

Buying sustainable stainless steel: Five things you need to know



Price used to be the most important factor when choosing between different suppliers – but times are changing. With world leaders signing up to climate targets, stainless steel products now need to come with a clean bill of health when it comes to sustainability.

It's a big change of mindset. Everyone knows that contracts can have hidden costs and it's the same when it comes to hidden sustainability costs. If you use these five principles, you can be confident that you are comparing stainless steel providers on equal terms.

1. Ask for product-specific carbon footprint data
2. Compare recycled material content
3. Check the companies' sustainability work, ratings, and certifications
4. Ask for expert advice in choosing the right stainless steel grade
5. Check offering for low-emission steel products

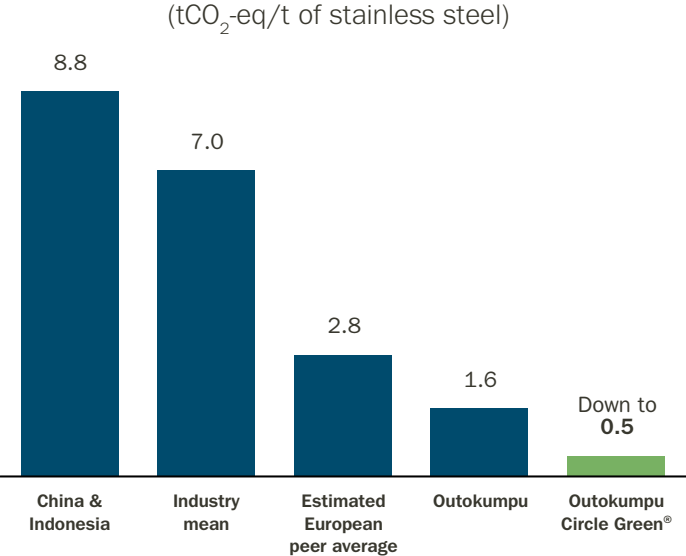
1. Ask for product-specific carbon footprint data

When you invite suppliers to tender, ask them to report their product-specific carbon footprint. It is important to make sure the reported carbon footprint is based on the ISO 14040 standard which assesses the environmental aspects of a product in its entire life cycle. Outokumpu's stainless steel has up to 75% lower carbon footprint than the global industry average.*

This standard breaks the carbon footprint into three scopes:

- **Scope 1** accounts for a supplier's direct carbon dioxide (CO₂) emissions. For a stainless steel supplier, this could be from burning fuels to heat furnaces.
- **Scope 2** covers indirect emissions from generating electricity that the supplier uses to power equipment such as electric arc furnaces and motors in rolling mills.
- **Scope 3** emissions are from the production of raw materials, including mining and processing of ores, or sourcing and sorting of scrap for recycling. For stainless steel, this is often the largest source of emissions.

The total emissions from all three scopes is the most important figure as scopes 1 to 3 can vary widely between suppliers, see Value chain emission comparison.



Product carbon footprint.

Read more about comparing carbon footprints of stainless steel: [Read more](#)

