VOLVO

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Volvo Cars position on sustainable steel

Purpose of this document

The overall intention of Volvo Cars position papers is to provide clarity to stakeholders in areas of high relevance to the company considering its ambitions and long-term strategies. This position paper addresses the sustainability challenges of steel, a material used by Volvo Cars in large volumes.

Background and challenges

- Steel is a commodity material used by many different industry sectors today. The automotive sector accounts for 12 per cent of use[1]. About 1900 million tonnes of crude steel was produced in 2022, indicating the scale of this material.
- Reducing greenhouse gas emissions (currently at 7 per cent of the global emissions) is a big challenge within the primary steel industry[2]. A majority of the greenhouse gas emissions from conventional ironmaking originates from the reduction process creating iron from iron ore, due to the used chemical process.
- A sustainable steel has low CO_2 footprint, below 1.2 kg CO_2 eq/kg crude steel[3]. However, low CO_2 is not enough to produce sustainable steel. It is also crucial to safeguard human rights, rights of indigenous people, freshwater and biodiversity both during iron ore mining, refining, and recycling, and at the same time have good working conditions at the steel mill. All the alloying elements used in the steel and the processing aids also need to be responsibly sourced.
- Steel plays a key role in our sustainability ambitions. Steel (and iron) makes up approximately half the weight of a car and is used throughout the framework of our facilities. A fully electric XC40 has around 930 kg steel, with a CO_2 impact of 18 per cent (materials production and refining phase). Volvo Cars use more than 650 000 tonnes of steel each year. To reduce our CO_2 and biodiversity footprint we are today actively trying to increase the recycled content in steel. The new EX30 for example has 17 per cent recycled steel.

Future challenges

- We need low CO_2 emission steel[3] in large quantities and in different grades. The production volumes of near-zero emission[4] steel are expected to be low and insufficient

1 #steelFacts - worldsteel.org
2 https://www.iea.org/reports/iron-and-steel-technology-roadmap
3 ResponsibleSteel-Standard-2.0.pdf, ResponsibleSteel Performance level 3, < 1.2 kg CO2 eq/kg crude steel
4 ResponsibleSteel-Standard-2.0.pdf, ResponsibleSteel Performance level 4, < 0.4 kg CO2 eq/kg crude steel

to meet demand to deliver climate neutral products by 2040. A combination of methods and technologies to reduce the CO_2 footprint of steel are therefore needed, including increased use of steel scrap, direct reduction of iron ore with green hydrogen[5], electrolysis and carbon capture and storage/utilization.

- To decarbonize the steel industry worldwide large investments are needed. It is estimated that $300 billion on top of the business-as-usual investments are needed[6]. This can be seen as $10 billion per year until 2050. On top of these investments an additional $2 trillion needs to be invested to build out the infrastructure of green hydrogen production, carbon transport and storage, and low-emission power generation (estimated that 921 GW needs to be installed)[6].

Volvo Cars position

- We believe steel can be a truly sustainable material with low CO_2 footprint[3], high content of post-consumer scrap, recyclable to high value including preserving the alloying elements, safe (without any harmful chemicals) and extracted and processed with high respect for both people and the planet.
- Volvo Cars actively advocates for policies and tries to support the steel industry in their transform:
    - In 2021, Volvo Cars became the first car maker to partner with SSAB to explore the development of near-zero emission high-quality steel, SSAB Fossil-free™ steel. SSAB is currently aiming to supply the market with SSAB Fossil-free™ steel at a commercial scale by 2026. In 2023 the collaboration was extended to include SSAB Zero™, which will become available sooner. We have today secured access to both SSAB Fossil-free™ and SSAB Zero™ for future car programs.
    - In 2022, Volvo Cars joined SteelZero, committing to strict, interim CO_2 requirements by 2030. All our sourced steel should be near-zero by 2050. We find that it is helpful to collaborate across sectors and send a clear demand-signal.
    - In 2022, Volvo Cars also became a member of ResponsibleSteel and thereby taking an active role in setting a sustainability standard for steel.

