

FAQs on iron and steel making for One Planet – One Atmosphere – One People

These questions will be updated periodically

What is Steel and why is it important?

1. What is steel at its basic level?

Iron is made by removing oxygen and other impurities from iron ore. When iron is combined with carbon, recycled steel and small amounts of other elements it becomes steel. Source: <https://worldsteel.org/>

2. How important is steel to our way of life?

Steel is the foundation of the last 100 years of modern progress. It is the great collaborator, working together with all other materials to advance growth and development. Steel will be equally fundamental to meeting the challenges of the next 100. Source: <https://worldsteel.org/>

3. Why is steel important to modern day life?

Without steel, countries would be dependent on others for basic needs such as bridges, buildings, military weapons and vehicles, electrical grid, transformers, etc. Steel is used in our home appliances, our radiators, vehicles, brings water via pipes, skyscrapers, bridges, and boats to name a few.

The housing and construction industry is the largest consumer of steel in today's global economy, using more than 50% of global steel production. Steel is a critical resource and the need for steel to support other industries is increasing. The average world steel use per capita has steadily increased from 150kg in 2001 to around 220 kg in 2023.

Steel creates and maintains jobs. Globally, over 6 million people work in the steel industry. And for every two steel jobs another 13 are supported through it's the supply chain. Source: <https://worldsteel.org/>

Steel's impact on our planet, environment and with a circular economy

4. Isn't steel manufacturing a significant carbon emitter?

In aggregate, yes steel is one of the heaviest emitters of greenhouse gases (GHG). Steel manufacturing results in 1.85 tonnes of CO₂ per tonne of steel produced, according to statistics published by McKinsey and the World Steel Association in 2022. However, this is a weighted average between the two main production methods for steel. The Blast Furnace-Basic Oxygen Furnace (BF-BOF) “primary” manufacturing averages 1.987 tonnes of CO₂ per tonne. Electric Arc Furnace (EAF) “secondary” manufacturing, which uses 100% recycled steel, averages 0.357 tonnes of CO₂ per tonne. Source: <https://www.sustainable-ships.org/stories/2022/carbon-footprint-steel>

5. Does steel use water and for what purpose?

Yes, as it is used in cooling of not only excess heat but actually in the production of steel itself. In the global steel industry, around 90% of the water used is cleaned, cooled and returned to its source. In many cases, water returned to rivers and other sources is often cleaner than when extracted. Of the water lost, most is due to evaporation. Source: <https://worldsteel.org/>

6. If steel is predominately iron, how much iron is left in the world?

As it stands, iron is one of the most abundant elements on Earth, accounting for roughly 5% of the planet’s crust. In 2022, it was estimated that there were roughly 180 billion tonnes of crude iron ore reserves globally. These reserves are distributed across identified and yet-to-be-discovered deposits. Source: <https://www.rapidmetals.co.uk/how-much-iron-is-left-in-the-world-will-we-run-out-and-what-happens-if-we-do/#:-:text=A%20Worldwide%20Overview%20of%20Iron%20Reserves&text=In%202022%2C%20it%20was%20estimated.to%2De%2Ddiscovered%20deposits>

7. Could the world run out of iron ore?

Although nothing can be said with certainty, it’s highly unlikely that we’re set to run out of iron. Vast reserves are available, as well as the constant advances in mining technology and ongoing recycling efforts help to guarantee a steady supply of iron for years to come. Source: <https://www.rapidmetals.co.uk/how-much-iron-is-left-in-the-world-will-we-run-out-and-what-happens-if-we-do/#:-:text=A%20Worldwide%20Overview%20of%20Iron%20Reserves&text=In%202022%2C%20it%20was%20estimated.to%2De%2Ddiscovered%20deposits>.

8. What is the steel industry doing to minimize its impact on natural resources?

Steel is the most recycled material in the world. Since 1900 the global steel industry has recycled over 25 billion tonnes of steel. This has reduced iron ore consumption by around 33 billion tonnes, as well as cutting coal consumption by 16 billion tonnes. As blast furnace and basic oxygen furnace steel making get replaced by electric arc furnace steel making, recycling rates will increase.

