies in Poland, Hungary and Germany, as well as plans by European companies such as Northvolt in Sweden and ACC in France. In total, the 17 projects account for 87 GWh cell production capacity in 2021, 318 GWh in 2025, and 474 GWh in 2030. They are estimated to create more than 24,700 direct factory jobs.

- 10 other projects have secured partial financing and support, representing at least €14 billion in potential investments. These include many national projects key to Europe's battery autonomy, notably Verkor in France, Britishvolt in the UK, Italvolt in Italy, Basquevolt-Nabatt in Spain, and Freyr in Norway. Some of these have secured a location and partial financing (e.g. Britishvolt), some pre-construction financing only (e.g. Freyr), while others are set to establish pilot projects this year (e.g. Morrow, InoBat). A solid-state battery

plant by QuantumScape with support of VW is also rumoured to be built in Germany and is included here. Three major expansions to the previously secured projects by Tesla, Northvolt, and CATL are also included. These potential projects and expansions would total 144 GWh cell production capacity in 2025 and 670 GWh in 2030. Together, they would create at least 19,500 direct jobs.

Having full vs partial financing in this case is not about questioning the merit of projects. Rather, a lot of the projects in the second category have simply been announced more recently and are behind as to the timeline and maturity, i.e. behind the curve of the first group. In the eyes of T&E, they do not have less potential to ramp up; on the contrary many of these are central to EU governments' battery industry ambitions.

If the 38 above projects come online as planned, 462 GWh worth of battery cells could be produced in 2025 and 1,144 GWh in 2030, i.e. 13 times the current European supply of 87 GWh in 2021. This will put Europe firmly on the global battery map, accounting for one fifth of global cell production in 2025, second only to China[2].

In addition, 11 other gigafactories have recently been announced but lack firm commitments, i.e. no location or production plans known yet. These would begin production in the second half of the decade, and include four battery plants by Volkswagen (announced during their Power Day). No planned capacity or investments are available for these projects and they are therefore not included in this analysis.

