



Local Content Requirements for the Battery Value Chain in Europe

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Table of Contents

Intro	01
Background	03
Value Chain	05
Local Content Requirements	07
Pillars	09
Cathode Active Material Production	15
Recycling	17
Foreign Direct Investments	19
Subsidy Scheme Based on Production Output	21
Conclusions	23





Local Content Requirements for the Battery Value Chain in Europe

BASF* welcomes the idea of setting up local content requirements (LCR) in the European e-mobility/battery value chain. This will stimulate production in Europe which will boost the whole value chain and support the commercial operation between the value chain steps. If designed appropriately, this supports Europe's goal towards decarbonization, increased resilience, less dependence on non-EU countries and overall greater autonomy.

While the exact definitions of local content are not clear yet and the supporting legal framework is still to be established, BASF would like to highlight some key aspects of LCR to accelerate clarity and the establishment of policy guidance. This concept note also proposes complementing actions that are needed for a successful implementation.

*This position paper represents the views of BASF Battery Materials division.



Background

The establishment of a competitive, integrated European e-mobility/battery value chain featuring all possible production steps including recycling faces strong headwinds from Asian countries where this industry has grown for decades, partially based on heavy subsidies, and is now facing large overcapacities. Incentives in support of the build-up in Europe are needed. On that background, requirements for partial local manufacturing in Europe are an effective tool to reach the goal of reducing dependencies in strategic value chains.

Europe has supported the nucleation of a battery value chain with two IPCEI projects. These have led to several production facilities being developed and built along the value chain with first industrial deployment (FID), being a goal of the projects. However, the commercial interaction is missing. The European production facilities are not commercially interlinked; there is no steady order and product flow established. LCR can be a powerful tool to force these interactions and hence the establishment of a functioning value chain.

Our Key Messages

1 Ensure that details of timing and thresholds on LCR differ between the steps of the value chain and become stricter over time as the value chain develops, and as the dependency from non-European sources is reduced.

3 Our two-pillar concept decouples local content quota from accompanying subsidies and includes production taking place outside of Europe.

5 Define local content requirements on all steps of the battery value chain. Meeting those requirements grants access to benefits. Not meeting the requirements should not restrict market access.

2 Provide output-based production support to ensure competitiveness in the ramp up phase of the battery sector, until economies of scale are reached.

4 Ensure that when it comes to recycling, the products of the metal refining step have an LCR.

6 Define rules for Foreign Direct Investments (FDI) to ensure that they benefit Europe's overall strategic autonomy.





Value Chain

The battery value chain in Europe is still in its infancy. Numerous production plants exist in Europe, partially supported by the IPCEI projects¹. It must be noted that there is hardly any commercial relationship existing between those plants and other members of the battery value chain, esp. OEMs as of today. As such there is no broad, functioning battery value chain in Europe. The missing steps in the battery value chain in Europe are the metal refining step and the Precursor Cathode Active Material (PCAM) production. Other steps exist on a larger scale, albeit not to the full extent needed. While the European Commission has launched funding support for selected strategic raw materials projects², these projects do not stimulate demand as the economics of sourcing from them are not compelling enough for value chain players. In addition, non-European players, especially from Asia (China, Korea) are dominating the value chain globally. China experiences massive overcapacities which lead to products being exported to Europe at very low prices. As the North American market is practically no longer accessible for Chinese players due to recently introduced tariffs, China's export strategy focuses on Europe.

The general geopolitical situation together with the delayed uptake of electromobility have led to a situation where many facilities face difficult commercial conditions. Europe has already seen first cases of bankruptcy in this newly established battery value chain sector (e.g. Northvolt).

Despite this challenging environment, numerous examples of successfully upscaled processes and large-scale production facilities exist in Europe; more are planned and announced. The utilization of Europe's assets must be stimulated with additional political measures. Apart from a general demand pull (e.g. by a corporate fleet initiative³) local content requirements are especially suited, together with smart conditions for foreign direct investments and a subsidy scheme based on production output to overcome the initial barriers and obstacles that hinder a successful growth of the battery value chain in Europe.