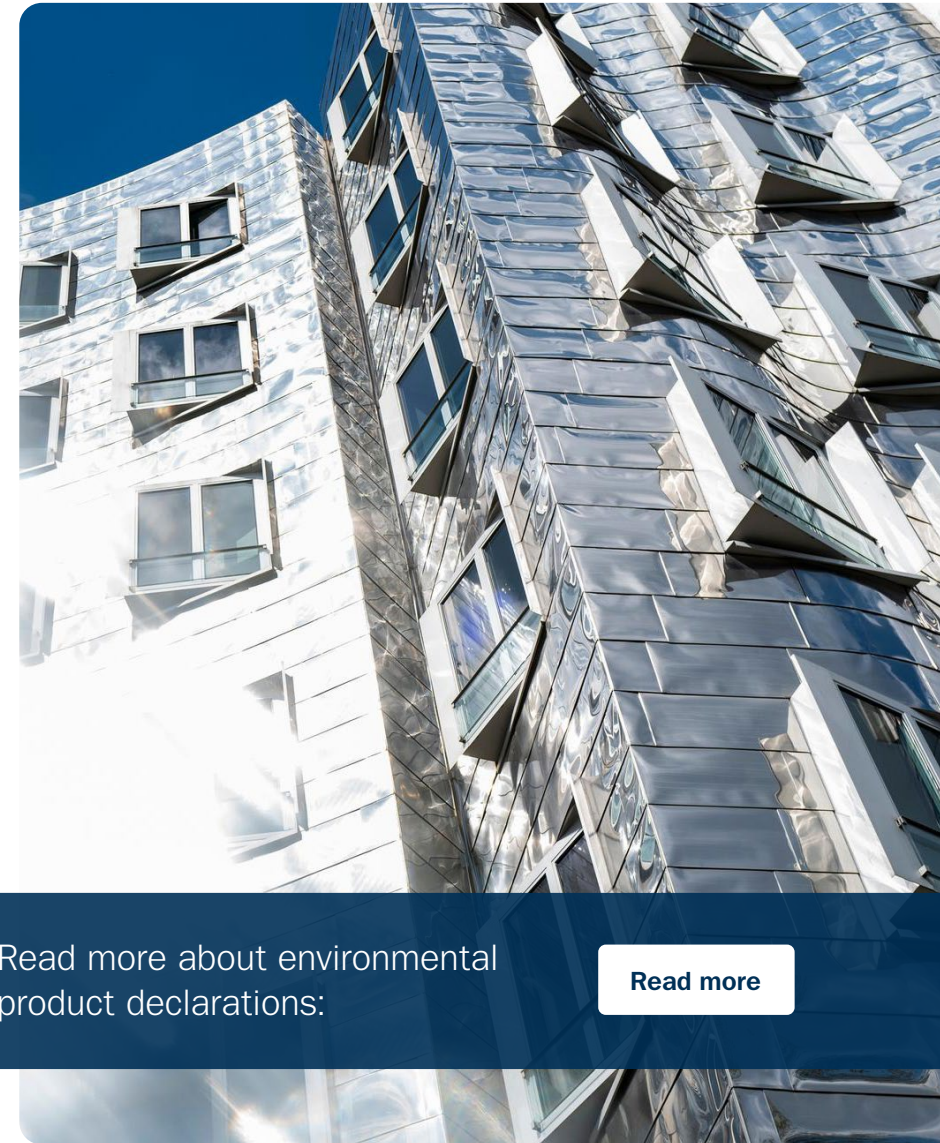
*) Outokumpu's average product carbon footprint (2024): 1.6 kg CO₂ per kg of stainless steel based on lifecycle assessment. Global average carbon footprint of stainless steel: (2024): 7 kg CO₂ per kg of stainless steel (Outokumpu's calculation based on data provided by CRU, worldstainless, and Kobilde & Partners AB).



The total emissions from all three scopes is the most important figure as scopes 1 to 3 can vary widely between suppliers.

It is also important to look at product-specific carbon footprints, not just industry averages. For example, Outokumpu can provide product-specific carbon footprint data based on continuous follow-up of production data. Every batch of every steel grade produced by Outokumpu will come with its own carbon footprint certificate.

However, it's also important to know that the data is reliable. That's where the EPDs help as it is required to have the EPDs certified by third-party – a stringent measure that Outokumpu has implemented.



Read more about environmental product declarations:

[Read more](#)

2. Compare recycled content

Another way to measure sustainability is by comparing the percentage of recycled content used in the manufacture of stainless steel.

It's worth knowing that the level of recycled content in steel is closely linked to its carbon footprint. That's because it uses less energy to recycle stainless steel than it does to produce new material by mining and processing virgin raw ores. According to Germany's Fraunhofer Institute, every tonne of austenitic scrap used in the production of stainless steel saves 4.3 tonnes of CO₂ emissions.

