Piloting the Industrial Decarbonisation Bank with an auction on industrial process heat decarbonization

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Discussion Paper for the 1st Stakeholder Consultation on 16 April 2025

EXECUTIVE SUMMARY

In February 2025, the **Clean Industrial Deal** communication announced a new auction to promote the decarbonization of key industrial processes, drawing on the experience of the hydrogen auctions of the **Innovation Fund**. It is proposed to allocate the **budget of up to EUR 1 billion** through fixed-premium auctions in support of projects that **decarbonise industrial process heat** through innovative electrification technologies such as heat pumps, electric boilers, resistance heating, induction heating, plasma heating and other solutions as well as renewable heat solutions (solar thermal and geothermal). Supporting the decarbonisation of industrial process heat will not only contribute to achieving climate neutrality by the mid-century, but also enhance energy security, modernise the economy and help to maintain industrial competitiveness as well as improving affordability of energy prices. The proposed auctions would target firms across various sectors and directly benefit not only large project promoters, but also smaller companies and mid-caps, helping firms EU-wide exploit their green growth potential. First ideas for **design elements** of the envisioned auction will be discussed during a stakeholder workshop on 16 April 2025, helping to ensure that later draft Terms and Conditions are attractive and workable for project developers. The auction is scheduled to open in December 2025.

1 POLICY RATIONALE OF THE NEW AUCTION

The **Clean Industrial Deal (CID)** is Europe's comprehensive strategy to build the business case for a competitive and decarbonised industry. Published in February 2025, the CID sees the target to fully decarbonize the EU's economy by 2050 as a key driver of growth for European industries. Its six pillars address various framework conditions for clean industrial competitiveness from affordable energy to circular economy, lead markets and investments. To deliver on the CID's promise of mobilizing additional public finance, the Commission announced a new pilot auction under the **Innovation Fund** to be launched by end the end of 2025. Drawing on the experience with the **renewable hydrogen auctions** of the European Hydrogen Bank and equipped with a budget of up to EUR 1 billion, the new auction will support the decarbonisation of industrial process heat across various sectors.

Process heating[1] is the single largest energy use in the European industrial sector, accounting for 47% of industrial energy demand and roughly three quarters of the CO2 emissions generated by industry in 2018 (see **Error! Reference source not found.**).[2] This demonstrates the importance of **decarbonizing industrial process heat** on the path to achieving a climate-neutral industry. Today, energy for industrial process heat is predominantly obtained from the combustion of fossil fuels in the EU, while biomass accounts for 15% and electricity for only around 4% of energy demand.

[1] Industrial process heat refers to the many methods by which heat is used to transform materials into useful products. E.g. heat is used to remove moisture, enable chemical reactions, create steam, treat metals, melt plastics, glass etc.

[2] Fraunhofer ISI (2024).