¹ Commission decision of 09/12/2019 and 21/01/2021 to approve IPCEI on Batteries and IPCEI European Battery Innovation (EuBatIn)

² The Commission's 47 selected projects who received funding: [Selected strategic projects under CRMA](#)

³ Demand pull mechanisms are e.g. included as flagship actions in the automotive action plan (COM(2025) 95 final) and will not be discussed in detail in this paper.



Local Content Requirements

Local content requirements can act as an effective market-pull mechanism for the buildup of a competitive, integrated European e-mobility/battery value chain featuring all possible production steps including recycling.

The EU-UK Trade and Cooperation Agreement (TCA) defined product-specific rules of origin that mandate a certain fraction of the electric vehicles' battery value to be produced in Europe. A stepwise approach was defined with requirements getting stricter over time. These origin stipulations have led to a lot of discussions between value chain partners, customers and suppliers

– notably between cell manufacturers and active material suppliers but also OEMs. All players are keen to comply with these requirements and invest in their respective supply chains. However, to date this has not yet resulted in a strong demand pull. Despite the investments into active material production plants and a three-year delay of the enforcement of the TCA origin stipulations, downstream users still seek supply from Asia.

The active material suppliers are ready to expand production capacity if the customer base demands it.

Strong “local content requirements” promise to be an effective tool to onshore parts of the indus-

try and stimulate commercial relationships between partners that have not existed before. In this light, a general rollout of local content requirements in Europe seems a very promising approach to protect and support the new value chain. To be successful, several factors should be accounted for:

- LCR should exist on all steps of the value chain, including recycling.
- LCR should develop over time, i.e. become stricter and demand a higher share of European production where feasible.
- The calculation methodology for LCR should be established in collaboration with industry.
- LCR should differ between the steps, depending on the availability of European players and production units.
- LCR should be defined in a measurable and traceable way, that links seamlessly with Battery Passport requirements.
- LCR should provide an environment to grow in line with international trade rules.
- LCR should not serve to exclude non-European players from the market but rather should serve to encourage onshoring production in Europe.

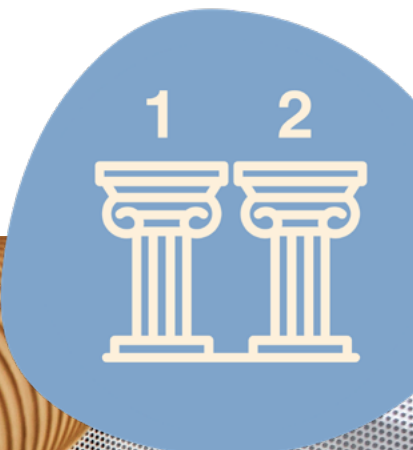
All these efforts must be in line with a predictable and rules-based international trade policy framework. WTO law rules are the basis and should not be deliberately abandoned.



BASF recommends a two pillar approach to strengthen resilience in the battery value chain.

First, expand European production and create local jobs.

Second, maintain access to Asian (particularly Chinese) technology, know-how, and supply – these should not be excluded or overlooked during the development of a European ecosystem. This strategy balances onshore capacity and employment with international collaboration, in line with WTO free trade principles.





Pillar 1: Resilience by Quotas

We recommend a mandatory quota of “European made” materials along the value chain for batteries being used in vehicles for propulsion (e.g. battery electric vehicles or plug-in hybrid electric vehicle). The quota shall increase over time but never reach 100 % to not exclude external markets and their innovation and follow the “free trade” principle while, at the same time, develop resilience in the European value chain. OEMs (all, including Asian/ US imports) must fulfill this quota on a fleet average. The concept allows for flexibility as the quotas can be met independently, e.g., the EU Cathode Active Material (CAM) does not have to be contained in EU cells; if a fraction of cells is sourced outside of Europe (e.g. from a Chinese company producing cells in China) but based on EU CAM, this would fulfill the rule for CAM. There could be a compliance tool to enforce meeting of the quotas (similar to CO₂ thresholds for emission limits).