Volvo Cars actions

- Volvo Cars aims to becoming climate neutral by 2040 and making low-CO_2 steel part of our purchasing policy.
- Today we have high focus on increasing the amount of recycled content in our vehicles, as near-zero emission steel is not yet commercially available. Our ambition is to have 25 per cent recycled and bio-based content in our new car models by 2025 and 35 per cent by 2030.
- As an active member of ResponsibleSteel, we contribute to the standard development and improving the ESG performance of steel companies. We aim for all our steel suppliers to become members and certify their sites according to ResponsibleSteel by

5 Green hydrogen refers to hydrogen produced with renewable energy.
6 https://www.weforum.org/reports/the-net-zero-industry-tracker/in-full/steel-industry/

2030. We therefore urge more steel companies to join ResponsibleSteel. Besides CO_2 reductions, it is vital to ensure safeguarding of human rights, biodiversity, water, and high ESG governance.

- Volvo Cars aims for closing the loop on steel recycling. We have started to work with the steel scrap from our inhouse stamping facilities and aim to circulate scrap from end-of-life-vehicle (ELV) back to automotive steel grades. The later can be achieved by a close collaboration between metal recyclers, steel producers and the automotive industries. To succeed, steel from shredded vehicles needs to contain very low levels of copper contamination and high strength automotive steel grade needs to become more tolerant for contamination[7].
- At Volvo Cars we allow for the use of mass balance, however, we prefer physical traceability. With physical traceability we can prove that the more sustainable material is physically present in our vehicles. When using mass balance, it is important to ensure that the scheme is credible. We therefore have a clear set of requirements on mass balance schemes.
- We recognize that offtake agreements might be crucial to scaling the sustainable steel industry, enabling new entrants in the steel industry to secure long-term investment. This is however, a new approach for us and one that we currently are investigating.
- An important part of the work towards reaching our ambition is to collaborate with other steel users to jointly advocate for reduced CO2 emissions from the steel industry and at the same time raise the importance of safeguarding both people and the planet.

Volvo Cars proposed suggestions to make steel more sustainable

1. Steel industry

- Accelerate investments and plans for near-zero emission steel production
  - We find it critical for the steel industry to speed up investments in near-zero emission steel production on all continents. Steel companies need to ensure their climate roadmaps cover scope 1, 2 and 3 emissions[8].
- Preserve biodiversity, stop deforestation, and reduce water consumption
  - The demand for steel will continue to increase in society. Preserving biodiversity, stopping deforestation and reducing freshwater use is therefore as important as reductions of CO_2 emissions. Steel producers must place high demands on their raw material providers.
- Safeguarding human rights, providing traceability, and transparency
  - The industry needs to have good traceability of their raw materials to meet demands placed by NGOs, society, and customers.
  - Besides excellent occupational health and safety for their own employees, the steel industry must conduct risk based due diligence to safeguard the rights of local communities and other stakeholders along their value chains.

7 Tolerant steel grades can handle a higher degree of contamination from recycling.
8 What are Scope 3 emissions and how it differs from Scope 1 and 2 | World Economic Forum

2. Policymakers

- A harmonized standard on low CO_2 emission steel is vital to bring clarity, reduce financial risk and to support the investment decisions for near-zero emission steel projects, secure supply demands and prevent greenwashing. It must be credible, yet ambitious and 'technology agnostic'. It should also enable the use of recycled material, in order not to jeopardize circularity objectives set by the EU or companies like us.
- Policymakers and others need to secure the expansion of supporting infrastructure for near-zero emission steel, renewable electricity and green hydrogen[5]. There is a risk of steel producers continuing to rely on natural gas in the longer term. The faster the transition occurs, the better our chances are of limiting global warming.
- Policymakers must adopt the provisions foreseen in their respective regulations and policies[9] to promote carbon neutral projects, while increasing public spending on research and higher education. We need to overcome the 'green premium' by effective carbon pricing and lead-market support.

3. Recycling Industry

- Steel has been recycled for a long time. However, we believe that more can be done to retain the value of both the steel and its alloying elements. For high performance steel grades to contain post-consumer scrap, the scrap needs to have a low copper content after recycling. We encourage the recycling industry to revise their material standards to clearly indicate the copper content of recycled steel fractions.

4. Steel Users

- Volvo Cars urges other steel users to sign up to SteelZero and put requirements on suppliers to speed up deliveries of near-zero emission steel (scope 1, 2 and 3).

9 Including the US' Inflation Reduction Act, Net Zero Industry Act and Critical Raw Materials Acts.