

TATA STEEL



Zeremis™

Together towards a zero-carbon
emissions, circular world

July 2022



Together we make the difference

Zeremis™

Zeremis – short for zero emissions – is our promise to the planet to become carbon neutral by 2045. The Zeremis brand represents the journey Tata Steel Nederland is taking with our customers, together towards a zero-carbon emissions, circular world.



We will be introducing a range of new solutions under the Zeremis brand

Zeremis™

Low carbon emission steel

Carbon Lite

Recycled content

Zero-carbon logistics

Carbon neutral downstream operations

Our track record

Tata Steel has been working for years to reduce its CO₂e emissions. This makes the IJmuiden steelworks already one of the most CO₂e efficient in the world today¹. The CO₂e intensity of the steel produced in IJmuiden is around 7% below the European average and almost 20% below the global average.

1. Source: World Steel CO₂ Association data report 2021, BF-BOF route.



Our ambition



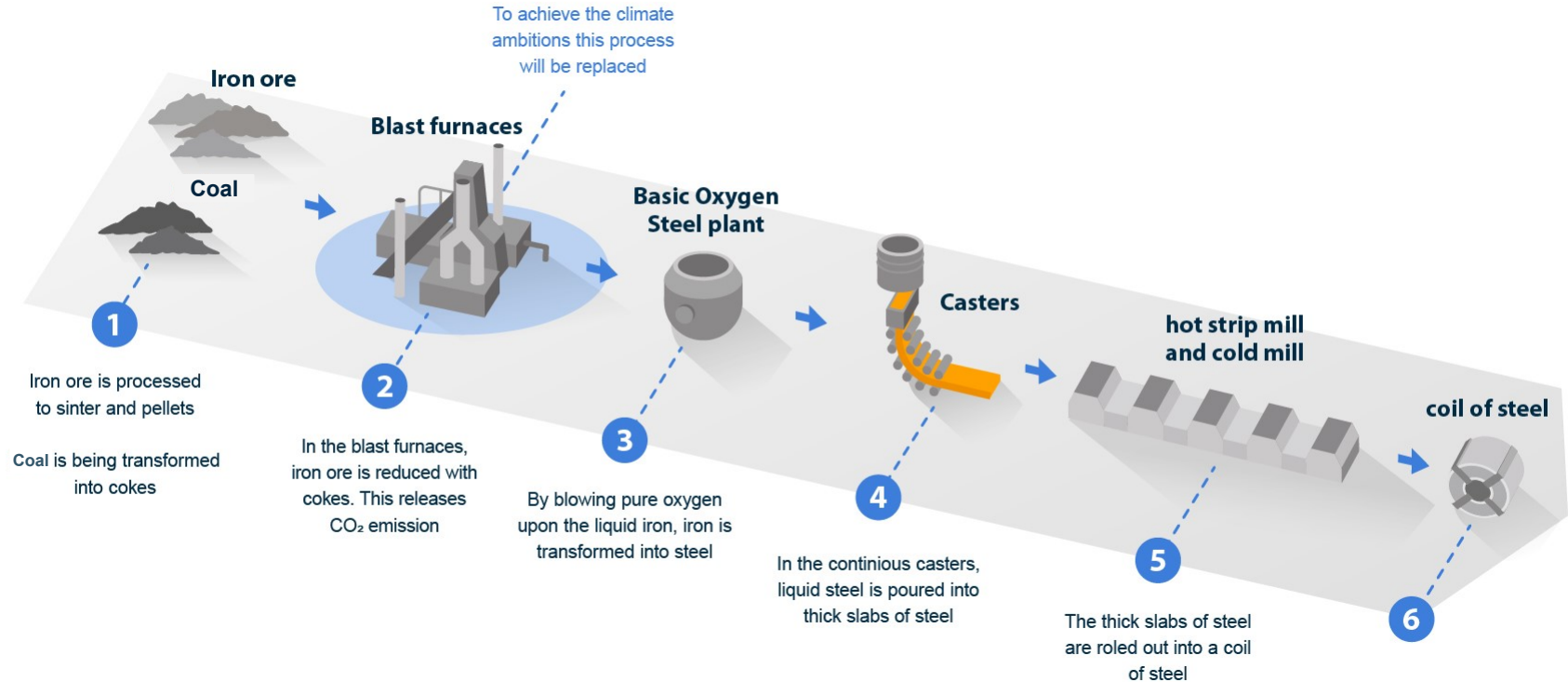
A large, stylized graphic of the chemical formula CO₂ in a vibrant green color. The 'C' and 'O' are represented by thick, rounded outlines. A horizontal line extends from the bottom of the 'O' to the right, where it curves upwards and then downwards to form a large arrowhead pointing to the right.