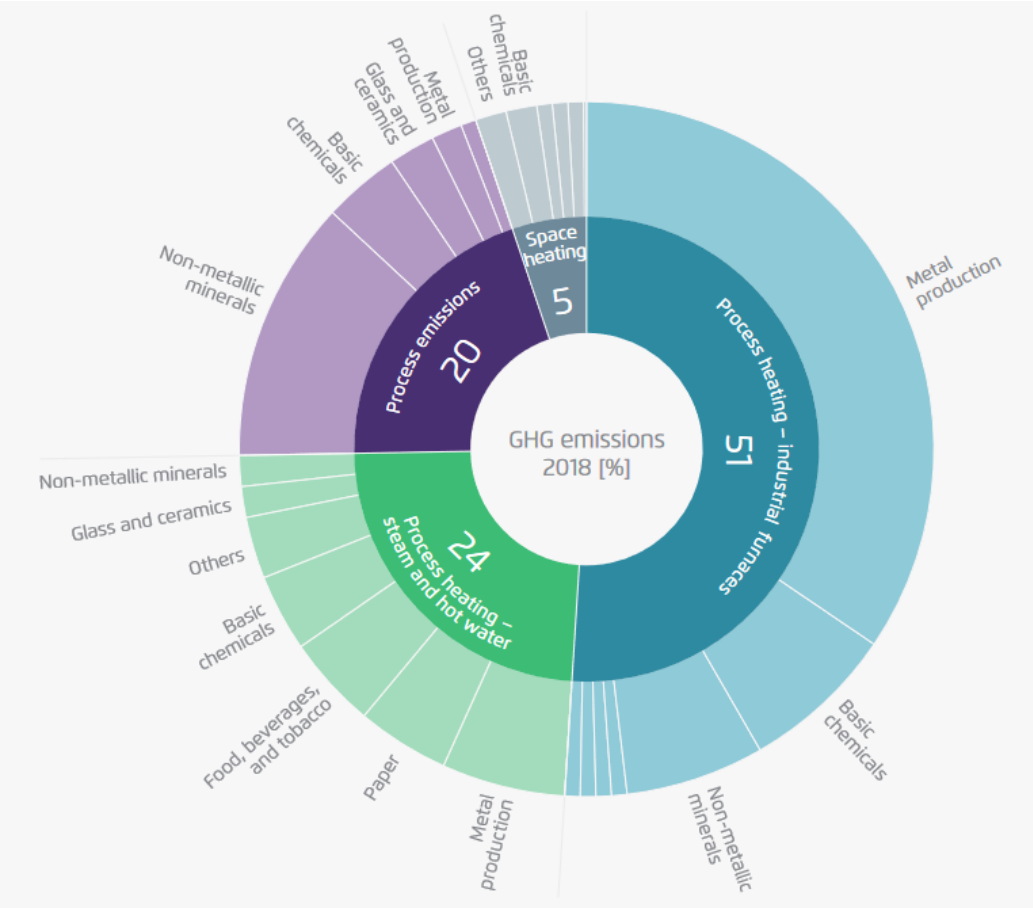

Figure 1: Approximate structure of GHG emissions in the European industry sector, 2018, Fraunhofer ISI

Thanks to rapid innovation, a broad range of decarbonisation technologies is viable today and can address specific heat process needs in different sectors, ranging from low temperatures up to more than 2000°C. **Electrified technologies** (heat pumps, electric boilers, UV, infrared, other radiation-based heating, induction heating, resistance heating, etc.) are often more energy-efficient than using fossil fuels or hydrogen. Several studies suggest that from a technological perspective, electricity-based industrial process heat solutions could reach 90 to 99% of their potential by the mid-2030s in the EU and beyond.[3] However, while direct electrification is seen as a technologically feasible and cost-effective pathway to decarbonization for many industrial production processes, **adoption** of respective technologies remains vastly below its potential – mainly due to remaining cost gaps compared with fossil-fuels-based technologies and perception of long pay-back periods. This points to significant **investment needs** in this area which government support in the form of the planned auction could help lower. Given that adoption of innovative process heat technologies could lead to positive externalities through **knowledge and skills spillovers** on other firms – including across sectors – subsidies would benefit a larger segment than recipient firms only.

Due to the wide range of applications, the envisaged support for decarbonised heat technologies would not only address large project promoters, but also **smaller companies and mid-caps**. The auction would enable a high **coverage of all industrial sectors**, as notably direct electrification of process heat is a suitable decarbonisation pathway for firms in most industrial sectors. Whereas low-temperature solutions are suitable for firms mainly in the pulp and paper and food and beverages industries,

[3] Fraunhofer Isi (2024) (ibid.); McKinsey & Company (2024); Silvia Madeddu et al. (2020).

mid- to high-temperature technologies can be used for chemical, non-ferrous metals and non-metallic mineral production and high-temperature options predominantly in the iron and steel sector and the cement sector. As the auction would cover firms of different sizes and sectors, the focus on industrial process heat electrification can also help ensure a fair **geographical balance,** with strong participation potential in all EU/EEA countries.

3 KEY DESIGN ELEMENTS OF THE AUCTION

Similar to the European Hydrogen Bank auctions, the new auction on industrial process heat decarbonization will be implemented as a fixed-premium auction: the auctioned good is a fixed-premium subsidy in **EUR per unit of electrified heat produced (EUR/MWh or J)**, **or EUR per tonnes of CO2 abated.**

Projects would receive payments from Entry-into-Operation onwards, proportionate to their decarbonized heat production (bid price x volume). Projects could price into their bid any costs that need to be covered to make the project financially viable (CAPEX, OPEX, DEVEX…), including costs for thermal or electricity storage to incentivise **flexible electricity consumption**. Bids would be ranked on price only, combined with qualification criteria assessed on a pass/fail basis. A competitive bidding process would ensure that support is auctioned to those projects that require the lowest subsidy up to the point where the clearing price is reached. More information on how auctions are used as a tool for funding innovative low-carbon technologies under the Innovation Fund is available on the Fund's Website.

4 GOALS OF THE WORKSHOP

To kick-off the preparation for the envisioned auction, a stakeholder workshop with representatives from various industries as well as experts on industrial process heat will take place on **16 April 2025** (in Brussels and online). During the workshop stakeholders will be invited to share their experiences and expertise with decarbonizing industrial process heat to get a better understanding of the current landscape of industrial process heat, particularly with regard to challenges, opportunities and priorities of stakeholders. First ideas for the key design elements of the auction will be explained and discussed, giving stakeholders the opportunity to provide input to the **Terms and Conditions** (T&C) for the auction. In addition, a survey will be published shortly after the workshop and stakeholders will be invited to provide written feedback. Based on the feedback received, T&Cs will be drafted and published by the end of August / early September 2025. Auctions are scheduled to open in December 2025 and the selection of bids is planned for spring 2026.