[2] BNEF (2021), Hitting the EV inflection point. Link

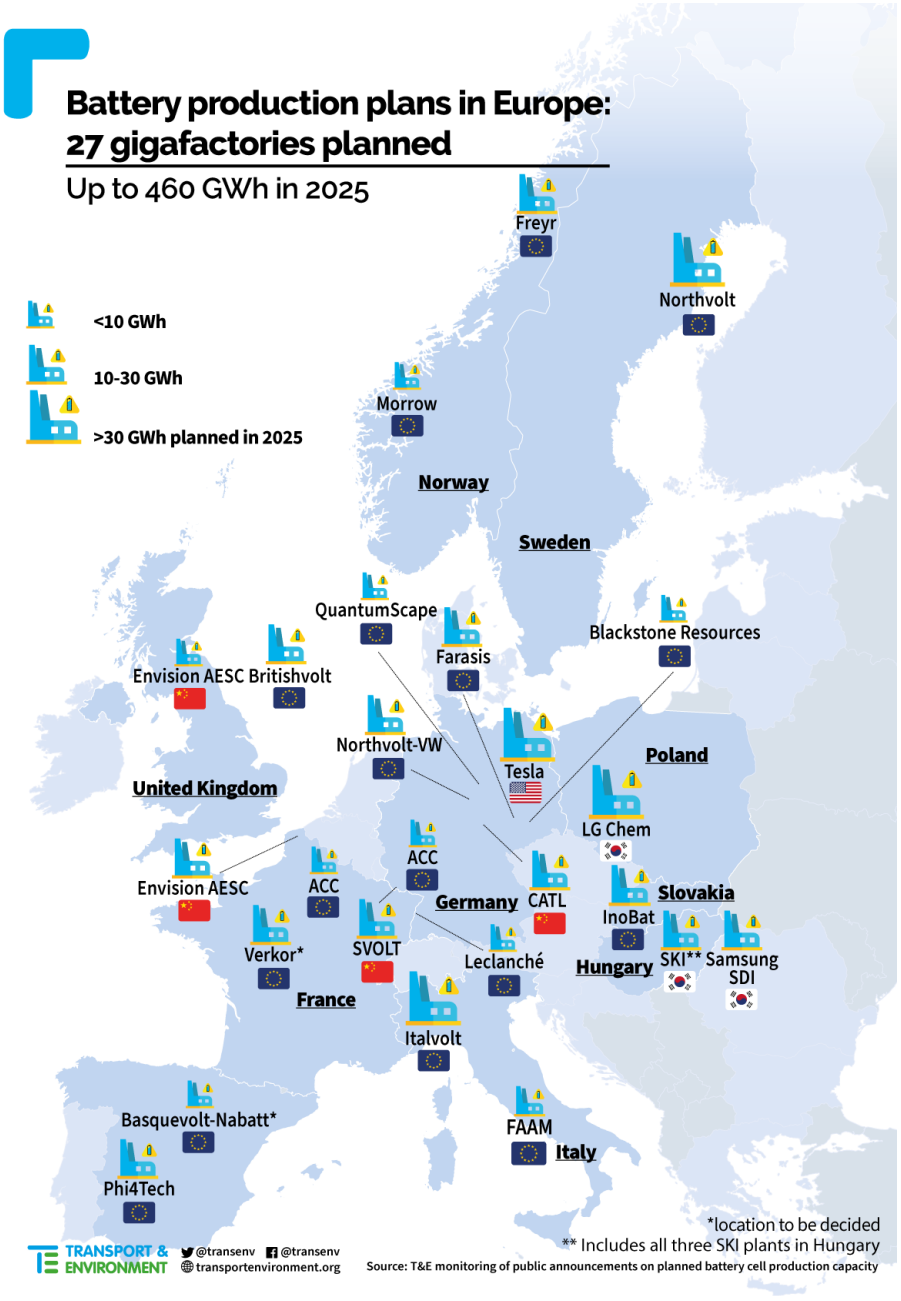


Figure 2: European gigafactories map

Will demand match the European battery supply?

With dozens of plans, there is no doubt that European battery production is expected to boom in the coming decade. Driven by both the current Car CO2 regulation that is pushing carmakers to invest in and sell electric cars, and the efforts of the European Battery Alliance to ensure European companies capture the battery value chain, it is fast becoming an industrial success.

This expected battery supply needs a firm route to market, so it is important to look into the demand side - i.e. the market for electric vehicles and energy storage - to better understand who will buy

these batteries. The electric vehicle market accounts for the largest part of this demand. To analyse the demand, T&E has modelled two scenarios:

1. "Current policies" demand scenario is based on the current EU car and van CO2 standards which determine how many electric cars (EV) carmakers have to sell on the European market, and therefore the demand for battery cells from those. Under this scenario, the electric passenger car market share would reach a minimum of 15% in 2025 (10% for battery electric cars and 5% plug-in hybrids)[3] and 34% in 2030 (25% for battery electric cars and 9% plug-in hybrids). For vans, battery electric vehicles are expected to make up 2% of new sales in 2025 and 12% in 2030. For both cars and vans, the average battery size is also expected to increase over the next decade[4][5].

2. "Enhanced 2030" demand scenario is based on a 50% CO2 reduction target in 2030 (same -15% target from 2025 to 2029), as hinted by the European Commission in its 2030 climate target plan in 2020. For vans a similar increase of the target was assumed with 40% CO2 reduction in 2030 (instead of 31%). Under this scenario, EVs would make up close to 50% of the market in 2030 (38% BEVs).

3. "Accelerated" or "T&E" demand scenario, is based on the T&E recommended car CO2 targets of -25% CO2 reduction in 2025, -40% in 2027 and -65% in 2030, leading to 100% zero-emission sales by 2035 to be in line with the EU Green Deal ambition. Under this scenario, electric passenger cars would represent 31% of new cars in 2025 (20% for battery electric) and 68% in 2030 (54% for battery electric). For vans, battery electric vehicles are expected to make up 15% in 2025 and 50% in 2030.

This analysis supposes that market size is constant, staying at 15.2 million new cars and 2.1 million new vans per year (EU27+UK). Additionally, T&E estimates that the demand from other sectors: heavy-duty vehicles (both trucks and buses)[6], industrial applications and stationary storage[7], and other transport applications (maritime and personal mobility) will amount to 58 GWh in 2025 and 168 GWh in 2030. This has been added to each scenario above.

