

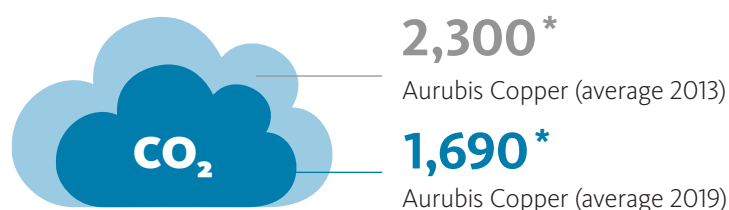
# Environmental Profile of Aurubis Copper

## Already small and still shrinking: The environmental footprint of Aurubis cathode copper

Metals, and copper in particular, will be key for a clean energy transition to reach the EU objective of a carbon-neutral continent by 2050. They play an important role in renewable energies, electrification, and electric vehicles. At the same time, clean energy will only be truly clean with sustainable metal production throughout the entire value chain.

As a sustainably oriented multimetal company, Aurubis takes responsibility for the global challenges of climate change, environmental protection, and resource conservation. We therefore have set the objective of achieving carbon-neutral production by 2050. And we are well on our way: within just six years, the carbon footprint of cathode copper from Aurubis has decreased by a full 25 %. And even before that, the carbon footprint of our cathode copper was a full 40 % below the global average for all copper smelters and refiners.<sup>1</sup>

### Carbon footprint of Aurubis cathode copper



\* CO<sub>2</sub> equivalent per ton of cathode copper in kg

## Life cycle assessment for Aurubis cathode copper

However, looking at CO<sub>2</sub> emissions alone does not give a comprehensive picture of a product's environmental impact. Therefore, we at Aurubis evaluated the environmental profile of our core product, cathode copper, by carrying out a life cycle assessment (LCA). This is the acknowledged method to evaluate the environmental impact of a product over its entire life cycle. In this holistic approach, we took into account all the activities involved in the production of cathode copper from

cradle to gate, such as copper ore extraction, smelting and refining, transportation, energy consumption, and auxiliary materials. The study was conducted in conformance with the ISO standards 14040 and 14044 for life cycle assessment.<sup>2</sup> In the calculation, we included the production from both primary and secondary raw materials combined, i.e., the weighted average for cathode copper across the Aurubis Group.

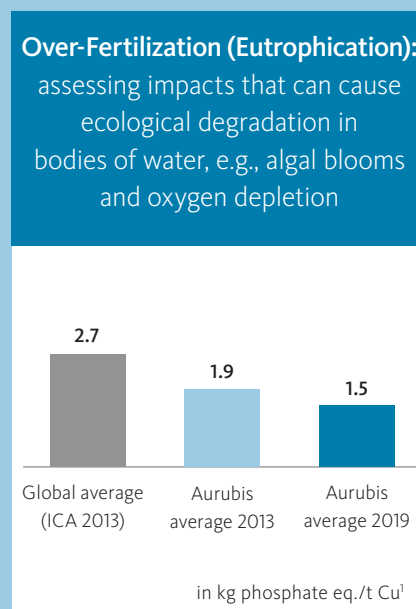
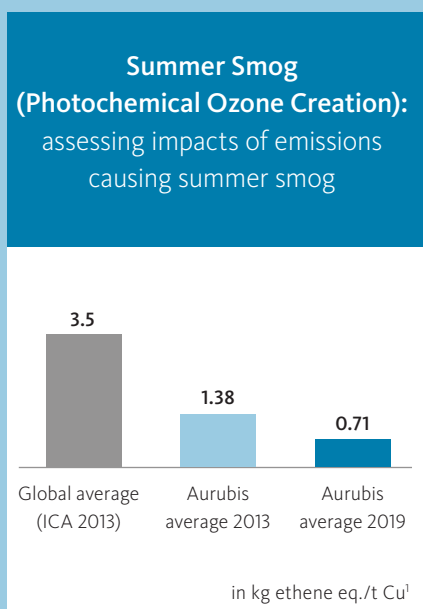
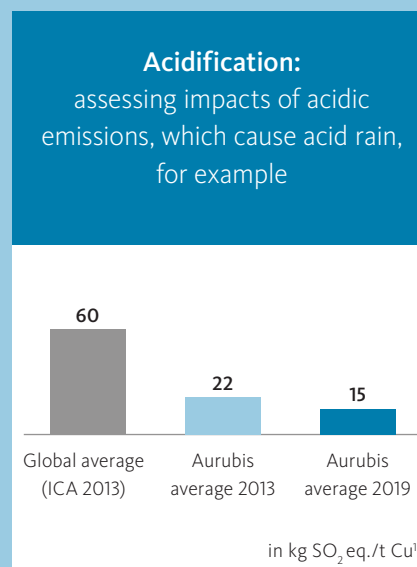
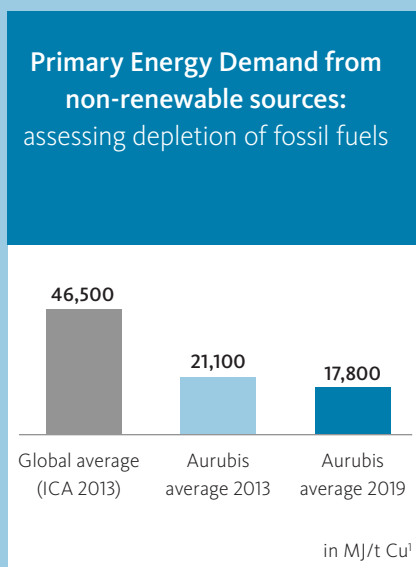
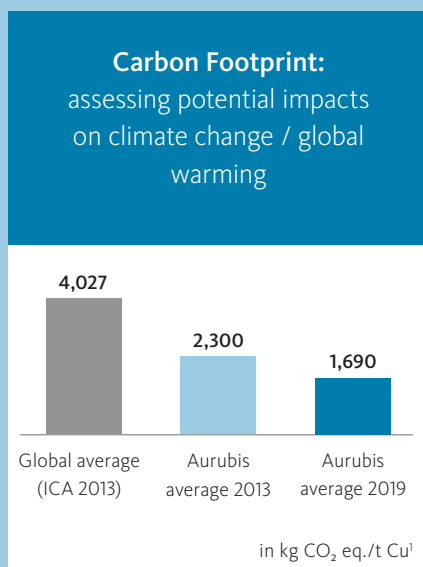
<sup>1</sup> Sources: International Copper Association, Copper Environmental Profile, Sept. 2017 / Aurubis, supported by Quantis. Reference years 2013 and 2019, respectively.