Tata Steel Nederland has the ambition to become CO₂e neutral by 2045 and reduce its CO₂e emissions by 35% to 40% by 2030

The journey



The main transition takes place at the iron making process



Tata Steel invests 65 million euro in the next phase of the hydrogen route



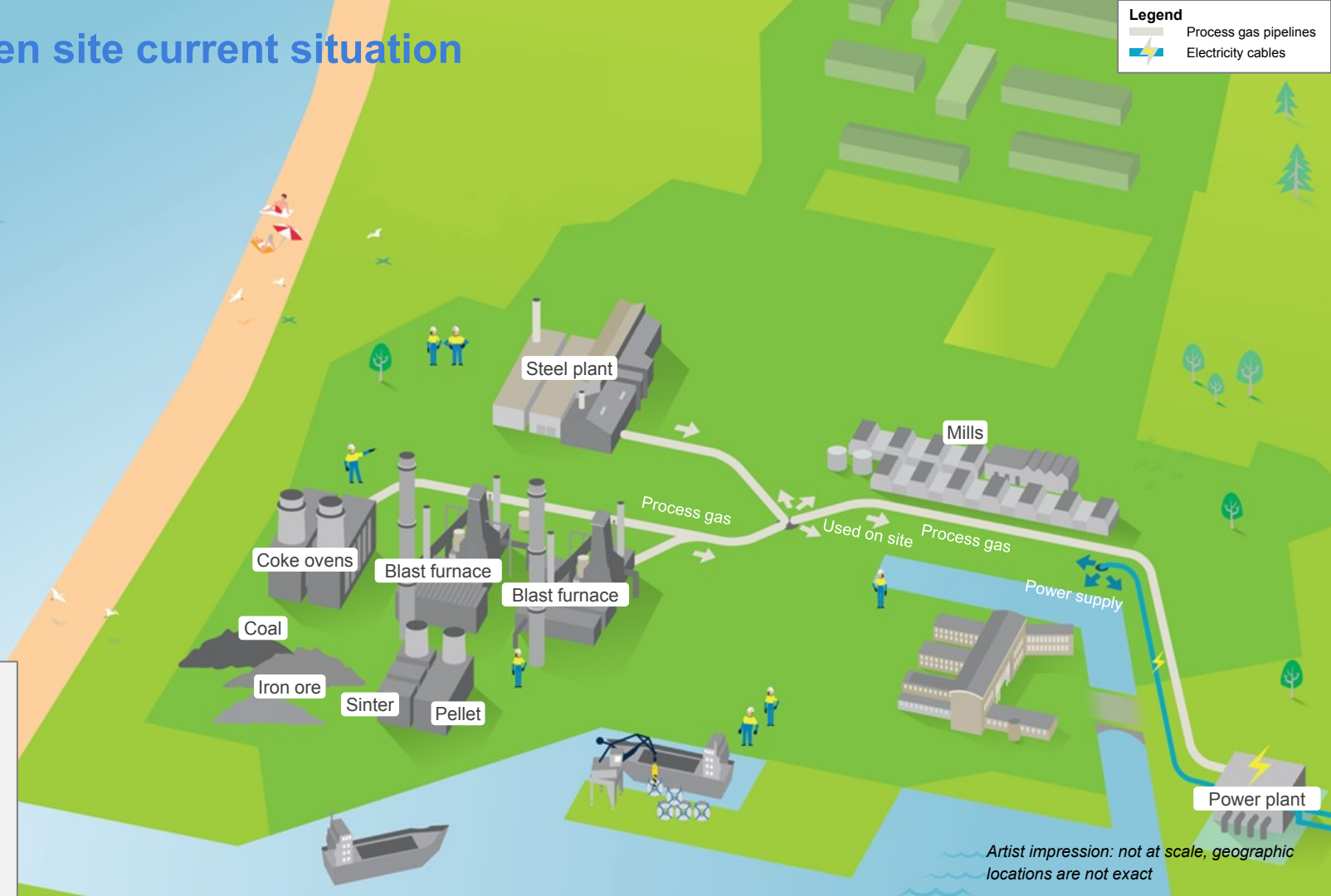
Basic engineering

- We have signed contracts with McDermott, Danieli and Hatch for the further technical preparations of the hydrogen route.
- The three companies collectively have all expertise needed to help Tata Steel shape and deliver the hydrogen-based steel manufacturing in IJmuiden.