Based on the 3 scenarios, T&E has modelled the battery cell demand expected from light-duty vehicles. It would reach 116 GWh in 2025 and 317 GWh in 2030 in the "Current policies" scenario, 474 GWh in the 'Enhanced 2030' scenario in 2030 and 251 GWh in 2025 and 696 GWh in 2030 in the T&E scenario. Adding the demand from other sectors (excluding consumer electronics) would result in:

[3] T&E mid-flexibility scenario where carmakers benefit from 3g/km of eco-innovation credits per ICE, 2g/km weakening from the mass adjustment of the target, and a 5% improvement from WLTP test manipulation. ICE are assumed to improve by 1.5% per year and carmakers would not overachieve the ZLEV benchmark in this scenario. For more details see T&E's cars climate brief #1

[4] From 54 kWh in 2020 to 68 kWh in 2025 and 72 kWh in 2030 for battery-electric cars, and from 13 kWh in 2020 to 15 kWh in 2025 and 19 kWh in 2030 for plug-in hybrid cars. Source: IHS Markit (2021) Light-duty vehicle production forecast.

[5] From 42 kWh in 2020 to 54 kWh in 2025 and 60 kWh in 2030. Source: *Ibid*

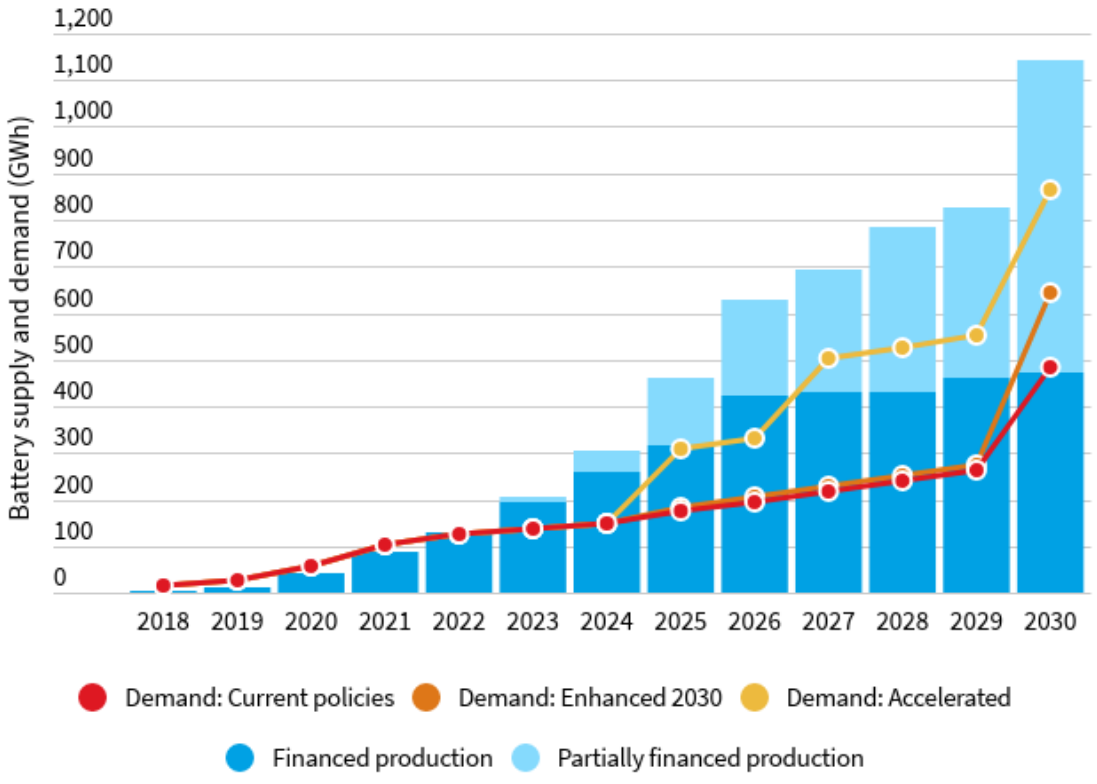
[6] T&E assumes that 6%-7% of truck (> 3.5t) sales in 2025 are electric and 40% in 2030 - in line with current announcements from the industry and that 100% of the city buses are electric from 2025..