Outokumpu's total input of recycled material rate is more than 90 percent, and in 2024 the input of recycled material reached a record high level of 95%. In Outokumpu Circle Green® products, share of low-emission raw materials such as scrap can be up to 100%.

When choosing between different materials, it's worth considering how the material is handled after its use. Stainless steel is an essential part of the circular economy as it is 100% recyclable at the end of its life-cycle. Stainless steel can lead multiple lives without any loss in quality and helps prolong the lifespans of products.



3. Check the companies' sustainability work, ratings, and certifications

You can also compare steel producers' sustainability efforts by looking into their annual reports and websites. By reviewing these, you can see the ambition of the companies' sustainability targets and progress towards them.

Target and its verification

For example, Outokumpu set an ambitious science-based climate target to keep the 1.5 °C ambition possible. We are committed to reduce emissions across Scope 1, 2 and 3 by 42% by 2030 from 2016 baseline. The target is approved by a third-party Science Based Targets Initiative (SBTi).

Progress

By the end of 2024, Outokumpu was ahead of its target and had reduced 32% of our emission intensity target from year 2016.

But it's not just about the environment. Sustainability front-runners have targets set for the full scope of sustainability topics. For example, Outokumpu has a long-term vision of zero accidents and to have minimum of 30% of diverse leaders in all international management teams by the end of 2025.

Sustainability ratings and certifications

In addition, one can have a look how companies have performed in different sustainability ratings to get third-party evaluation on their sustainability work. There are also sector-specific sustainability schemes and standards, such as ResponsibleSteel, that are based on externally audited sustainability criteria on environment, social and governance topics.

Outokumpu received ResponsibleSteel certification for all of its manufacturing sites as the first steel industry company in the Nordics in spring 2024.



In 2024, we helped our customers to reduce their supply chain emissions by 10 million tonnes compared to the global average carbon footprint of stainless steel, corresponding to over 51 million train trips around the world.





4. Ask for expert advice

While production is an important aspect of sustainable stainless steel, it's only a small part of the picture.

Engineers used to choose products and systems based on purchase cost. But today, many now base their decisions on Life Cycle Costing, which covers the monetary cost of purchase, operation, maintenance and end-of-life disposal.

Choosing the right grade can extend the useful life of an installation by years or even decades. For example, Tokyo Water Board adopted stainless steel pipes for its water distribution network. These are designed to last 100 years, in comparison with a 20-year lifespan of other modern materials. The reduced risk of system failure is not only limiting leakage, but it also drastically reduces the need for disruptive street works.

With this in mind, the next step is to purchase material based on Life Cycle Assessment, which considers the environmental cost of the asset itself, as well as the environmental cost to the wider society during the lifetime of that installation.

Choice of grade can make a big difference to lifetime of a product or system. That's particularly true in applications with corrosive atmospheres. Outokumpu's experts have helped engineers around the world to choose the right grade in marine, sour gas and many more corrosive environments.

So, if you need a solution for an exceptionally corrosive environment, Outokumpu's experts can evaluate it and suggest a solution.