As an industry, steel manufacturing energy use has been reduced by around 60% per tonne in the last 50 years. Now new low emission steel making plans are building

stronger demand for renewables energy sources and projects to be built. Source: <https://worldsteel.org/>

9. What is the steel industry doing to contribute to a circular economy?

Steel is the most recycled material in the world, at nearly 700 Mt recycled annually.

At the end of a product's life, steel's 100% recyclability ensures that the resources invested in its production are not lost and can be infinitely reused.

In 2022, the recovery and use of steel industry co-products reached a worldwide material efficiency rate of 97.65%. In the US, end of life cycle re-use of vehicles is nearly 100%, this is in part due to the demand created by the American steel industry evolving from high emission primary steelmaking to secondary, scrap based EAF steelmaking. The result has been the industry is leading efforts in reduce, reuse and recycle. Source: <https://worldsteel.org/>

10. How is the steel industry contributing to renewable energy?

Steel is the main material used in delivering renewable energy: solar, tidal, geothermal and wind. Perhaps more important is the demand creation worldwide for renewables. For steel to decarbonize, it requires renewable or fossil free energy. As in the case for Finland, while energy demand has been on the decline, the country is leaning into renewable generation projects. But these renewable energy projects are not moving forward due to lack of and declining domestic energy demand.

11. How do steel companies embrace all ESG, not just environment?

Social responsibility begins team members with responsible labor practices, ensuring good wages, worker safety, and opportunities for professional development. Additionally, the industry maintains community outreach and reinvestments part of its profits in the community in which they operate.

Deeper dive into steelmaking and why Blastr

12. If Electric Arc Furnace (EAF) steel making is so much better, why shouldn't all steel be manufactured using only scrap in the EAF to reduce GHG emissions?

While EAF manufacturing emits less carbon, the amount of scrap steel is insufficient to fulfil the steel demand using EAF manufacturing exclusively in today's industry.

In addition to the fact that steel demand is still growing, and we need more ‘virgin’ [primary] steel. Source: <https://www.sustainable-ships.org/stories/2022/carbon-footprint-steel>

13. Is virgin steel the same as virgin iron?

Actually, virgin steel is often mis-used. Virgin or primary steel is made from using virgin iron. Secondary steel is made from using 100% scrap.

Primary steel is therefore made from virgin iron ore. Virgin iron ore can be produced from primarily one of two production methods 1) blast furnace (BF) process or 2) direct reduction iron (DRI) process.

A blast furnace plant burns coke, which is a coal-based fuel, to chemically reduce iron ore at high temperatures (up to 1,300°C) to create pig iron (virgin iron). Source:

<https://www.materialspalette.org/steel/>

14. The second method to produce primary iron is direct reduced iron or DRI, how does this compare to pig iron from a blast furnace?

A direct reduced iron plant utilizes a reducing gas, typically a mixture of mostly natural gas and some hydrogen, which reacts with iron ore at lower temperatures than in a BOF, to make sponge iron, also called direct reduced iron (DRI) or hot-briquetted iron (HBI) can also be used in BOF or EAF. However, DRI/HBI has roughly 60% less embodied emissions than pig iron so roughly 600Kg of CO₂. Source: <https://www.energy-innovation-austria.at/article/co2-minimierte-roheisenproduktion/?lang=en#:~:text=Per%20tonne%20of%20pig%20iron,per%20tonne%20of%20pig%20iron>. And

<https://www.energy-innovation-austria.at/article/co2-minimierte-roheisenproduktion/?lang=en#:~:text=Per%20tonne%20of%20pig%20iron,per%20tonne%20of%20pig%20iron>.

<https://vale.com/ja/w/vale-signs-agreements-to-develop-mega-hubs-in-the-middle-east-and-provide-decarbonization-solutions-for-steelmaking-1>

15. Can pig iron be used with scrap in an electric arc furnace?

Yes, pig iron can be used in either the basic oxygen furnace (BOF) or electric arc furnace (EAF) to make crude steel. However, pig iron has 1,450KG of gross embodied CO₂ per tonne (of pig iron). Source: <https://www.energy-innovation-austria.at/article/co2-minimierte-roheisenproduktion/?lang=en#:~:text=Per%20tonne%20of%20pig%20iron,per%20tonne%20of%20pig%20iron>.