[7] Based on data from Circular Economy Storage (CES) Online

- Battery cell demand of **174 GWh in 2025** rising to 485 GWh in 2030 under the *current* vehicle CO2 policies; and reaching 642 GWh in 2030 in the *enhanced 2030* scenario;
- Battery cell demand of **309 GWh in 2025** rising to 865 GWh in 2030 under the T&E scenario, or more ambitious car and van CO2 standards.

When comparing these levels of demand with the available battery supply (see fig.3), it is clear that under the current CO2 regulation the battery demand from the electric vehicle market in Europe would be well below even the already secured battery projects. In the "Current policies" scenario, the demand for battery cells is on average just two-thirds of the supply from the 17 financially secured projects between 2022 and 2030. The surplus is particularly acute in the mid to late 2020s when the nascent battery market will be ramping up fast, peaking at 227 GWh of potentially unutilized battery capacity in 2026. This is due to the currently unambitious 2025 CO2 standard that would lead the European electric car market to stagnate up to 2029 as carmakers supply minimum EVs to comply with the targets. The battery cell turns into a small shortage of 11 GWh in 2030 as the higher 2030 car CO2 target enters into force.

When the 10 newer projects are added, the total demand for batteries in Europe will be on average 355 GWh/year below the battery supply between 2022 and 2030; in other words 54% of the battery supply risks not having any offtake in Europe. The surplus problem becomes more severe after 2025, potentially reaching 477 GWh of underutilised capacity in 2027 and 659 GWh in 2030. The planned battery capacity is almost triple the minimum demand in 2025-2030 in this scenario.



Source: T&E analysis of battery production projects. The "Current policies" demand scenario is based on the car CO2 standards. Demand includes demand from cars, vans, and energy storage systems.

Figure 3: European supply and demand of battery cells until 2030

On the contrary, the demand in the T&E scenario - as can be seen in Figure 3 - would bring the battery market much closer to the ramping up supply. The demand is within margin of the secured EU battery production (dark blue) up to 2026. Should only currently fully-funded projects be completed, supply would not meet demand starting in 2027, and a 391-GWh battery shortage could occur in 2030. This is good for the newer/less secure projects, such as the SEAT-Iberdrola one in Spain e.g., as it gives a clear business case and offtake for those. With only half of the partially committed projects the battery supply will be enough until 2029, and a smaller 56-GWh shortage would occur in 2030. Should all these projects materialise, the surplus of battery cells could reach 279 GWh in 2030. This is 380 GWh, or 58%, less than in the "Current policies" scenario. Oversupply in this scenario is comfortably within a margin that can safely be filled with either faster than expected ramp up in electric car sales following their price parity, or exports towards 2030 once EU companies gain experience in the battery manufacturing business.

In the scenario where all the battery demand expected to come online in Europe goes towards electric cars and vans, new cars and vans can be almost all electric by 2030. Electric car sales can reach around 50% in 2025 (32% BEVs), 65% in 2027 (48% BEV) and 93% in 2030 (75% BEVs). The corresponding car CO2 reduction targets are around 45% in 2025, 62% in 2027 and slightly more than 90% in 2030. Similarly, electric vans would be at 24% in 2025, 37% in 2027 and 69% in 2030, which would correspond to a target of 35% CO2 reduction in 2025, around 50% in 2027 and close to 80% in 2030.

Europe underselling its own battery ambitions

The European battery cell industry has fast become a success story with dozens of factories planned in the coming years and sufficient cell production for the domestic market. All in all, €39.5 billion has so far been committed and 44,000 jobs are in the pipeline. But if we look at the main client to buy these batteries - electric car manufacturers - there are concerns that the EV market will stagnate in the 2020s, exactly when the battery factories will be coming online, up until 2029. This is because the current EU car CO2 standards that determine the supply of electric vehicles across Europe - at least until the price parity with petrol cars is reached - are inadequate and, unless reviewed, will not require a significant ramp up in the electric vehicle market.

