

# Recast of the Energy Efficiency Directive

## European Copper Institute position

February 2022

**The European Copper Institute (ECI) supports the EU's climate ambitions for 2030 and 2050 and welcomes the proposed recast of the Energy Efficiency Directive (EED).** Copper is a key material for energy efficiency in all sectors and contributes significantly to the clean energy transition as a sustainable raw material that is essential to decarbonise the economy.

The EED recast proposal goes in the right direction in many areas. We welcome the **mainstreaming of the Energy Efficiency First principle and the strengthening of the exemplary role of public buildings** in driving renovation. The revised provisions on **energy audits and energy management** systems are also useful to help small and medium-sized enterprises (SMEs) catch up on energy efficiency measures, although we believe that mandatory certification can be a barrier to the adoption of energy management systems by SMEs.

**However, more needs to be done to facilitate the exploitation of the significant potential for utilising waste heat from industrial processes under the EED.** It is welcome that under the revised article 23, Member States are mandated to take measures for district heating and cooling infrastructure to be developed where benefits exceed costs.

However, in many cases it will not be possible to direct industrial excess heat to district heating networks, and in such cases, **the conversion of waste heat into electricity for own consumption should be explicitly included under EED Article 23** as an energy savings measure to be considered by Member States in the cost-benefit analyses underlying their comprehensive heating and cooling assessments, **and under Article 24** when assessing the utilisation of waste heat on-site and off-site when large industrial installations are newly planned or refurbished.

Finally, it is important to acknowledge that increasing energy efficiency will sometimes have an impact on the realisation of other environmental objectives, such as environmental protection, resource efficiency or decarbonisation. In some cases, decarbonisation measures such as switching to low carbon energy sources or increasing energy system flexibility may reduce energy efficiency, while the implementation of higher environmental protection standards can increase energy demand. Policymakers should be mindful of such trade-offs and take care to avoid setting conflicting targets.

## The EED should further facilitate the utilisation of waste heat from industrial processes

We estimate a savings opportunity of several terawatt hours per year that could be taken advantage of by capturing waste heat flows in the energy intensive industry, notably in the metals sector, where exothermal reactions take place. This is particularly the case in the copper industry: Despite the fact that approximately two thirds of the excess heat from copper production processes is already recovered and mostly converted into electricity (allowing to meet up to 20% of the sector's electricity demand with self-produced power), there is still potential for further waste heat recovery in the sector. Nevertheless, more important investments are needed to exploit this potential, which requires some support from member states.

The economically feasible supply of industrial excess heat to **district heating networks** accounts for around 8% of the heating demand for space heating in the EU. It is important to take steps to unlock this vast untapped potential and, in this regard, we welcome the revised EED Article 23.

The revised EED Article 23 requires Member States to integrate in their National Energy and Climate Plans (NECP) a comprehensive heating and cooling assessment, requiring municipalities with over 50,000 inhabitants to prepare local heating and cooling plans. Where benefits exceed the costs, **Member States are mandated to take measures for district heating and cooling infrastructure to be developed**. This is a welcome first step that incentivises Member States to invest in infrastructure that can capture industrial excess heat and make it available to industrial and residential consumers.

**However, in many cases it will not be possible to direct excess heat from industrial production processes to third parties, e.g. through a district heating network.** Copper production facilities, for instance, are in many cases in locations far from heat sinks, such as other industries or district heating networks. **In such cases, the best way to valorise excess heat is its conversion to electricity for immediate self-consumption**, given the electro-intensive nature of the copper production processes that require large amounts of electricity.

The current text of the EED (Article 24(4)(b)) mandates Member States to assess the utilisation of waste heat on-site and off-site when large industrial installations are newly planned or refurbished, including an assessment of the economic feasibility of heat to power technologies (under Annex IX (Annex X in proposed EED recast)). However, no provisions are included in relation to improvements that could be made to existing sites where a full refurbishment is not planned.

**To fully exploit the significant potential for utilising waste heat from industrial processes, we believe the following targeted changes should be made to Articles 23 and 24:**

- Mandate Member States to **accommodate the development of installations for the conversion of waste heat to electricity for self-consumption under Article 23(4)**, which mandates Member States to take measures to develop district heating and cooling and/or high efficiency cogeneration where benefits exceed costs; and
- **Explicitly include the conversion of waste heat into electricity for own consumption within the scope of Article 24(4)**, which mandates Member States to assess the utilisation of waste heat on-site and off-site when large industrial installations are newly planned or refurbished.

## SMEs need support to catch up on energy efficiency

### 1. Proposed changes to reinforce the quality and follow-up of energy audits are helpful and should be maintained

Our industry strongly supports the provisions that widen the scope of energy audits, improve their quality, and increase the level of adoption of cost-effective recommendations stemming from those audits.