<https://www.energy-innovation-austria.at/article/co2-minimierte-roheisenproduktion/?lang=en#:~:text=Per%20tonne%20of%20pig%20iron,per%20tonne%20of%20pig%20iron>.

16. Can the most advanced steel products used in automotive, energy pipes and wind towers be made from EAF steel?

Yes. With a balance of recycled scrap and virgin iron from DRI plants, the transition to low emitting technologies can still meet demand for the most advanced and highest quality steels, such as exposed automotive, high strength, electrical, and food container steels – all while significantly reducing the CO₂ embodiment in these products. Source:

<https://www.wiley.law/article-The-Industry-Has-Spoken-You-Do-Not-Need-High-Emitting-Blast-Furnaces-to-Make-the-Most-Advanced-Steel-Products>

17. What role do entrepreneurial start-ups play in decarbonization of the steel industry? Why are new entrants important?

Established companies face inherent challenges in adopting disruptive technologies, as their existing value networks and organizational structures are not conducive to embracing these innovations (often referred to as *The Innovators Dilemma*).

The approach to maintaining existing business units differs from entirely new business models, which are more conducive to an entrepreneurial model. Disruptive technologies are often more attractive to entrepreneurial entrants as compared to established companies and are more risk averse, as well as overly reliant on legacy systems and culture. Source: <https://www.linkedin.com/pulse/concise-disruption-brief-summary-innovators-dilemma-clayton-smith/>

18. Has the global steel industry experienced any recent disruptive technologies, particularly that successfully attracted new entrepreneurial entrants?

Yes, the best example is the modern history of [American] steel minimills, which eventually created the competitive environment that caused higher emission [BF-BOF] mills between the mid-1960s to mid-1990s to close in the US.

Steel had historically been produced exclusively in BF-BOF steel mills in the US, which transform coal, iron ore, and limestone into steel – the BF-BOF production method. Eventually, most BF-BOF mills found they were put out of business. Source:

<https://www.coursehero.com/lit/The-Innovators-Dilemma-When-New-Technologies-Cause-Great-Firms-to-Fail/part-1-chapter-4-summary/>

Steel manufacturing was at one point the most important industry in the United States. It was one of the biggest employers, a driver of economic growth, and it shaped the country's national security.

In the second half of the 20th century, foreign steel companies gained more market power in the U.S. because American firms were hesitant to change and invest in newer technologies. Only when a smaller [entrepreneurial] company took a chance with disruptive technology was the domestic industry changed, restoring American strength in steel. Source: <https://www.npr.org/2024/03/20/1197958509/steel-mini-mill-nucor-bethlehem> [The European steel industry is at a similar tipping point.](#)

19. Does Blastr wish to put all existing BF-BOF producers out of business?

No. While displacing higher emission steel plants is the reality, existing companies need to make those business decisions. A rising tide lifts all boats. Entrepreneurial start-ups, like Blastr, can help enable the European steel industry to take greater risk, move faster, be stronger, more innovative and more sustainable, to preserve the European steel and automotive industries and ensure continued economic independence.

20. What if existing European steel producers do not adapt or fail to act fast enough?

A 90% headline target (GHG emissions reduction) for the whole of the EU by 2040 equates to nearly full decarbonization of energy intensive industries such as steel. If a drastic ramp-up of investments in decarbonizing the steel industry fails, there is a real risk to Europe's economic and climate policies and the interaction with energy transition, foreign trade and global competition.

And this could contribute to de-industrialization, thus undermining the EU's resilience and strategic autonomy. Source: <https://www.eurofer.eu/press-releases/2040-target-enabling-conditions-for-unlocking-investment-in-industrial-transition-cannot-wait-any-longer-warns-eurofer>

Inkoo and the 1.5-degrees Celsius target

21. Why Inkoo/Ingå?

In the era of decarbonization, backward and forward integration of raw materials supply is critical. Location of steel production is increasingly determined by availability of clean energy, which is due to the costs and difficulties to transport clean energy (including hydrogen) large distances; it is more efficient to transport DRI/HBI or semi-finished steel products rather than clean energy. New steel lower emission steel production will replace older higher emission mills. These new mills will not be in the same geographies because energy prices and logistics are not favorable. These new locations will create industry clusters, re-writing economic fortunes in new countries and regions. Source: https://www.mattech-journal.org/articles/mattech/full_html/2023/04/mt20230025/mt20230025.html

