

Revision of EU Electricity Market Design

European Copper Institute position on the Commission proposal

May 2023

The current situation where EU electricity prices remain higher than in most other regions in the world is having a devastating impact on the global competitiveness of electro-intensive industries in the EU. It has substantially increased the operational costs of copper producers in Europe, and is causing a competitive disadvantage vis-à-vis producers in other regions where electricity prices remain considerably lower.

The European Commission has defined copper as a strategic raw material, acknowledging that copper is indispensable for achieving the EU's objective of a carbon-neutral economy, given its importance for electrification and its widespread use in the main decarbonisation technologies.

There is potential to increase copper mining, processing and recycling capacity in the EU to help meet rapidly increasing demand for copper. The producers that the European Copper Institute represents in Europe¹ wish to do this responsibly and have committed to a goal of reducing the scope 1 and 2 GHG emissions from their copper production to net zero by 2050.

Access to fossil-free electricity at globally competitive prices is a pre-condition both for attracting investments in the expansion of copper production capacity in the EU, and for bringing the sector's scope 1 and 2 GHG emissions to net zero by 2050.

The Commission proposal revising EU Electricity Market Design puts forward measures aimed at improving liquidity in the electricity market in the long-term, which is welcome. However, the proposal **will not help reduce electricity prices for consumers in the short-term and lacks immediate measures to avoid a repetition of the current price crisis** where high gas prices were the main reason behind untenable electricity prices.

For the EU to achieve its objective of keeping or increasing strategic raw material value chains in Europe, in order to secure access to the raw materials needed to manufacture net zero technologies, measures must be taken now to provide access to globally competitive electricity

¹ ECI represents approximately 85 percent of the copper production capacity in the EU, based on the International Copper Study Group's 2021 directory of mines and plants.

prices for these industries. ECI believes that the following changes are needed to the Commission proposal:

1. **Amend article 66a on “access to affordable energy during an electricity price crisis” to apply it also to electro-intensive consumers.** When the Commission declares an electricity price crisis, electro-intensive consumers should not be excluded from targeted public interventions that member states may decide to adopt in price setting. Member states should have the freedom to decide how to target such interventions.
2. **Introduce a price shock absorber mechanism** that would be automatically triggered when the Commission declares a regional or EU-wide electricity price crisis, to temporarily limit the ability of fossil generation to set wholesale electricity clearing prices in the EU. This would lower electricity prices for all consumers with immediate effect, while preserving the merit order curve and maintaining security of supply.
3. Given that a price shock absorber mechanism will only lower electricity prices in crisis situations, it must be **complemented with additional measures to provide EU electro-intensive industries access to electricity at globally competitive prices, until such time that sufficient decarbonised generation capacity and flexibility sources have been installed** in Europe to bring prices down. To this effect, the proposal should:
 - **Facilitate the access of electro-intensive consumers to competitively priced renewable Power Purchase Agreements (PPAs) by supporting them in the management of shaping risk** which arises from the variable nature of RES generation that does not match the stable demand profile of industry.

To this end, the wording of article 19a(3) which states that member state backed guarantee schemes for PPAs “shall not provide support to the purchase of generation from fossil fuels” should be amended to clarify that PPAs backed by guarantee schemes “shall not be signed with fossil fuel generation assets”, in order to leave the needed flexibility to manage shaping risk and avoid penalising financial PPAs.
 - **Provide for an amendment to the EU state aid framework to ensure that member states are allowed to support strategic European electro-intensive industries face the high electricity costs**, including by introducing transitional industrial electricity price schemes.
4. Introduce conditions on the design of **two-way Contracts for Difference** to mitigate undesired impacts such as reducing liquidity on the PPA and forward markets and further increasing prices for electro-intensive industries.