0 IJmuiden site current situation

Legend

- Process gas pipelines
- Electricity cables



Current situation

Traditional steel production with two blast furnaces, two coke ovens, a sinter machine and a pellet plant

Artist impression: not at scale, geographic locations are not exact

1 Situation after two DRP are operational

Legend	
	Process gas pipelines
	Electricity cables
	Hydrogen pipelines
	Natural gas pipelines

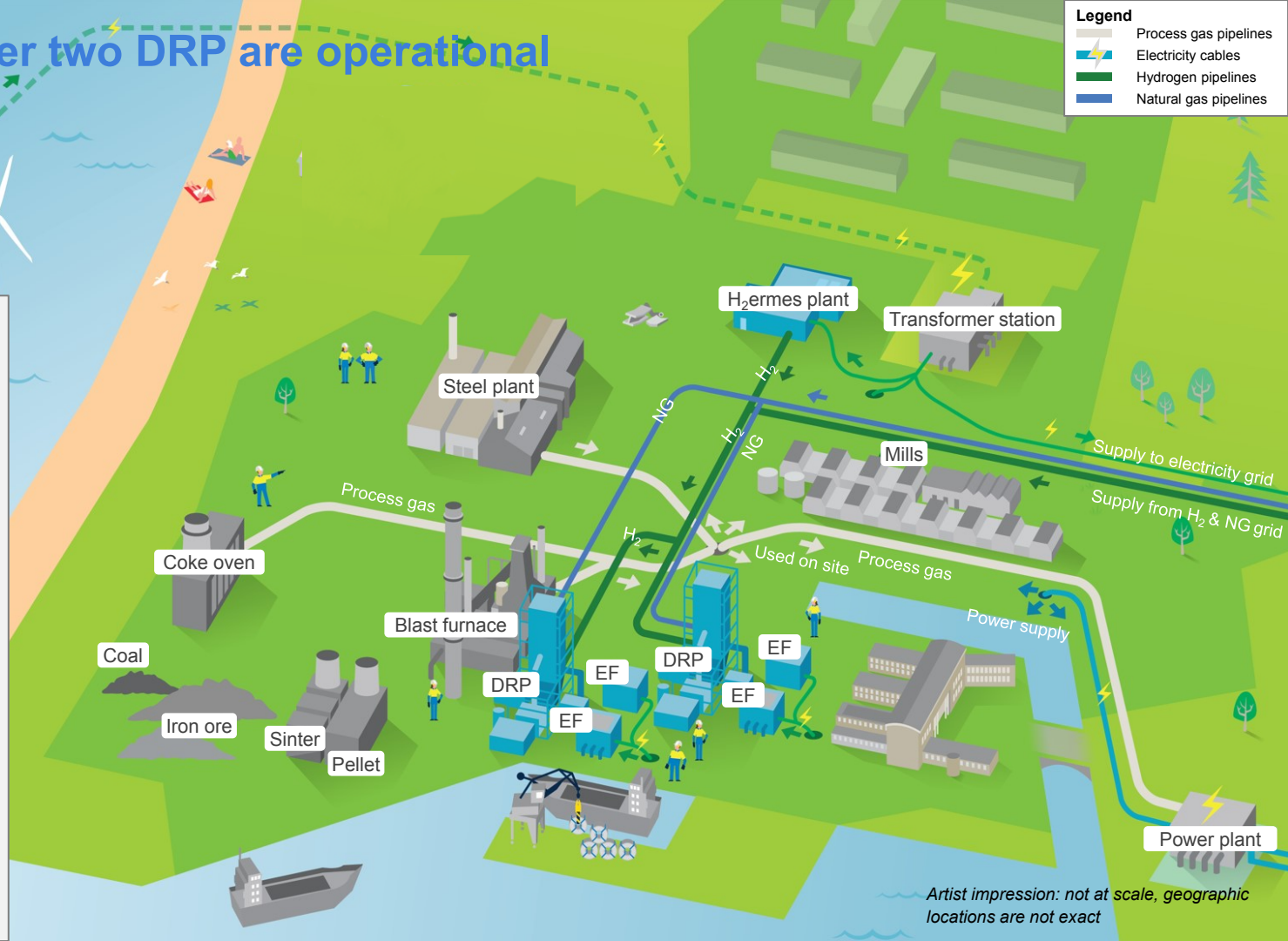
Step 1 completed

First two **direct-reduction plants (DRP)** and adjacent four **electric furnaces (EF)** have been built, replacing a coke oven and a Blast furnace