If car and van makers supply the minimum they need to meet the CO2 targets, as has been seen across Europe to date, around half of the battery cell supply where financing has already been committed risks not having offtake. The surplus is particularly acute in the 2025-2029 time frame due to the weak 2025 cars/vans CO2 standard currently in force. Crucially, without a bigger push on the EV market side, many new flagship battery projects announced recently in Spain, Italy, France, Germany and others (where full financing is not yet confirmed) might struggle to secure offtake contracts with OEMs and thus financial certainty. These, such as Italvolt and Britishvolt, are key to Europe's strategic autonomy in one of future's key technologies. As things stand, Europe seems to be underselling its global battery powerhouse potential.

One might argue that the market itself, driven by OEMs' voluntary EV commitments and burgeoning demand for electric cars, might deliver in the absence of a regulatory push. It might, but everything we have learnt to date - including a missed automotive CO2 commitment in 2004 and prioritising profit over climate by selling polluting SUV models until the last minute ahead of the 2020 targets - tells us that we cannot put the future of Europe's nascent battery industry solely into the hands of the automotive industry promises. We expect EVs to become market-driven but this requires a combination of abundant and high quality vehicle supply, price parity, excellent TCO and ubiquitous charging. All of that is within reach but none of it achieved yet. This means that for the foreseeable future EV market will remain policy driven. So the regulation such as vehicle CO2 standards should at a minimum provide the backstop for the electric car market to ramp up alongside the battery supply potential, so that the demand matches at least the min supply for the projects already secured.

One might also argue that the supply surplus can simply be exported to other regions, just as around a third of today's European combustion vehicle production is set for exports. A number of serious constraints stand in the way of this, notably:

- Most projects are specifically planned to be produced close to the EU market and with the EU OEMs in mind; exporting bulky batteries is cumbersome and expensive today;
- Given the lack of maturity and experience of many European companies, it will be hard to compete with Asians who are in the export business for years and have a big head start;
- While some % of batteries can be exported, designing such a capital intensive and hard to easily transport industry to be primarily relying on exports is not viable. World's largest battery makers such as CATL and LG Chem are setting up dedicated factories in Europe for exactly this reason, rather than exporting from China or South Korea.

Ultimately, it also raises the question of who will benefit from big sums of public money given to support these projects: Europeans who can purchase electric cars with more affordable and sustainable made in EU batteries, or foreign markets with little benefit for Europe?

As competition grows between cell manufacturers in the coming years, it is unclear which projects will take form. It is clear however that demand for battery cells needs to increase significantly beyond what is needed by the current car CO2 regulation in order to avoid a possible battery bust. This is not a problem of the battery industry, who is successfully answering the climate rhetoric and e-mobility surge across Europe. This is a failure on the side of EU policy-makers to provide regulatory certainty and guarantee the minimum demand from the electric vehicle market to ensure the automotive commitments are delivered. Raising CO2 standards for cars (and vans) in the 2020s - i.e. increasing a 2025 target to -25% and setting an additional binding 2027 target - will give the needed offtake certainty to the nascent battery market across Europe.

The new ecosystem is developing in Europe, the one based on zero emissions technologies that will bring new investment, jobs and opportunities for Europe to compete in the new global age of green tech. But by not moving fast enough and worrying about the old world of engines and oil, Europe risks instead slowing down its new world of batteries and electric vehicles, underselling its own battery powerhouse potential. In the choice between the old & polluting on the one hand, and new & sustainable on the other, the future should prevail.