Access to fossil-free electricity at globally competitive prices is a prerequisite for securing decarbonised production of copper in the EU

European power prices have risen dramatically since the summer of 2021. While prices have come down from the peak reached in the summer of 2022, analysts predict that with electrification driving an increase in electricity demand in Europe and Russian gas imports expected to reduce further, wholesale power prices may not reduce substantially until at least 2027.²

The current situation where EU electricity prices remain higher than in most other regions in the world is having a devastating impact on the competitiveness of electro-intensive industries in the EU. It has substantially increased the operational costs of copper producers in Europe, and is causing a competitive disadvantage vis-à-vis producers in other regions where electricity prices remain considerably lower. Because copper is traded on global commodity markets such as the London Metals Exchange, copper producers cannot pass on the cost increases caused by higher electricity prices to consumers without losing market share to producers who do not face the same costs.

The copper production process is electro-intensive: before the crisis, electricity costs typically accounted for 15-25% of copper production costs. Electricity is already the most important energy source for copper smelting and refining in Europe and European copper production sites consumed 14 000 GWh of electricity in 2018. This number is increasing as the sector decarbonises, given that **increasing the use of fossil-free electricity is the main lever for copper producers to decarbonise their operations.**

The copper producers that the European Copper Institute represents in Europe have committed to a goal of reducing the scope 1 and 2 GHG emissions from their copper production to net zero by 2050. Access to fossil-free electricity at globally competitive prices is a key pre-condition for reaching this decarbonisation goal.

The European Commission has defined copper as a strategic raw material, acknowledging that copper is indispensable for achieving the EU's objective of a carbon-neutral economy, given its importance for electrification and its widespread use in the main decarbonisation technologies. With the increasing demand for wind farms, solar PV, heat pumps, electric vehicles and other net zero technologies, **EU copper demand is forecast to increase by 35 percent by 2050³.**

There is potential to increase copper mining, processing and recycling capacity in the EU to help meet this demand. However, as electricity price volatility grows with the integration of a larger share of intermittent renewable generation, **it is difficult to make the case for investing in the EU unless strong measures are taken to lower industrial electricity prices and to avoid prolonged price peaks like the one last summer.**

² McKinsey projections based on futures from Bloomberg, EEX, Nasdaq and PEGAS, January 2023 [\[Link\]](#)

³ KULeuven, Metals for Clean Energy: Pathways to solving Europe's raw materials challenge, 2022.

1. Action must be taken to reduce prices for consumers in the short-term and avoid a repetition of the current price crisis

The Commission proposal puts forward measures aimed at improving liquidity in the electricity market in the long-term. However, strategically important electro-intensive industries like copper need globally competitive electricity prices now to remain competitive and to go ahead with investments in electrification to decarbonise their operations. The proposal must be amended to introduce short-term measures to avoid a repetition of the current price crisis where high gas prices were the main reason behind high electricity prices.

Short-term fix: Introduction of a Price shock absorber mechanism

As an immediate remedy, the resilience of EU electricity market design to future crises should be improved by building in a **price shock absorber mechanism – a market emergency mechanism that would be automatically triggered in situations of extraordinarily high prices**. This suggestion is in line with ACER's assessment of EU Wholesale electricity market design in April 2022, where it put forward the possibility of establishing a temporary price limitation mechanism or "relief valve", inspired by experience of such mechanisms in the US and Australia⁴.

How would a price shock absorber mechanism work?

The objective of such a mechanism would be to **limit the ability of fossil generation to set wholesale electricity clearing prices in the EU in situations of extraordinarily high market prices**. The mechanism would be technology neutral and it would preserve the merit order curve. It would be established ex ante and triggered automatically in pre-defined circumstances. Once triggered, the price shock absorber mechanism would combine 'pay as clear' and 'pay as bid' clearing methods, so that a large percentage (e.g. 90%) of the load volume with the lowest cost would be cleared with the 'pay as clear' model, while a small percentage (e.g. 10%) of the highest cost load volume would be cleared with the 'pay as bid' system.