One **blast furnace** and one **coke oven** remain operational, until the third DRI-EF combination has been built. Less process gas will be made and used in the power plant





TSN is connected to local green **hydrogen infrastructure network**

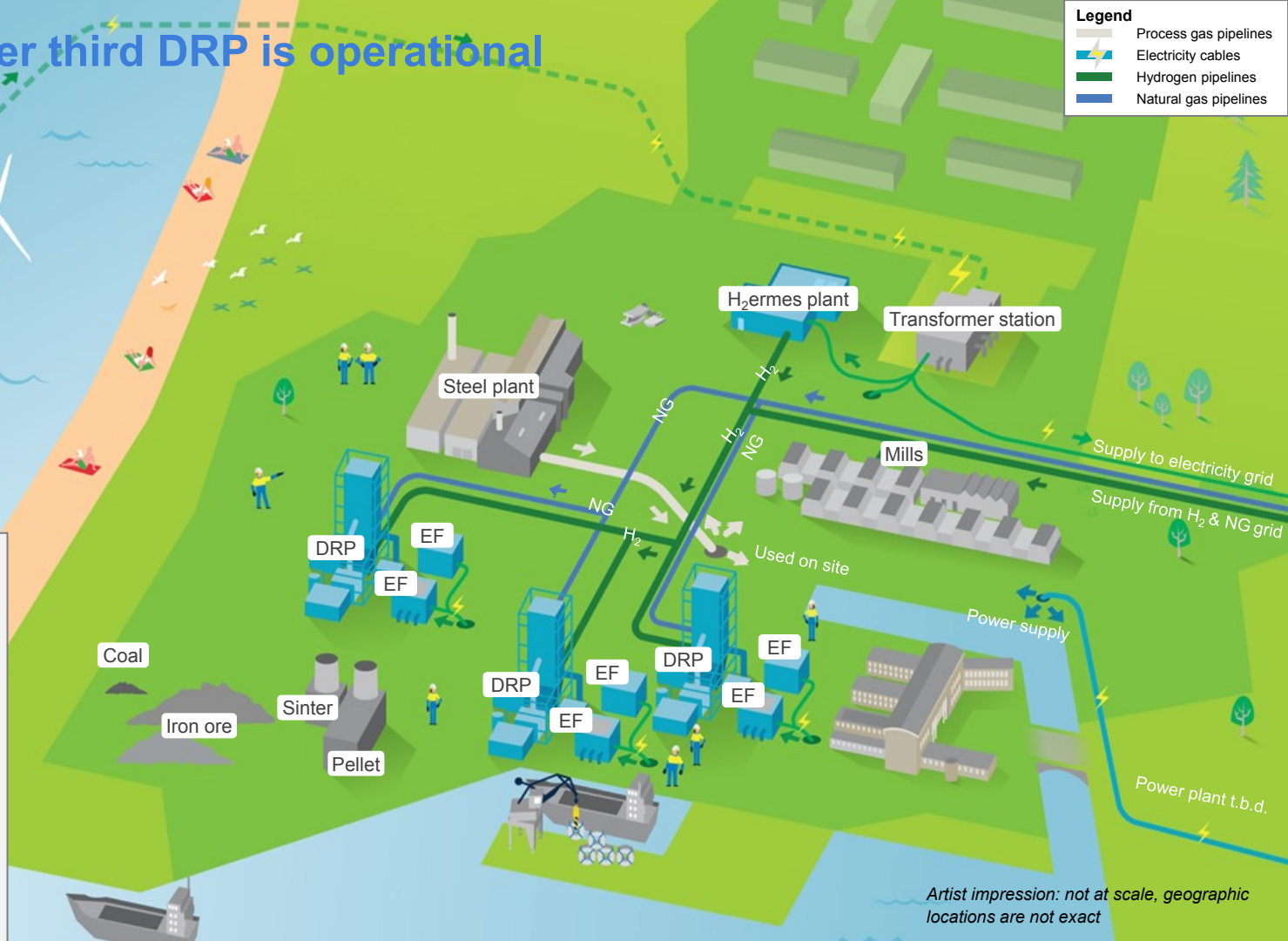
Green hydrogen is also being produced on site, with sustainable electricity from **offshore wind field**