22. Inkoo does not have a steel mill today, so building here is not helping the 1.5-Degrees Celsius target?

GHG emissions unfortunately have no borders – We are one people under one atmosphere. Source: <https://ourworld.unu.edu/en/emissions-without-borders-the-problematic-geography-of-mitigation>

23. I thought greenhouses gases are required to maintain life?

Absolutely are, but a proper balance is needed. 'Greenhouse gases' are crucial to keeping our planet at a suitable [balanced] temperature for life. Without the natural greenhouse effect, the heat emitted by the Earth would simply pass outwards from the Earth's surface into space and the Earth would have an average temperature of about -20°C – not inhabitable. Source: <https://www.bgs.ac.uk/discovering-geology/climate-change/how-does-the-greenhouse-effect-work/#:~:text='Greenhouse%20gases'%20are%20crucial%20to,of%20about%20%2D20%C2%B0C.>

24. How far can greenhouse gases (GHGs) travel from their source?

GHGs are transported in the atmosphere with the winds: they can travel thousands of kilometers. Source: <https://www.icos-cp.eu/science-and-impact/climate-change/ghgs#:~:text=GHGs%20are%20transported%20in%20the,travel%20even%20thousands%20of%20kilometres>

25. So why is CO₂ (Carbon Dioxide) often referred to as bad if it helps make earth habitable?

Human activities have raised the atmosphere's carbon dioxide content by 50% in less than 200 years. Source: <https://climate.nasa.gov/vital-signs/carbon-dioxide/?intent=121>

26. Does climate change in other parts of the world affect me and my family and Finland as a whole?

The impacts of climate change are diverse and extend worldwide. The increase in the atmosphere's carbon dioxide content stresses ecosystems and accelerates global biodiversity loss. Droughts, floods, and other extreme weather events are increasing in different parts of the world. Because the effects are not confined to local areas, they reverberate into global food production, as well as the stability of the world economy and communities – and, consequently, also in Europe and more specifically Finland.

Source: <https://www.ymparisto.fi/en/state-environment/climate-change/climate-change-advances>

27. Do GHG's emitted in one country impact other countries?

Yes. CO₂ emissions are released into a border-less atmosphere. Consequently, there is no means to stop CO₂ emissions from moving from one country or region, to another, which means that CO₂ emissions cannot be stopped at a border or backyard. Source:

<https://ourworld.unu.edu/en/emissions-without-borders-the-problematic-geography-of-mitigation>

A link to NASA visualization to help appreciate the borderless nature of CO₂.

https://svs.gsfc.nasa.gov/4949/#media_group_316180

28. Can climate change impact agriculture and soil?

Many soil properties are affected by changes in temperature and rainfall. Projected changes to our climate will therefore affect our soils. Degradation of our soils will have environmental impacts on our vegetation and water quality. It will also affect our agricultural production. Source: <https://www.climatechange.environment.nsw.gov.au/impacts-climate-change/natural-environment/soils#:~:text=Many%20soil%20properties%20are%20affected,also%20affect%20our%20agricultural%20production.>

29. But does climate change affect my backyard here in Southern Finland?

As the climate gets warmer, the soil does not freeze as deep as it once did. The change is more noticeable in the south than in the north. In Lapland, soil frost will be approximately one quarter less by mid-century, and towards the end of the century, as much as 30-40% less. Inland areas in southern Finland will see less than one half of the depth of soil frost we have now. In the southwest archipelago, there would be no soil frost at all at most times. Source: <https://www.climateguide.fi/articles/thinner-layer-of-soil-frost>

30. What does “less soil frost” due to the warming planet mean to me?

Climate change is creating new opportunities for agriculture, by providing longer and warmer growing seasons, and thawing frozen ground. But farmers in permafrost regions face many challenges, including subsidence in their field.