The overall demand price would be a weighted average of the 'pay as clear' and 'pay as bid' prices, thereby resulting in a much lower price for consumers than under the current market design. **While the price shock absorber would significantly lower market prices during price spikes, it would have very limited impact when the supply curve is flat.**

The percentage split and the conditions for triggering the mechanism should be determined in advance and set out in a transparent way, in order to provide certainty and predictability to the markets. **Marginal generators would be able to continue bidding at their marginal cost, but the impact of their high fuel costs on the market clearing price would be limited.** To prevent circumvention and speculation, the mechanism would be equipped with ex-ante market power mitigation measures to avoid changed bidding behaviour of power generators.

The introduction of the price shock absorber mechanism would lower electricity prices for all consumers with immediate effect, while preserving the merit order curve. This will help guard against the destructive impacts of price spikes on European electro-intensive industry as well as households, thereby **avoiding the need for state support schemes and interventionist measures to claw back windfall profits** from intramarginal producers that hamper investor confidence. It would also bring more predictability for all market participants, without endangering security of supply.

⁴ ACER assessment of the EU Wholesale electricity market design in April 2022, pp 49.

Advantages of the price shock absorber mechanism:

- Lower electricity prices for all consumers with immediate effect
- Transparent, predictable system
- Avoids need for disruptive emergency measures that erode investor confidence
- Avoids need for subsidies or funding from the state / EU
- Limited change to current market design, preserves the merit order curve
- Without negative impacts on security of supply given that marginal generators are remunerated based on their costs
- Can be implemented uniformly across the EU

ECI asks: Amend the proposed **article 66a** on “access to affordable energy during an electricity price crisis” to:

- Extend the application of this article to all affected customers, not only SMEs.
- Provide that once the Commission declares a regional or EU-wide electricity price crisis, member states must implement a price shock absorber mechanism that will apply during the period of validity of the Commission decision; Add the basic principles of application of the mechanism, including that
 - once it is triggered most of the national market volume will be cleared with the pay-as-clear method, while a smaller share (corresponding to the share of gas-fired generation) will be cleared with a pay-as-bid method;
 - the final market price will be a weighted average of the pay-as-clear and pay-as-bid prices; and
 - ex-ante market power mitigation measures are introduced to avoid tactical bidding behaviour.
- ACER could be mandated to develop guidance on the detailed implementation of the price shock absorber mechanism.

2. More must be done to facilitate access to competitively priced electricity to EU electro-intensive industry, including through Power Purchase Agreements

In the short-term, the EU state aid framework must allow member states to adopt schemes to provide competitively priced electricity to electro-intensive industry

A price shock absorber mechanism will only lower electricity prices in extreme situations, so it will not be sufficient on its own to reduce prices overall and help electro-intensive industries in the EU remain competitive. In the medium and long-term, Europe will only achieve security and affordability of electricity supply by increasing generation capacity, including dispatchable supply and flexibility solutions that are crucial to balance intermittent renewable generation.

In the meantime, **until sufficient fossil-free generation capacity and flexibility sources will have been installed, it is important that the EU state aid framework allows member states to support European electro-intensive industry face the high electricity costs.** It is in the EU's interest to keep a competitive raw materials industry in Europe to provide secure access to the strategic raw materials needed for windmills, batteries, solar panels, electrolyzers and other key net zero technologies.

ECI asks: The Electricity Market Design proposal should provide for an amendment to the EU state aid framework to ensure that member states are in the short-term allowed to support strategic European electro-intensive industries face the high electricity costs, including by introducing transitional industrial electricity price schemes.

Further measures are needed to help electro-intensive industries manage shaping risk in order to facilitate use of renewable PPAs

Corporate power purchase agreements (PPAs) can help electro-intensive industrial consumers such as copper producers secure a competitive long-term price for electricity supply. We welcome the Commission's intention to remove some of the barriers that make PPAs difficult to access for SMEs as well as large industrial consumers today. However, **additional measures are needed to unlock the potential of PPAs for electro-intensive industries** such as copper producers.