Artist impression: not at scale, geographic locations are not exact

2 Situation after third DRP is operational

Legend	
	Process gas pipelines
	Electricity cables
	Hydrogen pipelines
	Natural gas pipelines



Step 2 completed

Third **direct-reduction plants (DRP)** and adjacent to **electric furnaces (EF)** have been built

Blast furnaces, coke ovens and two **sinters** are no longer operational

One small **sinter machine** and one **pellet plant** remain


Artist impression: not at scale, geographic locations are not exact

Our plan is designed to help our customers achieve their scope 3 emission targets as they evolve over time. Our research shows most customers are aiming to achieve a 30% reduction by 2030.

	Pre 2018	2018 to ~2028	~2028 to 2033 Phase 1	2033 to ~2038 Phase 2	By 2045
CO₂e savings %	16% CO ₂ e reduction versus 1990	Incremental CO ₂ reduction projects ¹	35% – 40% versus 2019	60% – 70% versus 2019	CO ₂ e neutral all sites ³
CO₂e savings kt/a	~2.000 kt/a	100 – 500 kt/a	~5.000 kt/a	>9.000 kt/a	>12.000 kt/a
Amount of green steel (crude steel)²	Included in EPD	50 – 200 kt/a	>2.000 kt/a	>4.000 kt/a	~6.000 kt/a

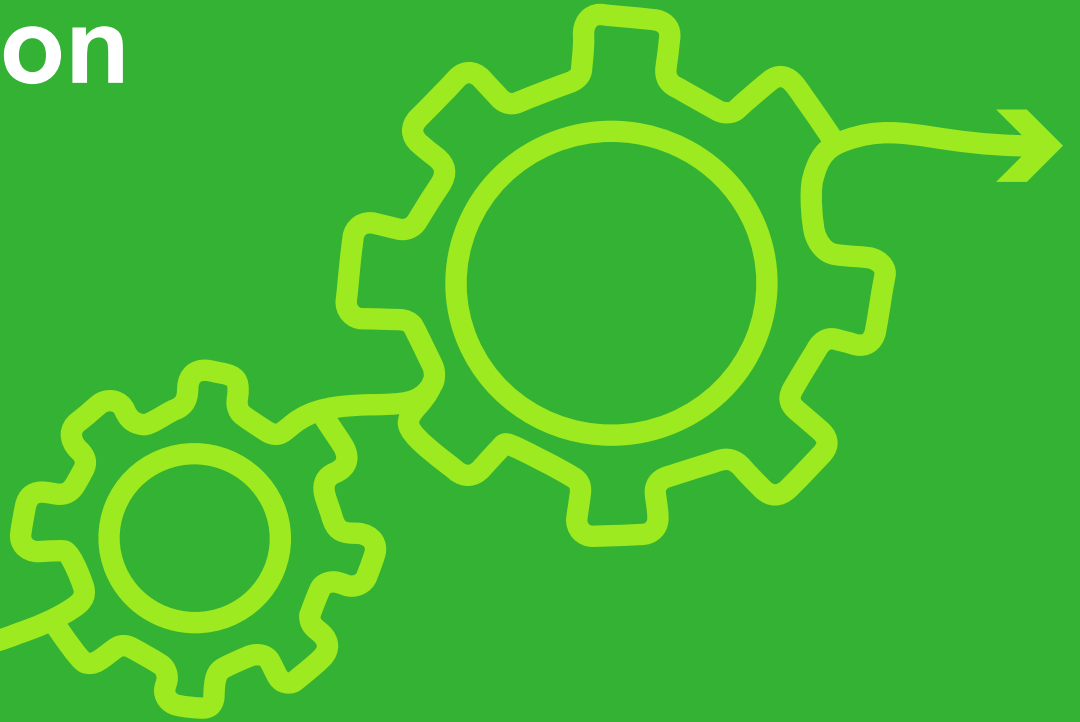
1. These incremental CO₂ saving projects are additional, implemented after 2018 and not included in our current EPD's
2. Conversion of CO₂ savings to Green Steel uses 2.2 t CO₂ per tonne HRC as current EU average
3. CO₂ neutrality at full Tata Steel Nederland site level requires additional measures beyond those currently announced

What does this mean for our product offering?