Subsidence is a serious problem for farmers in permafrost regions as fertile topsoil is lost and areas may become waterlogged. “Subsidence also damages farm infrastructure, such as fences and buildings, while making it difficult or impossible to use farm equipment in fields that are no longer level. Source: <https://futuraumcareers.com/farming-on-permafrost>

Blastr impact on Inkoo

31. How do Inkoo residents know that Blastr will actually produce steel with low emissions as promised?

The recent pace of this transition to lower emission steel, has caught policy and standards off guard. Today, unfortunately, there is no standard definition or classification for green steel or zero-carbon steel, etc.

However, Blastr does support the development of a global standard that includes a mine-to-gate value chain CO2 embodiment number. One such effort is the Steel Climate Standard. Which establishes a holistic comprehensive decarbonization program that includes product-based standards as well as a framework for setting science-based emissions targets for steel producers.

The Steel Climate Standard defines a clear boundary for Scope 1, Scope 2, and Scope 3 sources and includes applicable GHG pollutants as well as activities from mining to hot rolling. Source: <https://globalsteelclimatecouncil.org/the-standard/>

32. How significant is the steel industry’s impact on Global GHG emissions?

Global steel production causes approximately 7 to 9 percent of global greenhouse gas emissions and 28 percent of all industrial emissions (globally). However, simply changing from BOF to EAF steelmaking can reduce that by 40 to 60%. Source: https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/eu-climate-targets-how-decarbonise-steel-industry-2022-06-15_en

33. What is required for the EU steel industry to meet the Europe's GHG emissions targets?

The European steel industry is responsible for around 5% of all CO₂ emissions from manufacturing. In order to meet EU climate targets, the EU steel industry must develop and commercialize new low-CO₂ technologies within the next 5-10 years. Source: https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/eu-climate-targets-how-decarbonise-steel-industry-2022-06-15_en

34. Why is developing lower emission steel production important?

Steel is a building block of the global economy. It is used by almost every industry to some extent, which suggests a primary reason why steel should be at the head of the line for decarbonization. Source: <https://www.weforum.org/agenda/2023/08/why-steel-can-be-an-unexpected-leader-in-decarbonization/>

35. Why is low emission steel so important to producers of steel intensive products like home appliances, automobiles and home heating radiators?

When steel is purchased for further processing into finished products, steel is the buyer's scope 3 emissions. And for steel intensive products, such as home appliances, these scope 3 emissions represent 90% of the products embodied emissions. Source: https://cdn.cdp.net/cdp-production/cms/guidance_docs/pdfs/000/003/504/original/CDP-technical-note-scope-3-relevance-by-sector.pdf

36. Is "green steel" and start-up projects really possible?

The difference between current EU production and a green steel future: today's electric arc furnaces run on conventional energy powered by a mixture of sources, including natural gas and coal. In a green steel future, they would be powered only by CO₂-free energy, which can be provided by either hydro, nuclear, wind, and solar energy or a combination of these energy sources. All these technologies exist, which is a big advantage for steel. Source: <https://www.weforum.org/agenda/2023/08/why-steel-can-be-an-unexpected-leader-in-decarbonization/>

37. Is using the term "green steel" greenwashing?

Although there's no universal definition for green steel, e.g. WWF Suomi use it to refer to steel produced with low emissions. A common denominator for all of the low-emission production methods is the use of electrically powered arc furnaces instead of coal-

powered blast furnaces. Source: <https://wwf.fi/en/ready-for-green-steel/> Electric power is cleaner than coal power and, therefore, considered by many to be more “green”.

38. How are current producers handling the transformation?

The European steel industry is on an ambitious path to cut carbon emissions by 55% by 2030 compared to 1990 levels (equivalent to over -30% compared to 2018 levels), and to achieve climate neutrality by 2050. Source: <https://www.eurofer.eu/issues/climate-and-energy/maps-of-key-low-carbon-steel-projects>

39. Are any steel manufacturers building mills that are not low emission?

Sadly, a considerable number of high-emission blast furnaces are coming on-line to meet steel production demand. As a result, without projects like Blastr, the sector’s CO2 emissions will continue to increase.

