

Output-based support - production aid for cleantech

This briefing outlines the benefits of output-based support for cleantech end products manufacturing in Europe. Output-based aid is not tied to operating cost (Op-Ex), but to production output, in order to ease the difficult ramp-up stage and to promote local content.

It builds on T&E's report [State Aid 2.0](#) highlighting the shortcomings of the current cleantech manufacturing aid framework, and on T&E's written contribution to the public consultation on the Clean Industrial Deal State Aid Framework (CISAF).

1. Is output-based aid a breach with EU aid principles?

No. In fact the Commission itself is increasingly favouring, and even implementing and mandating, output-based aid in areas other than cleantech manufacturing.

1. The Commission has historically allowed output-based aid schemes in renewable energy, moving from allowing feed-in tariffs towards now de facto mandating Contracts for Difference (CfD) as aid instruments of choice for renewable energy production;
2. The Commission runs CEF-AFIF, the funding programme for charging infrastructure, the latest iteration of which awards €20-30k per high-power charger installed close to the TEN-T network;
3. The Commission has, under its Innovation Fund, introduced two rounds of a Hydrogen Bank, an output-based scheme for hydrogen production in which project developers are awarded compensation per kg of sustainable hydrogen produced.
4. On June 18, it outlined terms and conditions for its auction for electrification of industrial heat. Support is output-based, through a fixed premium.

So there is plenty of precedent for the principle of output-based aid.

Whether competitive auctioning (à la H2 bank, heat, CfDs) or fixed per-unit support (à la CEF-AFIF) is the most suited instrument depends on the technology and its market features. The literature suggests that competitive auctioning is suited for mature industries, but less for emerging ones (like the EU battery industry).

2. Is funding operating expenditure (opex) in breach with EU aid principles?

To the contrary. The most important cleantech state aid guidelines currently in force (IPCEI, R&D&I, TCTF Article 86, but also the Chips Act) already allow for national-level funding of ongoing operating expenditures.

IPCEI, TCTF 86 and Chips Act guidelines define maximum allowable aid by a 'funding gap': the difference between discounted cost and revenues over the lifetime of a project, typically 20-30 years. Over such a long discounting period, opex (materials, labour, energy) dominates the cost side of the funding gap.

R&D&I defines maximum aid as a % of eligible cost. Opex (materials, labour etc.) is eligible.

And this is not just theory. In total the Commission has approved almost €10bn of aid to batteries on the basis of opex:

- €6.2bn under the 2 battery IPCEIs;
- €0.9bn under TCTF Article 86 (Northvolt);
- €2.2bn under R&D&I (Prologium and Verkor).

Our conclusion is that the EU allows national-level state aid based on opex is legal.

3. So if aid for opex is possible, what is the problem ?

The problem is that the aid in the current process is unbankable – hence underperforming in crowding private money, because:

- 1) EU-level approval is not automatic but project-by-project and
- 2) national payment is not automatic either but depends on subjective project-by-project milestones, which adds another layer of unbankability:
 - The negotiation on these milestones happens project-by-project, and is long and complex;
 - The milestones themselves are often hard to define and subject to interpretation;
 - Companies have no visibility on the extent to which changes in the plan (which always happen) affect eligibility of their costs. Every significant deviation from the plan (which meanwhile was written long ago) needs to be discussed with the government, and the eligibility of costs re-negotiated.

This is why the EU should allow **automatic** aid related to opex, namely, for output-based support. By definition, this proposal **does not socialise losses**: payment is related to success not failure. And because it is bankable (i.e., crowds in private money), and payment only happens in case of success, it is a more **efficient use of public funds** than current practice.

4. Can output-based aid be financially sustainable?

Yes, this is a matter of how output-based aid is designed.

The EU should not copy the U.S. Inflation Reduction Act uncapped production subsidies.

- The EU should use production-based aid during ramp-up, phasing it out when the company has achieved a certain level of production hence learning;
- The EU should use caps per company;
- The EU makes aid conditional on the use of local content and control, so that not all production qualifies, further reducing expenditure.

It's not about propping up failing firms, but about helping competitive, capital-intensive firms reach cost parity with international competitors and scale using EU supply chains.

This approach encourages cost reductions along the learning curve and use of local supply chains, not long-term dependency. It will also avoid over-compensation.

5. Is supporting production unfair toward smaller companies?

No, in contrast with the status quo, it favours EU scale-ups over legacy companies.

The current project-by-project aid approvals benefit established firms with the capacity to navigate complex application processes, at the expense of new market entrants. Only established firms know their way around the myriad of state aid frameworks (CISAF, TCTF, CEEAG, R&D&I, IPCEI, Innovation Fund, regional aid, etc). They are better equipped with the necessary legal and consultancy resources to navigate complex rules, while startups struggle with this. A recent paper by [LUHNIP](#) estimates costs close to €1 million per company just for application support.