“European made” shall be cells/material that is either (a) produced in Europe or (b) produced by a company that is ≥25 % European owned outside of Europe (e.g. a ≥25 % owned JV abroad). This ensures a certain European ownership and European control while not limiting it to local production as the European OEM sector must stay price competitive. For some value chain steps, e.g. mining and refining, localization overseas makes more economic sense than building in Europe. In addition, it allows upstream players to secure raw materials that simply may not be available in Europe. However, European ownership ensures a certain degree of value chain resilience.

We recommend the following quotas that OEMs must meet:

Item	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Batteries (battery packs, modules and cells)	10 %	15 %	20 %	25 %	30 %	35 %	40 %	45 %	50 %	Stable 50 %				
CAM (starting from Lithium & PCAM calcination)		10 %	15 %	20 %	25 %	30 %	35 %	40 %	45 %	50 %	Stable 50 %			
PCAM (minimum starting from metal salts/ metal solutions)			10 %	15 %	20 %	25 %	30 %	35 %	40 %	45 %	50 %	Stable 50 %		
Metal mining and refining (incl. recycling)				10 %	15 %	20 %	25 %	30 %	35 %	40 %	45 %	50 %	Stable 50 %	

We recommend a rather early quota requirement to push for localization soon, starting in 2027. However, a temporary suspension or reduction of penalties could be an appropriate tool to ease the challenges of transitioning to local content in the first two years of introduction of a new quota.

The battery value chain can be divided into these steps, which are referred to in the table above:

- 1. OEM – uses cells in batteries
- 2. Cells – uses CAM and active materials
- 3. CAM – uses PCAM and Li salt, the electrochemically active product of the main calcination
- 4. PCAM – uses metals, either primary or recycled
- 5. Metals – both, primary and recycling; refining operations in Europe yield local content



Pillar 2: Boost Local Production via Subsidies

Besides the higher resilience of the value chain for Europe we recommend a subsidy scheme for European production.

We propose to subsidize the operational costs (OpEx) for “European production” (or “EU produced”) up to 10 % of operational costs for producing finished goods. “European production” would refer to entities that produce in Europe and are ≥25 % owned by European companies.

Such a subsidy could support localization of value chain steps without excluding Asian battery value chain players (if they partner with Europeans, e.g. CATL and Stellantis are planning). This could lead to changes in the ownership structure of existing assets. Asian companies would still be welcome to produce in Europe (to fulfill the quotas

from Pillar 1) but would not be eligible for the subsidy unless they are partnering with a European company.

The focus on finished goods would avoid subsidies being paid for scrap production and would push the companies to higher yields and process optimization and thus improve the price position for European produced goods.

The following overview and examples shall illustrate the concept and provide further explanation.

The concept of “EU made” vs. “EU produced” and the eligibility for compatibility with the two pillars are summarized in the table below:

Company, ownership	Location	European made (to fulfill Quota)	European production (eligible for subsidy)
<25 % EU	EU	Yes	No
≥25 % EU	EU	Yes	Yes
<25 % EU	Non-EU	No	No
≥25 % EU	Non-EU	Yes	No



The application of the quotas is demonstrated in the following examples:

Example 1 OEM “A” value chain concept for 2028

- 20 % of fleet are equipped with cells made in Canada by a company with EU ownership (eligible), 80 % of cells are produced in Europe by an Asian owned company (non-eligible)
- Cell quota (15 %) met
- Asian cell producer uses 50 % CAM produced in Germany by a German CAM producer (eligible)
- CAM quota (10 %) met: 50 % of 80 % = 40 %

Example 2 OEM “B” value chain concept for 2028

- 50 % of fleet are equipped with cells made in France by a company with EU ownership (eligible), 50 % of cells are produced in Asia by an Asian owned company (non-eligible)
- Cell quota (15 %) met
- All cell producers use CAM made in Korea by companies with Korean ownership
- CAM quota (10 %) not met: 0 %

Example 3 OEM “B” value chain concept for 2030

- 50 % of fleet are equipped with cells made in Germany by a company with ≥25 % EU ownership (eligible), 50 % of cells are produced in China by a purely Chinese company (non-eligible)
- Cell quota (25 %) met
- 50 % of cell producers in Europe use CAM produced in either Germany or Poland
- CAM quote (20 %) met: 50 % of 50 % = 25 %
- EU CAM portion (25 %) fully produced by PCAM and recycling stream produced in Finland
- PCAM (15 %) and Metal (10 %) quota met



Two-Pillar Approach to Strengthening Europe's Battery Value Chain

This two-pillar system requires all players along the European battery value chain to ramp up production. The accompanying subsidy scheme drives process optimization and serves European only companies that produce in Europe, hence provide employment in Europe and eventually pay taxes in Europe.