The proposed Article 11(2) requires the carrying out of energy audits on the basis of the average annual energy consumption (above 10TJ), rather than the size of the company, which ensures that energy savings opportunities in small but energy intensive enterprises are realized as well. It also incentivizes the implementation of the recommendations, without making it mandatory. **We strongly support this approach, as we believe that voluntary schemes result in higher willingness to invest on a more continuous time horizon compared to mandatory schemes<sup>1</sup>.**

Article 11(3b) now stipulates that Member States must put in place quality checks to ensure the validity and accuracy of energy audits – dealing with a much reported weak spot of the current EED. Annex VI adds welcome new criteria such as the need to identify energy efficiency measures and the potential use of renewable energy.

### 2. The obligation for all energy intensive industries to implement energy management is welcome, but needs adjustments

The copper industry strongly supports the introduction of an obligation for all energy-intensive industries to implement energy management practices. Energy management with simplified schemes for SMEs and based on operational metering data, should become the norm to ensure that energy efficiency is further improved in particular in industries lagging behind. However, industry must be supported in the implementation of energy management practices.

Article 11(1) introduces an obligation for all energy-intensive industries to implement *and get certified* on energy management systems. In companies without sufficient organizational capacity, such a certification obligation may not be effective in inducing tangible energy efficiency activities beyond the mere formality of compliance with the requirements. We ask for the EED recast to address this capacity problem and ensure that certification does not become a barrier for the uptake of energy management.

**One option to build such capacity is to support SMEs in the development of simplified and pragmatic approaches that are tailored to the type and size of the company.** As a first step in that direction, ECI developed an application note on energy management tailored to SMEs, based on an extensive selection of literature on the subject. It raises awareness on the benefits of energy management for SMEs and provides clear guidelines for SMEs on how to follow the main principles of energy management systems but in a more pragmatic way without going for certification<sup>2</sup>.

We also welcome that the **definition of 'energy management systems'** (Article 2(14)) was extended with an explicit reference to 'monitoring actual energy consumption', as this shifts the focus of the EED

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<sup>1</sup> This is supported by: Kimura, O. Noda, F. (2014). Does regulation of energy management systems work? A case study of the Energy Conservation Law in Japan. In: Proceedings of ECEEE Industry Summer Study, Arnhem, 2-5 June.

<sup>2</sup> This application note can be retrieved from: [https://help.leonardo-energy.org/hc/en-us/article\\_attachments/4405897601042/Cu0269\\_AN\\_Energy\\_management\\_SMEs\\_v1.pdf](https://help.leonardo-energy.org/hc/en-us/article_attachments/4405897601042/Cu0269_AN_Energy_management_SMEs_v1.pdf)

from energy efficiency *by design* towards energy efficiency *in operation*. Energy metering technologies can provide greater certainty of the energy savings that energy efficiency measures can deliver and improve decision makers' confidence in the uptake of energy savings equipment and appliances.

In addition, as end-use electrification and intermittent renewable energy supply grow in importance, the value of energy efficiency varies increasingly by location, time of day and season. The shift towards energy savings monitoring is therefore also a driver for Demand Side Flexibility. We believe that **more direct provisions should be included to maintain consistent and real energy performance via metering, control and automation.**

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## Copper makes a significant net contribution to the clean energy transition

### Copper is a necessary raw material for decarbonisation technologies

More copper is needed for the clean energy transition. Thanks to its excellent electrical and thermal conductivity, copper delivers energy savings and CO<sub>2</sub> reductions across the electricity system, in transport, buildings and industry. Copper is used in applications such as windmills, power grids, electrical installations, solar panels, electric vehicles, charging infrastructure, building automation, energy storage, solar thermal, wastewater heat recovery, heat pumps and batteries. Overall, **copper-enabled decarbonising technologies can abate approximately 75% of the EU GHG emissions<sup>3</sup>.**

The additional copper demand generated by the energy transition is compatible with the move towards a circular economy. Copper can be recycled endlessly without loss of properties and around 50% of copper produced in the EU today is obtained through recycling. Copper also contributes to resource efficiency as a carrier metal and by-products of copper production include other metals needed for the energy transition, such as nickel.

### The copper industry is committed to reducing its carbon footprint

The copper industry has significantly decreased the per-unit energy consumption of copper through improvements such as flash smelting, use of oxygen, energy management and excess heat recovery. Copper producers are working to further reduce their carbon footprint for instance through increasing electrification and the use of renewable energy. The use of electric trucks and machinery, battery energy storage as well as hydrogen are also being explored. As an industry we are putting together a decarbonisation roadmap to 2050.

#### 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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<sup>3</sup> Copper estimate based on the EU 2050 "High-RES" scenario of the EU 2050 energy roadmap, plus additional assumptions about the uptake of emerging technologies.  
[https://ec.europa.eu/energy/sites/ener/files/documents/2012\\_energy\\_roadmap\\_2050\\_en\\_0.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2012_energy_roadmap_2050_en_0.pdf)  
GHG estimate based on DecarbEurope. <https://decarbEurope.org/>