In addition, the prolonged negotiation process - often over [two years](#) for IPCEIs - does not match timeframes startups operate in. This undermines equal opportunities in the internal market.

Output-based aid during scale-up, with all criteria fixed beforehand, not during a project negotiation, is transparent for everyone, legacy and newcomers alike.

Aid already received (typically by established players) could be deducted from any output-based aid in order to further level the playing field between old and new.

The cap on aid per company is also favourable to scale-ups vis-a-vis established ones. The conditionality on local content ensures that aid given to producers of end products trickles down across the entire EU value chain, including smaller suppliers.

6. Will production aid distort competition between Member States and undermine EU cohesion?

No. The current approach distorts competition more.

The highest levels of approved aid for battery projects went to projects in Germany (Northvolt) and France (Verkor, Prologium). This is not a surprise because as written above, the largest projects have the largest opex hence largest funding gaps. Direct production aid would not change anything to this.

What's more, the current administration-heavy approach makes it hard for smaller Member States to participate. For illustration, all six member States that have never participated in an IPCEI are small: Bulgaria, Cyprus, Latvia, Lithuania, Luxembourg and Slovenia.

Designing a coordinated EU framework via CISAF, with common eligibility criteria and transparency for an output-based system, can enhance fairness and level the playing field by:

- Providing predictable and uniform rules across Member States
- Linking aid to measurable outcomes, not negotiations
- Supporting only successful production

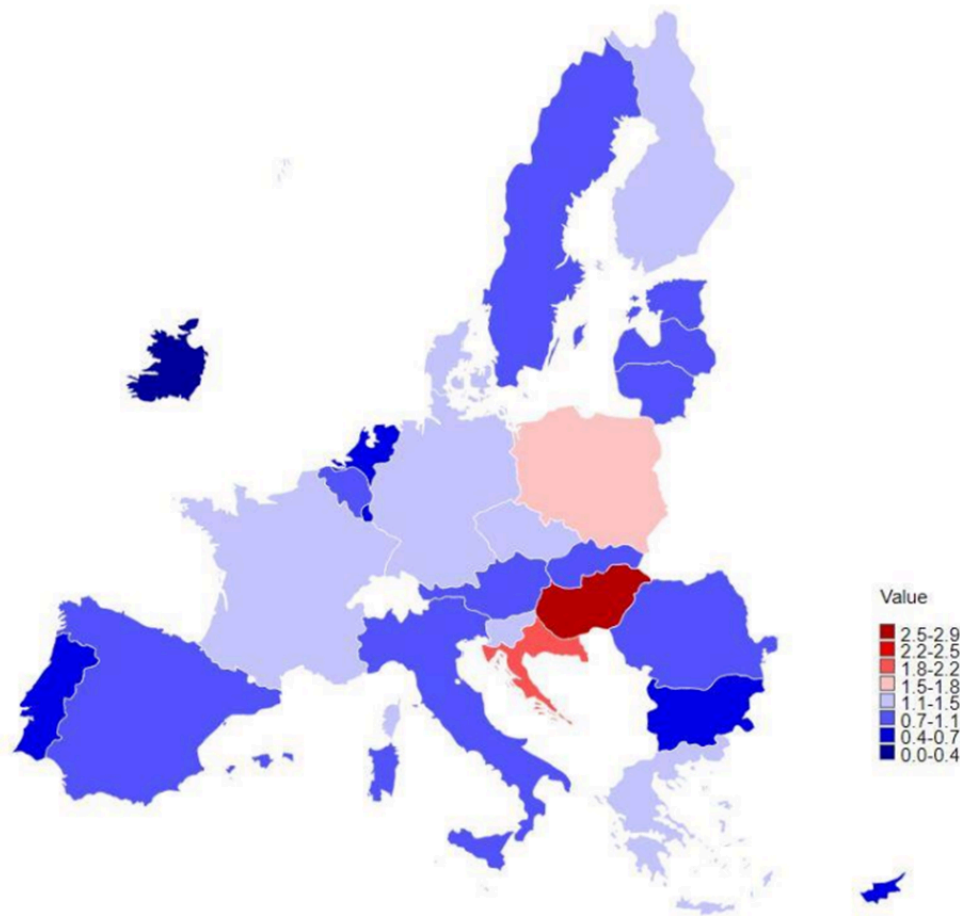
Expenses can be controlled by caps per company, by strict conditionality on local content, and by phasing down output-based aid as production ramps up. This will strongly limit any distortions within the EU.

Extra support could also be awarded under EU-managed instruments that ensure equitable geographic distribution (e.g. via joint EU-national funding models or national compartments in the future Competitiveness Fund).