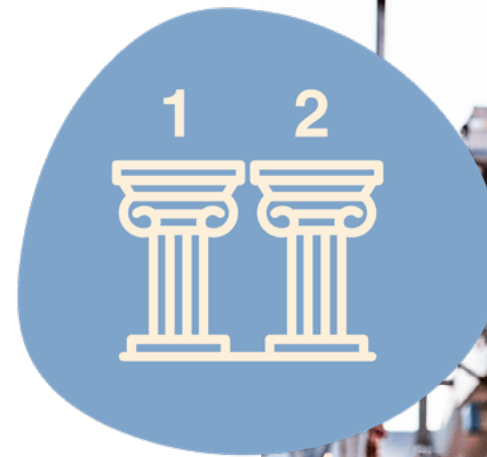
The concept relies on a certain percentage of parts being made in Europe, which facilitates identification and reporting. It does not employ typical (and both, error-prone and reporting-intensive) parameters used in trade agreements like “change in tariff heading” or “value added in Europe”.

All targets must be met by the OEM, allowing for flexibility for OEMs to fulfill the requirements. For example, EU-produced CAM does not necessarily have to be contained in EU-produced cells. It is important that both quotas are met but this can also be achieved independently of each other.

The eligibility for “local content” is decoupled from subsidies, i.e. the European tax-payer money can be focused on European companies producing in Europe

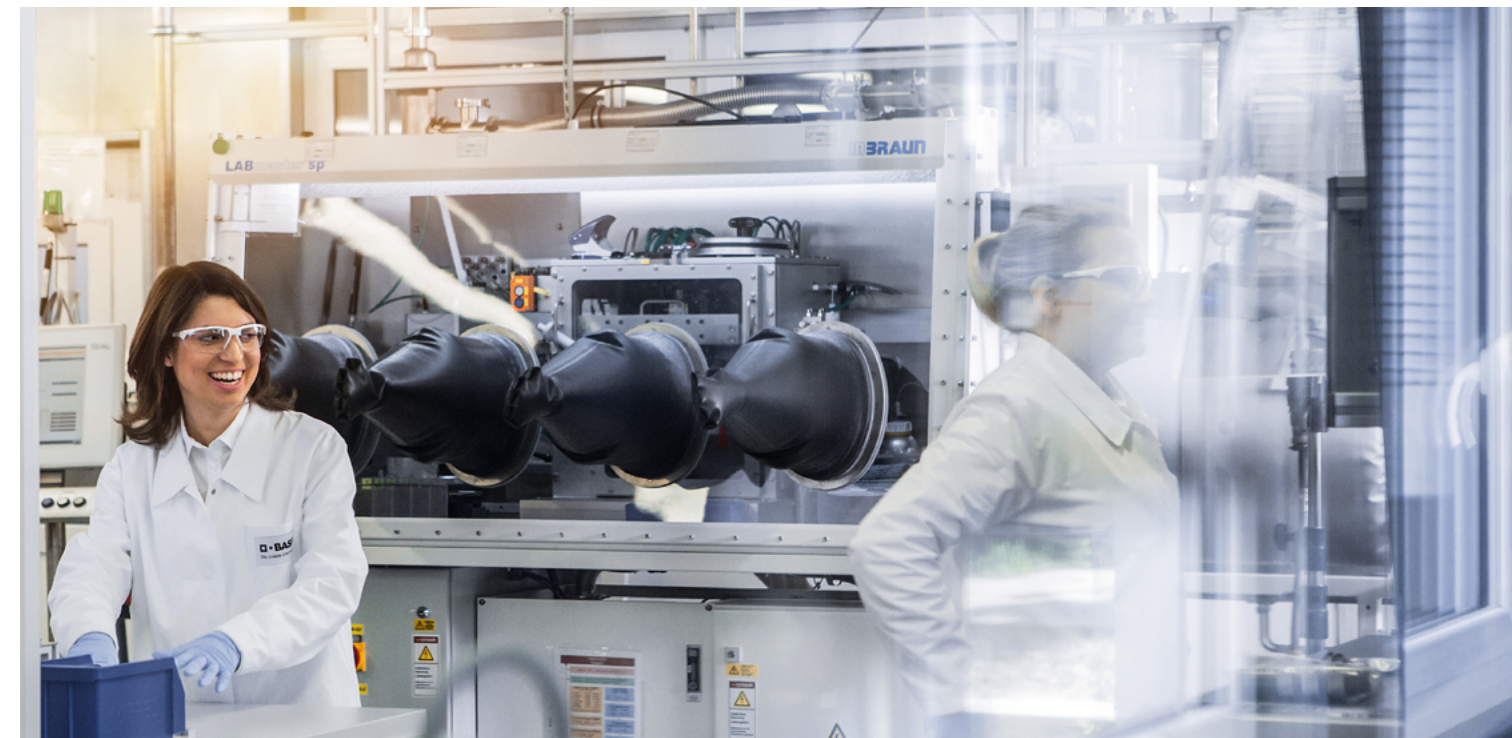
while the scope of the concept is much broader and also allows for production outside of Europe. The subsidies as envisaged in this concept would not only support production in Europe but also foster partnerships with established non-European players, with the effect of access to technology and reduced Capex spending as investments would be shared.