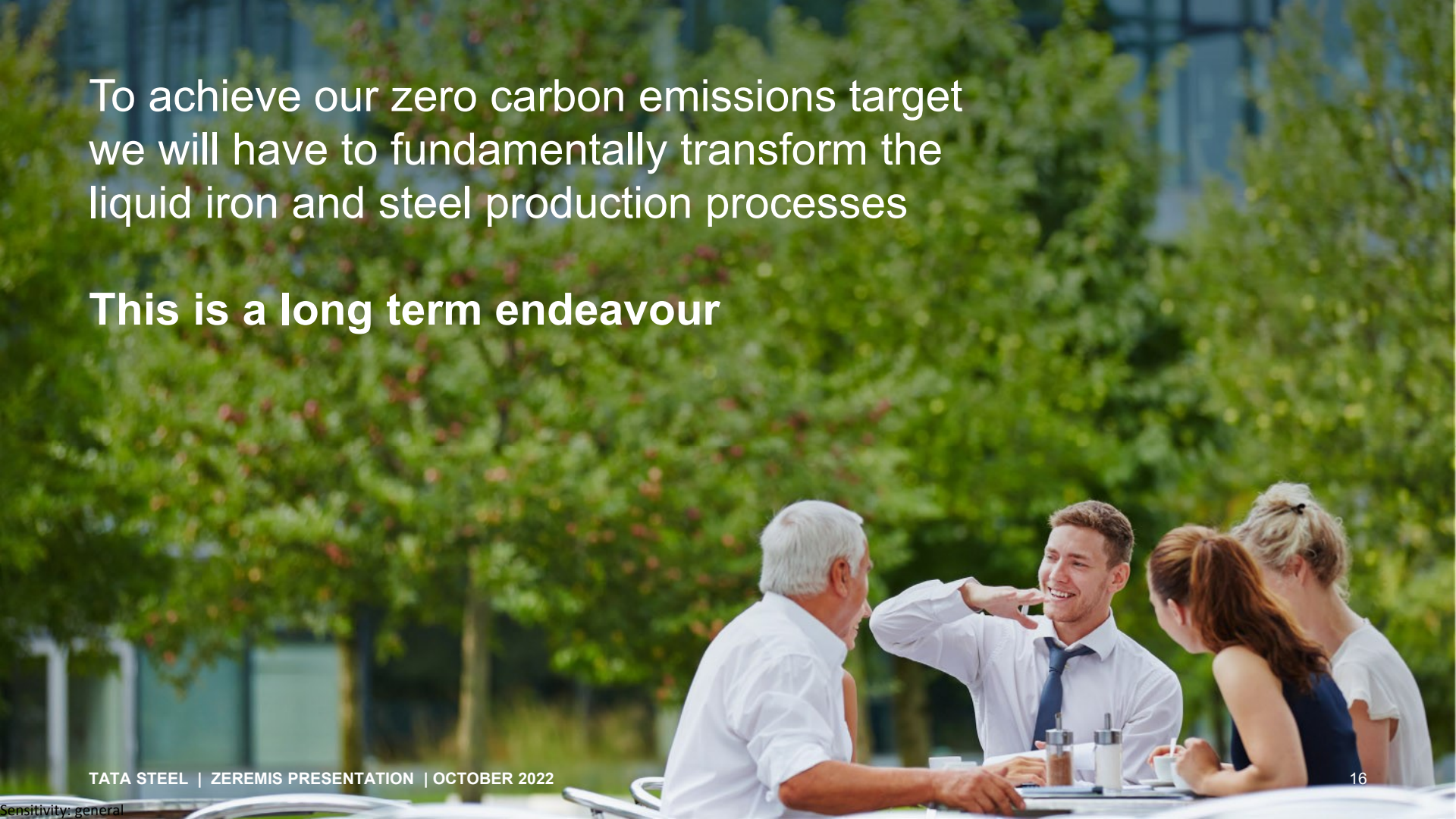
Pre-2022	2022 to ~2028	~2028 to ~2033	Post-2033
Good starting position TSN has obtained a very good starting position through historic focus on efficient and sustainable production, leading to steel with a footprint reduction of ~7% vs. European average	Mass balanced green steel We are accelerating projects to save carbon emissions, capture these savings in a carbon bank and launch a carbon balanced green steel offering based on certificates by July 2022	Embodied green steel We will shift to a different production process using DRI to significantly reduce the footprint of steel, enabling us to launch an embodied green steel offering by the end of this decade	Only embodied green steel Post 2033 we will convert our entire site towards new production technologies to further reduce the footprint of TSN and sell higher volumes of embodied green steel