5. Check offering for low-emission steel products

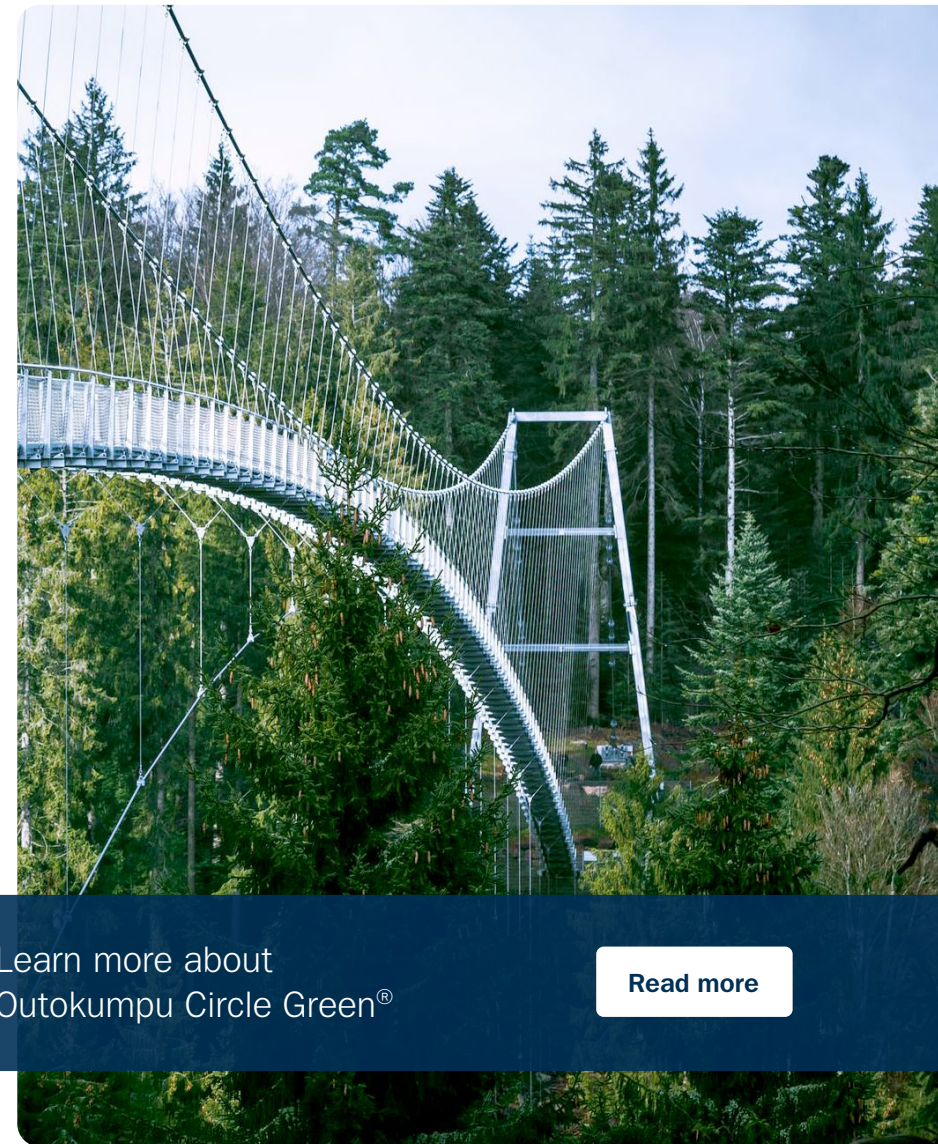
The final area where you can compare suppliers is to check whether they have included low-emission products in their product portfolio.

Compared to the producer's conventional offering, these products can differ in, for example, raw materials, used energy sources or production methods.

Checking a producer's offering for low-emission steel products can help you to achieve lower carbon footprints for your own products. For example, Outokumpu Circle Green® products can have up to 93% lower carbon footprint compared to the industry average production.*

In Outokumpu Circle Green products, the unprecedented emission reduction has been achieved with improvements throughout the whole stainless steel production chain. The products can include up to 100% low-emission raw materials such as scrap, renewable energy has been used in the production and the entire production process was reinvented to achieve the lowest possible carbon footprint.

*Global average carbon footprint of stainless steel: (2024);7 kg CO₂e per kg of stainless steel (Outokumpu's calculation based on data provided by CRU, worldstainless and Kobilde & Partners AB). Outokumpu Circle Green CO₂ emissions: down to 0.5 kilos of CO₂e per kg of stainless steel.



Learn more about
Outokumpu Circle Green®

[Read more](#)

Working towards a world that lasts forever

We work with our customers and partners to create long lasting solutions for the tools of modern life and the world's most critical problems: clean energy, clean water, and efficient infrastructure. Because we believe in a world that lasts forever.



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