Eligibility for “local content” can either be reached by producing in Europe (by any non-European company), or by producing outside of Europe if the respective company is partially European owned ($\geq 25\%$). This allows for access to raw materials which are typically concentrated in countries outside of Europe. It also allows for compliance through creating joint ventures (JVs). Thus, the build-up of the value chain does not exclusively rely on (very expensive) build-up of new production infrastructure but is also possible by integrating existing infrastructure (with proven production and possibly under-utilized and hence cheaper) in JVs. This opens an alternative option for European companies to grow in this industry sector.





Cathode Active Material Production



Regarding Cathode Active Materials (CAM), LCR supports production of CAM in Europe, which is the goal. The requirement should enable and support establishing competitive European production but also allows for international trade.

Typically, investments in production plants are currently 2-4 times more expensive in Europe than in China, and OpEx figure differences are in the same ballpark in the early phase of industrialization. The reasons are manifold, mainly driven by higher regulatory requirements and standards, but

also energy costs and workforce, to name a few. This results in a huge commercial disadvantage of production in Europe which cannot be compensated for by higher product prices in the market. Therefore, in reality production partially utilizing assets outside of Europe can help to reach the goal of European resilience in the long run. Assets outside of Europe can enable assets in Europe. This is especially true for production steps in the initial stages, before material enters Europe. Excessive product shipping and logistics between regions along the value chain should be avoided as it would reduce the environmental benefits of battery usage.



Recycling

In the recycling step of the lifecycle of the battery, an LCR should be defined on the output of the metal refinery, e.g. on Nickel sulfate. This mandates the use of partially EU-based starting materials in the PCAM production step (in the case of NCM or NCA-based batteries; to be similarly applied to other input materials or battery chemistries).

An LCR on Black Mass is counterproductive. This would effectively pose a restriction on the import of Black Mass into Europe. China has high volumes of black mass and has also lifted its import ban on black mass. As such, to be competitive, Europe must not restrict black mass imports. Such an import is desired as it increases the number of metals in the loop in Europe.





Foreign Direct Investments

The measures outlined above will lead to a higher share of production in Europe along the value chain. It does, however, not automatically mean that only European companies will benefit from local content requirements. The established Asian battery cell and materials manufacturers have been building a European footprint for some years (e.g., CATL, Sunwoda, SDI in Hungary). More and more Asian players would also establish a European footprint if the import from their Asian production base does not meet the European content requirements. While such a buildup of the value chain is desirable in terms of scaling the battery industry's landscape in Europe, the overarching goal of the European Union of increased

resilience and reduced dependence on non-EU sources must be taken into consideration.