Driving transformation



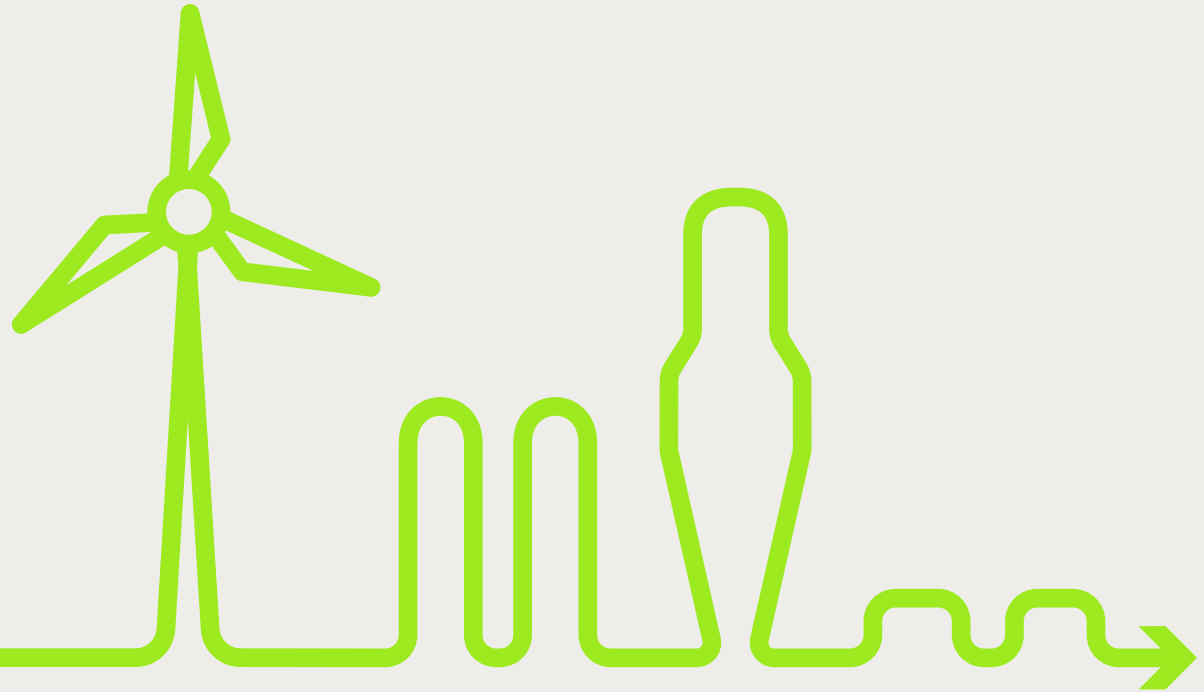
To achieve our zero carbon emissions target
we will have to fundamentally transform the
liquid iron and steel production processes

This is a long term endeavour



By introducing Direct Reduced Iron (DRI) technology, processed with green hydrogen, we will make a giant leap towards CO₂e neutral steelmaking in a clean environment at IJmuiden.

This introduction will happen before 2030, resulting in one of the largest CO₂e reductions in steel making in Europe in a decade.