A RES generator can always choose between signing a PPA or selling electricity on the market. Therefore, RES generators base themselves on the market price for electricity, rather than their expected generation costs, when negotiating the pricing of a PPA. **The current high electricity price acts as a barrier in itself for electro-intensive industries to enter into competitively priced PPAs. Therefore, in addition to the measures suggested below, the Price shock absorber mechanism will also be important for enhancing the uptake of PPAs as it will lower average market prices by 'shaving' price peaks in moments of extremely high prices.**

A key obstacle limiting the access of copper producers to RES PPAs is the high cost of managing risks that stem from the variable nature of renewable generation, in particular shaping risk.

This risk arises because copper production sites have a stable consumption profile requiring a constant flow of electricity, while wind and solar generators have a variable supply profile that fluctuates based on the weather and time of day. This means that the generation volume of the RES generator will not always match the demand of the industry offtaker.

The industry offtaker is therefore required to buy additional capacity on the spot market when there is a shortfall in RES generation, unless they enter into hedging arrangements to manage the risk of having to buy electricity at a high cost on the market. PPAs can be structured in different ways to

manage this risk and the copper producer (or other industry offtaker) can also contract a third party to take on this risk. However, **all the available risk management options result in an increase in the cost of the PPA to the copper producer, which is often so high as to make it uneconomical to sign RES PPAs** (See Annex 1 for further explanation of shaping/profiling risks and how they can be managed).

As was concluded in a 2019 CEPS study⁵ on the Competitiveness of corporate sourcing of renewable energy commissioned by the European Commission, **shaping costs can be managed in a competitive way if the electricity markets are liquid and the market price is competitive**. This is not the case in most of the EU electricity markets today. With today's high and volatile electricity prices, it is becoming more difficult to have access to PPAs where shaping risk is managed in a cost-competitive manner.

The wording of **article 19a(3) should be improved to ensure that the possibility to sign and shape financial PPAs is not compromised**, given that such PPAs often involve the trading of electricity on the market. Article 19a(3) states that member state backed guarantee schemes for PPAs “*shall not provide support to the purchase of generation from fossil fuels*”. A strict interpretation of this wording would make it impossible to support financial RES PPAs because of the necessary interplay with the electricity market, even though the electricity being sold is renewable. **We therefore suggest reformulating this phrase to avoid such an issue of interpretation to: member state backed guarantee schemes for PPAs “shall not be signed with fossil fuel generation assets”**.

ECI asks: Amend the wording of article 19a(3) which states that member state backed guarantee schemes for PPAs “shall not provide support to the purchase of generation from fossil fuels” to “shall not be signed with fossil fuel generation assets”, in order to leave the needed flexibility to manage shaping risk and avoid penalising financial PPAs.

Two-way Contracts for Difference must be carefully designed to avoid drying liquidity in the PPA & forward markets and increasing prices for electro-intensive industry

Contracts for difference have in the past been helpful in supporting investments in renewable generation capacity. However, such support is not required to the same extent today and the overall direction should be towards reducing or phasing out such subsidies, not increasing them. In the instances where state support is justifiable, the extent to which two-way CfDs are the right mechanism depends on the design parameters of the CfD.

ECI members have several concerns that should be tackled in the way two-way CfDs are designed:

- Subsidising new RES generation through two-way CfDs will reduce liquidity in the market for PPAs and other bilateral contracts.
- If the cost of CfDs is passed onto the bills of electricity consumers, this will further increase prices for electro-intensive industries.

⁵ CEPS, COWI: *Part 2 of the Study on the competitiveness of the renewable energy sector*, 28 June 2019.

- Generators must be incentivised to respond to market signals (e.g. by increasing supply when there is scarcity or reducing generation when prices are negative).
- Fragmentation risks increasing in the single market given the differences in the ability and willingness of member states to deploy such support measures.

To ensure that these basic principles are respected in the design of CfDs in all member states, conditions should be added to the use of CfDs in article 19b.