40. What is the demand for “green steel”?

The Global Green Steel Market Size was valued at \$200 million in 2022, and is projected to reach \$364.5 billion by 2032, growing at a CAGR of 113.6% from 2023 to 2032. Source: <https://www.alliedmarketresearch.com/green-steel-market-A31690#:~:text=Green%20Steel%20Market%20Research%2C%202032,113.6%25%20from%202023%20to%202032>

41. What is the demand for “green iron”?

The latest analysis suggests that over 100 Mt of near-zero emissions ironmaking production is required by 2030, but a gap of 50 million tonnes per year is projected, despite (an unrealistic) assumption that all projects move forward. Source: <https://www.metso.com/insights/blog/mining-and-metals/green-steel-technology-now-is-the-time-to-accelerate-decarbonization/>

42. How long do steel mills typically operate before they close?

Once established, steel plant sites operate for many decades, providing long-term stability in terms of employment, community benefits and economic growth. Capital intensive investments like steel mills usually have investment horizons that span decades. Source: <https://www.sustainable-ships.org/stories/2022/carbon-footprint-steel>

43. Will Blastr fail if it cannot capture a significant level of market production?

The European steel industry produces on average 152 million tonnes of all steel per year. That means Blastr’s 2.5 million tonnes is less than 1.6% of EU’s total steel production. Source: <https://worldsteel.org/data/>

44. Are investors in Blastr Green Steel only interested in profit?

Investors in the climate arena, including Blastr, are purpose driven. Blastr's primary goal is to contribute to EU and global decarbonization. While earning profits for re-investment is what businesses do, profit is not Blastr's investor's primary focus. And bottom line, any effort should perhaps be applauded.

The 90% target recommended today by the European Commission demands an unprecedented transformation of EU society and industry in just 16 years, and investments remain worryingly low. Source: <https://www.eurofer.eu/press-releases/2040-target-enabling-conditions-for-unlocking-investment-in-industrial-transition-cannot-wait-any-longer-warns-eurofer>

45. Why will companies pay a premium for low emission steel?

Consider automobile production, global policies (push) and then consumers (pulled) such as automakers to produce cars with lower tailpipe emissions – better fuel mileage as one component. Now that those are reaching maximum capability, producers will turn to embodied emissions, policy driven and stakeholder driven in the age of ESG requirements, for example Science Based Target index (SBTi) commitments.

The economics and science: As carmakers continue their transition to selling only electric cars and thereby reducing tailpipe emissions to zero, the climate impact of the materials used to make a car will fall increasingly under the spotlight and will need to be addressed as the sector strives to become net zero by 2050 at the latest. Indeed, a vehicle's embedded, or production, emissions are expected to account for around 60% of an electric car's total lifecycle emission by 2030, with steel making up an important part, with estimates ranging from 16% to 27%. Source: [https://www.transportenvironment.org/articles/cleaning-up-steel-in-cars-why-and-how#:~:text=Finally%2C%20switching%20to%20green%20steel,\(just%20%E2%82%AC%20more\)](https://www.transportenvironment.org/articles/cleaning-up-steel-in-cars-why-and-how#:~:text=Finally%2C%20switching%20to%20green%20steel,(just%20%E2%82%AC%20more))

46. Does low emission steel behave differently in use than higher emission steel?

Fossil-free [or low emission] steel has the same characteristics as traditional steel. It has the same strength but largely no CO2 emissions. As a user of the steel, you won't notice any difference, but the planet will. Source: <https://www.ssab.com/en/fossil-free-steel>

47. Low emission products, will be too expensive and consumers will not pay to help decarbonize supply chains?

Consider again automobiles, although as a percentage of total sale price, probably similar in other steel intensive consumer products like home appliances, lawn equipment, furniture, etc., assume 40% green steel in a car by 2030, a negligible add of only €57 to the sticker price of a battery electric vehicle or BEV. By 2035, assume green steel is 75% of the steel content adds another €49, for a total premium of €106. Fossil fueled cars require more steel, so perhaps "green steel" becomes 2% of the sale price. One people – One atmosphere. Source: [https://www.transportenvironment.org/articles/cleaning-up-steel-in-cars-why-and-how#:~:text=Finally%2C%20switching%20to%20green%20steel,\(just%20%E2%82%AC%20more\)](https://www.transportenvironment.org/articles/cleaning-up-steel-in-cars-why-and-how#:~:text=Finally%2C%20switching%20to%20green%20steel,(just%20%E2%82%AC%20more))

48. How can a person outside the steel industry know for sure companies are committing to lower emissions, not just marketing or greenwashing, where is the science?