<sup>2</sup> ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework / ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines.

## The results: Our footprint is getting (even) smaller

The results of an update of our earlier life cycle assessment show that the environmental footprint of Aurubis cathode copper has considerably decreased further in all the impact categories investigated. Aurubis thus makes a real contribution to the global challenge of environmental and climate protection.

The key environmental aspects were assessed along a set of so-called impact categories. These impact categories were selected because they represent a broad range of environmental impacts and are each determined by a well-established scientific approach.



**Remark:** The environmental profile of global cathode copper is currently being updated by the International Copper Association (ICA).<sup>2</sup> Aurubis is participating in this study again, and the profile of Aurubis cathode copper will be updated accordingly. Therefore, a direct comparison of Aurubis' 2019 profile with the ICA's 2013 profile should be avoided at this stage.

<sup>1</sup> The diagrams show the industry's global average results based on data for the reference year 2013 (ICA, left bar), and the average results for Aurubis cathode copper for the reference years 2013 (middle bar) and 2019 (right bar).

<sup>2</sup> The International Copper Association, with its 35 members, is an organization that represents the global copper industry.

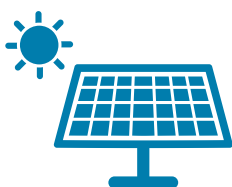
## How we got there: Improvements by constantly implementing environmental and climate measures

The improvements achieved were only possible with major investments into environmental measures that reach ambitious environmental standards. Aurubis also develops innovative and energy-efficient technologies in environmental protection that often set new benchmarks worldwide.



### Emission reduction

To reduce emissions to air, we have installed an innovative gas cleaning system in our primary smelter in Pirdop (Bulgaria), to name one example. This installation uses a modern process, a technology called Sulfacid, that is unique for Bulgaria and for the entire copper smelting industry.



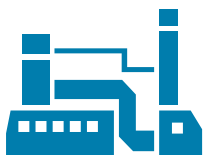
### Energy-efficient technologies

We also invested in energy-efficient and low-carbon technologies at all sites across the Aurubis Group, implemented measures to save energy, facilitated the switch to renewable energies, and enabled decarbonization. For example, we implemented projects such as our industrial heat project at the Hamburg plant, which uses the excess heat from production processes for district heating. With this project, HafenCity East is the first urban neighborhood near our Hamburg plant to be almost fully supplied with CO<sub>2</sub>-free industrial heat.



### Extending recycling capacities

The extension of Aurubis' recycling capacities and the acquisition of the recycling specialist Metallo also contributed to the improvements of our overall footprint on the environment. With the recycling plants in Beerse (Belgium) and Berango (Spain), Aurubis extended the recycling of secondary materials significantly, which goes along with a lower footprint in the LCA results.



### Enhanced multimetal recovery

The efforts of Aurubis to convert the raw materials as completely as possible into marketable products also help to reduce our overall footprint. Aurubis is in the process of strengthening this advantage with the goal of becoming the most efficient and sustainable integrated smelter network worldwide. This network encompasses the metallurgical infrastructure that enables enhanced multimetal recovery.

With all measures we implemented, we reduced the direct emissions of pollutants such as sulfur dioxide and dust as well as the greenhouse gas emissions. At the same time, our recycling and the efficiency of metal recovery increased, which is now visible in the improved results in our life cycle assessment.



### **We are committed: Carbon-neutral by 2050**

The EU has an ambitious goal for 2050: a carbon-neutral society and economy. And Aurubis has followed suit: we have set the objective of achieving carbon-neutral production by 2050. In late 2019, **we committed to the Business Ambition for 1.5 °C**, an initiative of the UN Global Compact, committing the Group to setting science-based targets to reduce the greenhouse gas CO<sub>2</sub>. Our target has been validated in the meantime:

- » **reduce direct and indirect emissions by 50 %**, and
- » **reduce upstream/downstream emissions by 24 %** until 2030 compared to 2018.

The targets cover the company's greenhouse gas emissions as defined by the GHG Protocol Corporate Standard.

### **By taking part in this initiative, we are contributing to achieving the 1.5 °C target of the Paris Climate Agreement.**

And we take our responsibility seriously: to make our achievements in environmental protection and our carbon footprint transparent, we publish our own reporting, and we participate in sustainability ratings and rankings, such as the Carbon Disclosure Project (a non-profit organization that advocates for climate reporting).

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