T&E proposes aid that is open to any firm meeting EU value-added thresholds, regardless of geography. In fact, cohesion countries and regions may gain more under such schemes because smaller, newer players are finally able to compete. The EU can offer higher unit amounts for products manufactured in cohesion regions (A and C regions) - an approach already grounded in regional aid rules and long-standing cohesion policy principles.

Last but not least, DG Competition's state aid scoreboard shows that state aid spending is not correlated with a country's GDP or fiscal space.

Figure 1: Total State aid expenditure by Member States, as % of national 2023 GDP



Source: DG COMP State Aid [Scoreboard](#) 2024, April 2025

High-GDP, low-debt countries like the Netherlands, Sweden, Ireland and Luxembourg rank very low in state aid spending, whereas lower-GDP countries with higher debt like Hungary and Croatia are the highest-ranked.

This suggests state aid spending is more correlated with national political priorities than with fiscal capacity.

In addition, the proposed conditionality on EU local content will ensure that production aid given by individual Member States will trickle down in supply chains across the EU. As illustrated by a recent [report](#) from the European Commission on “*The Net-Zero manufacturing industry landscape across Member States*”, cleantech manufacturing is diffused across Member States. The benefits stay within the Union - whether a factory is built in Slovakia or Spain.

7. Does production aid breach the EU Financial Regulation ?

The EU already uses similar models, showing this is compatible with EU budget rules and the Financial Regulation:

- The Alternative Fuels Infrastructure Facility (AFIF) under the Connecting Europe Facility funds charging points based on actual performance (€20-30k “unit contribution” per point installed along the TEN-T network), making previously unviable locations viable.
- Contracts-for-Difference (CfDs) support renewable electricity by paying the difference between the market and strike price, ensuring predictable revenue for investors based on the amount of electricity produced.

The Financial Regulation 2024/2509 allows support for operational costs, as long as these are:

- Necessary and proportionate for achieving the objectives of a funded action.
- Clearly defined in advance, e.g. through unit costs or lump sums.
- Compliant with the specific rules of the funding programme (some programmes may restrict Op-Ex, others allow it).

The key articles are the following:

- Article 125(1c): “*unit costs, which cover all or certain specific categories of eligible costs which are clearly identified in advance by reference to an **amount per unit**;*”. Payment per unit is explicitly allowed.
- Article 189(1c): “Grants shall” ... “be established” ... in the form of lump sums, unit costs or flat rates”. Eligible costs based on units (as the case for production aid) are possible.

8. Can public funds support production in already built facilities?

The Financial Regulation 2024/2509 does not prohibit support to already built facilities: Article 196(3) on the principle of non-retroactivity states that “*grants shall not be awarded retroactively for actions already completed*”.

This is often interpreted with capital expenditure in mind, i.e., that it would not be possible to provide aid to a facility already built. However, for production aid, the “action” can be interpreted as the act of production, not the building of the facility. Therefore, aid may still be granted for production, even if the factory is already built - as long as the production itself hasn't occurred yet. This interpretation aligns with examples like CEF-AFIF, which provides unit-based grants regardless of prior aid for infrastructure.

Additionally, it is possible to deduct aid already given from any production aid.

9. Do local content requirements breach WTO law ?

Tying local content requirements to EU State Aid is both a strategic necessity and increasingly common practice globally. Major economies like the US (Inflation Reduction Act), India (>50% localisation of EV plants, and a Production Linked Incentive PLI), Japan (procurement of storage batteries), Indonesia (>80% local content for EV batteries by 2030) and South Africa (>20% local content for storage batteries) are using local content rules to secure cleantech supply chains and strengthen competitiveness. For the EU, attaching local content conditions to public subsidies, particularly for strategic sectors like battery production, helps ensure that taxpayer support delivers industrial, environmental, and geopolitical benefits within the Union.

While WTO rules under the Agreement on Subsidies and Countervailing Measures (ASCM) prohibit subsidies explicitly contingent on the use of domestic over imported goods, the EU can design its support in a way that avoids breaching these rules.

The EU can invoke GATT Article XXI - the national security exception - to justify measures supporting domestic battery manufacturing. Batteries are vital not only for clean mobility and energy storage but also for critical defense applications such as unmanned systems, communications, and base resilience. Given the broad scope of Article XXI and its applicability to materials essential for military and strategic infrastructure, the EU has a legal and political case to defend targeted local content provisions as necessary for its security interests.

While GATT Article XX(j) (local short supply) has limited potential following the WTO ruling in the India-US solar panel case, Article XXI offers a viable legal basis that remains untested but potentially robust. Moreover, the EU can reinforce its international credibility by clearly excluding export-focused production from subsidy schemes. In sum, combining local deployment criteria with a security rationale provides a legally cautious and policy-strong path to support resilient, local clean tech manufacturing under EU State Aid frameworks.

Further information

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