Further information

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Annex

	Battery cell supplier	Location	Status	Financing	Capacity (2025)	Capacity (2030)
	ACC	Douvrin, France	Financed	Investments worth €5 bn shared between Douvrin and Kaiserslautern.	8 GWh	24 GWh
	ACC	Kaiserslautern, Germany	Financed	Investments worth €5 bn shared between Douvrin and Kaiserslautern.	8 GWh	24 GWh
	Blackstone Resources	Döbeln, Germany	Financed	Received a loan.	0.5 GWh	0.5 GWh
	CATL	Erfurt, Germany	Financed	Investments worth €1.8 bn.	14 GWh	60 GWh
	Envision AESC	Sunderland, UK	Financed	Bought in 2018 for an estimated €0.4 bn.	2 GWh	6 GWh
	FAAM	Teverola 2, Italy	Financed	Received €0.5 bn in public grant.	2.5 GWh	7 GWh
	Farasis	Bitterfeld-Wollen, Germany	Financed	Investment worth €0.6 bn.	10 GWh	10 GWh
	Leclanché	Willstätt, Germany	Financed	Investments worth €0.05 bn.	1 GWh	2.5 GWh
	LG Chem	Wroclaw, Poland	Financed	Investments worth €1.5 bn, including €0.5 bn from EIB.	65 GWh	65 GWh
	Northvolt	Skellefteå, Sweden (Ett)	Financed	Debt and equity raises worth €2.6 bn (shared between Ett and Zwei).	32 GWh	40 GWh
	Northvolt	Salzgitter, Germany (Zwei)	Financed	Debt and equity raises worth €2.6 bn (shared between Ett and Zwei).	16 GWh	24 GWh
	Samsung SDI	Göd, Hungary	Financed	First expansion worth €1.1 bn. Current expansion worth €0.7 bn.	30 GWh	40 GWh
	SK Innovations	Komarom, Hungary	Financed	Investment worth €0.7 bn.	7.5 GWh	7.5 GWh
	SK Innovations	Komarom, Hungary	Financed	Investment worth €0.8 bn.	9.8 GWh	9.8 GWh
	SK Innovations	Iványcsa, Hungary	Financed	Investment worth €1.9 bn.		30 GWh
	SVOLT	Überherrn, Germany	Financed	Investments worth €2 bn shared with sister plant in Heusweiler.	12 GWh	24 GWh
	Tesla	Grünheide, Germany	Financed	Investments worth €5.8 bn, including €1.2 in German subsidies.	100 GWh	100 GWh
	CATL	Erfurt, Germany	Expansion			40 GWh (additional)
	Envision AESC	Sunderland, UK	Expansion		6 GWh (additional)	18 GWh (additional)
	Northvolt	All locations	Expansion			86 GWh (additional)
	SK Innovations	Komarom, Hungary	Expansion			6 GWh (additional)
	Tesla	Grünheide, Germany	Expansion			150 GWh (additional)

	Battery cell supplier	Location	Status	Financing	Capacity (2025)	Capacity (2030)
	Basquevolt-Nabatt	Unknown, Spain	Potential	Investments worth €1.2 bn.	2 GWh	10 GWh
	Britishvolt	Blyth, United Kingdom	Potential	Investments worth €2.8 bn, including €1.3 bn by 2023.	10 GWh	30 GWh
	Envision AESC	Douai, France	Potential	Investments worth €1 bn.	20 GWh	20 GWh
	Freyr	Mo i Rana, Norway	Potential	Pre-construction financing secured.	16 GWh	32 GWh
	Inobat	Voderady, Slovakia	Potential	Investments worth €1 bn.	10 GWh	10 GWh
	Italvolt	Turin, Italy	Potential	Investments worth €4 bn.	45 GWh	75 GWh
	Morrow	Eyde Energipark, Norway	Potential	Investments worth €0.5 bn.	8 GWh	32 GWh
	Phi4Tech	Badajoz, Spain	Potential	Investments worth €0.4 bn.	10 GWh	20 GWh
	QuantumScape	Salzgitter, Germany	Potential	Investments worth €1.3 bn.	1 GWh	91 GWh
	Verkor	Unknown, France	Potential	Investments worth €1.6 bn.	16 GWh	50 GWh
	Beyonder	Rogaland, Norway	Announced			
	BYD	Unknown	Announced			
	CALB	Unknown	Announced			
	CTAG/Zona Franca de Vigo	Vigo, Spain	Announced			
	Customcells	Tübingen, Germany	Announced			
	Panasonic	Unknown, Norway	Announced			
	SEAT-Iberdrola	Barcelona, Spain	Announced			
	VW	Eastern Europe	Announced			
	VW	Southern Europe	Announced			
	VW	Unknown	Announced			
	VW	Unknown	Announced			