ECI asks: Article 19b should be amended to make the conclusion of two-way CfDs conditional on:

1. An obligation for generators under two-way CfDs to sell a meaningful share of their output (e.g. 50%) through PPAs or other market-based instruments
2. Ensuring that the redistribution of revenues to final electricity customers is harmonised across EU member states
3. Ensuring that generators are incentivised to respond to market signals by e.g. increasing production during peak hours if possible.

About the European Copper Institute

The European Copper Institute (ECI) is the leading advocate for the copper industry in Europe and the European arm of the International Copper Association (ICA). Our members mine, smelt, refine and recycle copper for use across the economy, in the electricity system, buildings, transport and industry.

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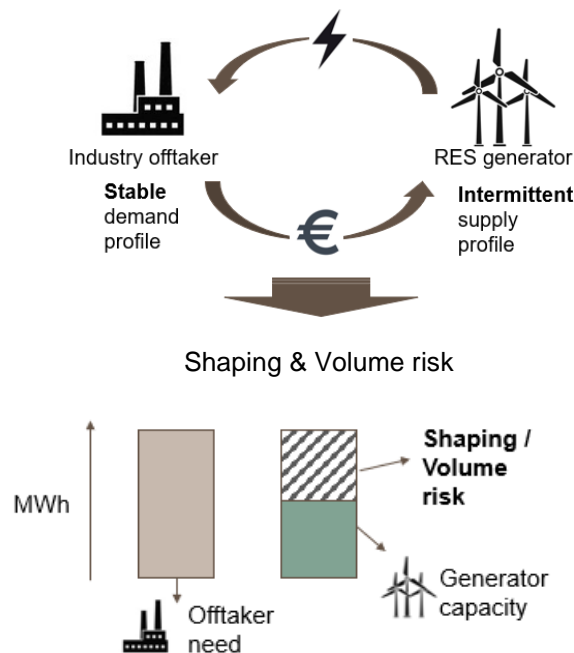
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Annex 1: What is volume and shaping risk? Why do these risks increase the cost of PPAs for industrial consumers?



Volume risk is the risk that the RES generator does not produce the volume of electricity predicted in long-term modelling. **Shaping / profiling risk** is the risk related to the difference in the stable demand profile of an industry offtaker and the variable supply profile of a RES generator: even if overall generation volume is as expected, the hour-to-hour generation volume of the RES generator is variable and will therefore not always match the demand of the offtaker.

Managing volume and shaping/profiling risks increases the cost of a PPA

In a **baseload PPA**, the generator bears the volume and shaping risks, at least partly. The generator can take on these risks to a different degree: an **annual baseload PPA** obligates the generator to supply a certain amount of energy every hour of the year; whereas in a **monthly baseload PPA**, the offtaker agrees to buy different amounts of energy for each month of the year to take into account seasonal differences.

Given that this implies a higher risk for the generator that will have to buy or sell energy on the spot markets when their generation capacity does not match the contracted demand, typically, banks or other lenders to the RES generator will require higher interest rates, and the cost of a baseload PPA will always be higher to the offtaker than that of a pay as produced PPA.

In a **pay as produced PPA**, the industry offtaker bears volume and shaping risks. The offtaker is obligated to purchase the entirety or a percentage of the produced electricity at a pre-determined fixed price. This means the offtaker will need to buy electricity on the spot market when there is a shortfall in supply, which implies a significant risk given the volatility of electricity prices.

The offtaker can manage volume and shaping risks by incurring costs to perform balancing in-house or by contracting a third party such as a utility to manage volume and shaping risks. However, this comes at additional cost that can make the PPA uneconomical for the offtaker.

Today, pay-as-produced PPAs are the most common form of PPA and are often favoured by banks/lenders given that they provide more security for the RES generator.

In practice, given the significant amount of electricity required to power a copper mine, smelter or recycling facility, the amount of electricity that must be sourced through shaping/profiling arrangements is significant. This means that the cost of managing shaping / profiling risk in reality significantly increases the cost of the PPA and can act as a disincentive to conclude PPAs.