



Atradius

Clean Energy Transition: Steel

Is the steel industry on track to meet the world's climate goals?

Traditional steel manufacturing contributes more greenhouse gas emissions to our atmosphere than any other single industry (about 8% of global emissions). The energy intensive manufacturing processes include smelting iron ore in coke and coal fired blast furnaces; a technology that has remained unchanged for 200 years. Cleaning up steel to minimise or eliminate the release of greenhouse gases requires a massive undertaking, involving significant capital investments. To put it bluntly it needs a green industrial revolution.

Robert Leportier is the Head of Trade Credit Insurance at one of the world's largest steel producers, ArcelorMittal. During our last event on clean energy - Clean Energy Transition: A New Way Forward for Global Trade?, he provided a unique insight into the enormous transformation green steel represents for the steel industry as well as his perspective as a credit manager. He told us: "Today the steel industry still using technology which dates back to the 19th century, meaning producing steel out of iron ore and coal in blast furnaces. And tomorrow, we focus on a complete change of technology, aiming to produce steel out of electric furnaces and using recycled steel fueled by gas in a first step and hydrogen in the future."

What is green steel?

- Green steel can be smelted in electric arc furnaces, powered by renewable sources of energy.
- When burned, hydrogen can be used to smelt the ore, while only emitting water instead of greenhouse gases.
- If the hydrogen itself is produced using renewable electricity this process can be completely free of greenhouse gas emissions.

Grey hydrogen

Natural gas is used to power the creation of the hydrogen, but CO₂ is released into the atmosphere as part of the process.

Blue hydrogen

Natural gas is used in the creation of the hydrogen, but the CO₂ is captured and stored.

Green hydrogen

Green electricity is used in place of natural gas in the creation of the hydrogen and only oxygen is released into the atmosphere.

What can our underwriters tell us about clean energy transitions in steel?

Perhaps unsurprisingly, cost was listed as a key issue by every market. Steel companies expressed concerns about the costs of electricity, as well as the levels of capital expenditure required to transition steel plants to carbon neutral manufacturing.

Interestingly the appetite for green steel ranged from strong interest to not so much across different markets. The EU's Joint Research Centre (JRC), however, asserts there is evidence of an emerging market that is willing to pay a green steel premium.



Challenges: What are the most urgent challenges for the sector in the next three years?

1. Cost, cost, cost

The sector's primary challenge is cost, including both the high transition costs and the difficulties of sourcing finance to fund the capital expenditure. Our underwriters in China explained: "The carbon emission financing system is not mature yet, Currently, the capital support is insufficient to enable the expensive transition to clean energy." In addition, several markets questioned the ability to pass on costs to customers and whether some customers were prepared to pay higher prices for green steel.

2. Supply chain sustainability

Securing and developing sustainable supply chains can also be a challenge, especially in terms of mining, transportation and processing of materials. Our underwriting team in Japan noted: "It's not just about steel manufacturing. Steel companies have to work with their suppliers to ensure sustainable practices along the supply chain, including in the raw materials and logistics."

3. Energy security

Finding a secure clean energy supply is becoming an increasing challenge for steel producers and cited by several markets including France, Poland, Germany, Italy and the Netherlands. The latter also noted the challenge is not just about being able to obtain energy from renewable resources, but whether national grids have the capacity to supply enough green electricity to power the plants.

Opportunities: What are greatest opportunities for the sector in the next three years?

1. Development of new markets

The steel industry is not the only one seeking to reduce carbon emissions. Industries that use steel and are aiming for net zero targets are driving demand for green steel, a demand that is likely to grow in the near future. This is particularly true for electric vehicle manufacturers that are increasingly including Scope 3 emissions as part of their decarbonisation strategies. Scope 3 refers to the carbon emissions generated in the production of materials used in their cars.

2. Increased competitiveness

Several of our underwriters noted increasing competitiveness as an opportunity for the steel sector. As a result of increased demand for green steel, particularly in automotive but also in areas such as wind turbine production, producers of green steel can gain a competitive advantage over steel manufacturers that are slower to transition.

3. Key role in new technologies

Steel companies that invest in developing new and innovative applications for recycled steel can potentially create new markets and revenue streams, as well as reduce their environmental impact. In addition to the manufacturing process itself, steel producers could benefit from investing in carbon capture and storage, and related new technologies.

How has the industry moved forward over the past six months?

In the months following our live event, Clean Energy Transition: A New Way Forward for Global Trade? the steel industry has made great strides towards net zero. This momentum, however, is not uniform across the world. The Atradius underwriting team in Germany explained that steel manufacturers are investing in green steel production, which is also being marketed more aggressively.

In Italy the steel producer, Acciaieria Arvedi, announced the world's first zero emissions steel mill. However, elsewhere progress towards climate goals is slow. High energy costs, low margins and challenges such as the Russian war with Ukraine have impacted consumption and had a dampening effect on progress towards energy transition.



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