In addition, Europe's local content requirements should aim to maximize benefits for European industry, economy, and society. Clear incentives to include European players, foster domestic employment, and boost supplier industries are required. Creating an attractive investment environment is crucial, and extending incentives to compliant non-EU companies can prevent market barriers. Instead of fearing competition from non-EU players, the EU should embrace the economic benefits they bring and explore joint ventures that yield mutual gains.





Subsidy Scheme Based on Production Output

Given the novelty of the battery value chain for most European companies, each production will undergo a learning curve. Also, during the ramp-up phase, players will experience hefty investments and periods of underutilization. All these factors add to a higher cost position compared to Asian players.

Assuming comparable external factors (energy cost, etc.), the cost position of production in Europe may eventually be on par with Asian players once an economy of scale has been reached. To bridge the time until then and to allow the value chain players to build up and run the infrastructure, an output-based subsidy scheme should be in place, i.e. every successfully produced unit put on the market is subsidized to a certain degree. This incentivizes the industry to scale up quickly and optimize the production processes. Such output-based subsidies have proven very successful in the U.S. under the former Inflation Reduction Act. If the Commission introduces local content requirements, it must be acknowledged

that companies in the battery value chain would not be producing in equivalent conditions compared to Asian counterparts. The product will be deemed to be European, and therefore come with a price premium, which requires some off-setting mechanism (ideally in the form of a subsidy) to counteract the higher cost position.

OpEx subsidies could be either in the form of tax credits or active payouts. While tax credits require less upfront capital from member states, it may not serve the purpose if companies suffer from low profitability in the early years. Also, tax credits can be complex to define as member states have different taxation systems. The active payout of funds would benefit all companies immediately but requires more capital from the member states. Either way, these subsidies should be available for the eligible companies as soon as possible, i.e. in the year when the reporting of the last calendar year is submitted. Access to OpEx subsidies should come with minimal reporting burden and be based on products sold in Europe.



Conclusions

BASF is amongst the frontrunners to establish an industrial scale full battery value chain in Europe, mainly driven by the demands of electromobility. BASF is a founding member and active participant of the first IPCEI project in this field, IPCEI on Batteries. Industrial scale production plants for PCAM and CAM have been erected with the clear goal to expand these plants to meet the growing demand of the electromobility sector and other sectors that are transformed and increasingly electrified.

BASF welcomes the initiative to set up local content requirements (LCR) in the European e-mobility/battery value chain. Those must be balanced and individually defined per step of the value chain to reach full impact. In this regard, a strategic dialogue between the European Commission and the battery value chain sector is warranted.

To enable and safeguard the establishment of a full battery value chain, especially the material steps, a partial allowance of non-European materials in European CAM products must be permitted. To allow for 100 % non-European products will prohibit the establishment

of a new domestic value chain, and a strict exclusion of non-European material does not enable a build-up of new production capacities either. A partial allowance of non-European materials into a European product is a reasonable compromise to foster trade and technology exchange with other regions while contributing to the overall goal of becoming more resilient and independent from non-EU countries. Similarly, certain processing/production steps should also be permitted to take place outside of Europe to support the global competitiveness of European products and companies.

As the European battery materials industry matures and achieves competitiveness, these LCR framework conditions may undergo a review.

The LCR should be accompanied with an incentive system regarding foreign direct investments in Europe to make sure that the goals of increased independence from non-European sources and general autonomy of Europe are not endangered. Finally, an output-based subsidy scheme should support the players of the value chain in the early years.



Do you have questions about our position or want to discuss your ideas? Visit our website to get in touch with us: <https://battery-materials.basf.com/lcr>



About BASF Battery Materials

BASF is a leading global supplier of advanced cathode active materials (CAM) for the lithium-ion batteries market, providing high-performance CAM to the world's largest cell producers and for leading OEM platforms. We complement our portfolio with base metals sourcing and management, as well as various battery recycling solutions, including closed loop offerings. By leveraging our industry-leading R&D platforms and passion for innovation, BASF Battery Materials develops unique, proprietary solutions that drive customer success. Further information is available on the internet at www.battery-materials.basf.com

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