In 2018, the Intergovernmental Panel on Climate Change warned that global warming must not exceed 1.5°C to avoid the catastrophic impacts of climate change. To achieve this, GHG emissions must halved by 2030 – and drop to net-zero by 2050.

The Science Based Target index (SBTi) defines and promotes best practice in science-based target setting. Offering a range of target-setting resources and guidance, the SBTi independently assesses and approves companies' targets in line with its strict criteria.

In early 2021, coincidentally as the first “green steel” project was being announced in Sweden, there were less than 900 companies making a public promise to the 1.5-Degrees Celsius ambition.

The number of companies with science-based targets increased by 102% just during 2023. Today there are over 8,500 global companies that have made public commitments to help reduce global warming with the ambition to reduce their Scope 1, 2 & 3 greenhouse gas or GHG emissions. Source: <https://sciencebasedtargets.org/>

[SBTiMonitoringReport2023](#)

49. Lot of talk about Scope 1, 2 & 3. What is the basic meaning of these?

Scope 1 covers emissions from sources that an organization owns or controls directly – for example from burning fuel in our fleet of vehicles (if they're not electrically-powered).

Scope 2 are emissions that a company causes indirectly and come from where the energy it purchases and uses is produced. For example, the emissions caused when generating the electricity that we use in our buildings would fall into this category.

Scope 3 encompasses emissions that are not produced by the company itself and are not the result of activities from assets owned or controlled by them, but by those that it's indirectly responsible for up and down its value chain. Source: <https://www.nationalgrid.com/stories/energy-explained/what-are-scope-1-2-3-carbon-emissions>

Some might argue that each of us add to GHG emissions when we buy and use products with high embodied emissions; like a new washing machine, refrigerator, boat, grain dryers, automobiles, farm tractors, bicycles – all have embodied emissions. If you drive a diesel-powered car and made with 2,000Kg of CO2 steel, your GHG footprint is significant. Same might be true for a grain dryer that runs on diesel fuel. Irrelevant of good intentions, we all impact global warming, and all must think different to save one atmosphere and one planet.

50. A new steel mill and billions of euros investment is difficult to imagine to most people and is therefore scary. How do we know this is possible?

Nothing is a guarantee in life. But with passion, commitment, thick skin, and support from those committed to one planet – one atmosphere - one people, Blastr will succeed.

In a public interview our peer, a Swedish entrepreneurial start-up had this to say: We [H2 Green Steel, have sold 1.0 million tonnes [annually] of steel into various European industries, in 5 to 7-year term take-or-pay contracts.

Those contracts we [H2 Green Steel or H2GS] are getting a 20-30% premium compared to brown steel prices, - a blast furnace-based steel. The abatement of carbon compared to that route, is where the premium comes.

We [H2GS] will have a capacity by 2025-26 of 2.5 million annual tonnes, and the 1.0 million tonnes pre-sold is 40% of that annual capacity – guaranteed to be bought every year for the first 5 to 7 years. We [H2GS] do not believe we should sell more now because we think that premium will only increase with time. Source:

<https://www.argusmedia.com/en/news-and-insights/latest-market-news/2494034-q-a-h2gs-sees-green-steel-premium-potential>

SSAB and John Deere Forestry Oy agree on deliveries of fossil-free steel

APRIL 10, 2024. Source: <https://www.ssab.com/en/news/2024/04/ssab-and-john-deere-forestry-oy-agree-on-deliveries-of-fossilfree-steel>

German luxury carmaker BMW announced it would join hands with one of China's biggest steel companies, HBIS Group, on Thursday. The two sides signed a memorandum of understanding that BMW's Shenyang production base in Liaoning province will use HBIS's green automotive steel from 2026. Source:

<https://govt.chinadaily.com.cn/s/202209/26/WS63314017498ea274927a43ec/bmw-propels-sustainability-with-ground-breaking-green-steel.html>

One final thought about how can we as consumers help drive down emissions in steel making?

Imagine a world where enough lower emission products become the norm, and science driven labels identify these products as better for our planet and our atmosphere. Would consider – would you be willing to pay extra? Would you support producers that want to help decarbonize the products we use every day? Would you support the development locally in an old industrial site that would make low carbon steel making possible?