We are already laying out the infrastructure for a direct connection to the TenneT offshore wind farm, which will enable direct access to green energy required to produce hydrogen on site



Steel's road towards decarbonisation is promising but comes with various critical dependencies

The short-term achievements can already have major effects today



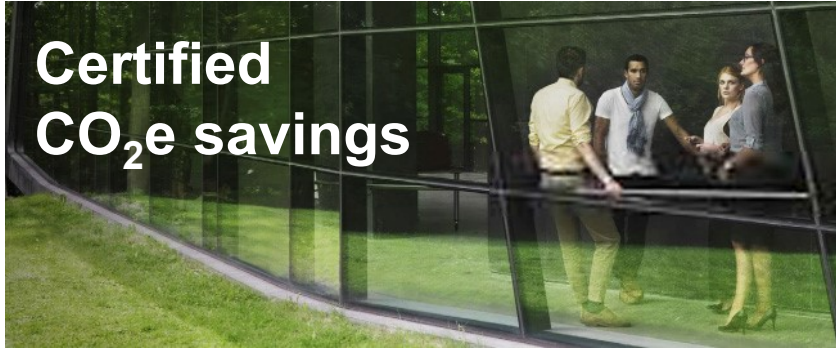
Accelerating change



Whilst we undergo our transformation to a sustainable steel production process, we recognise that taking action on climate change can't wait

We must act today

We are introducing carbon reduction and innovative circular solutions for the coming years covering our full supply chain



Certified CO₂e savings

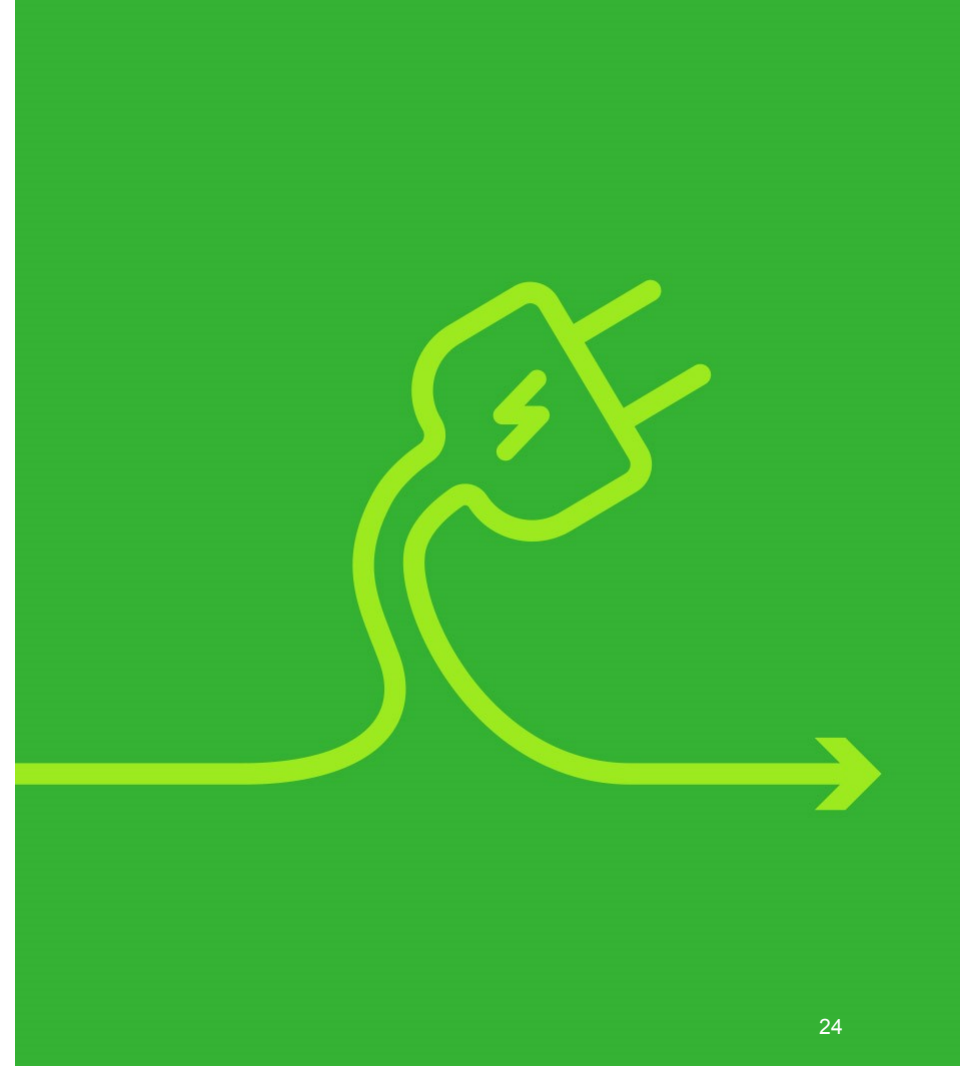
Our Zeremis™ Carbon Lite solution enables our customers to achieve CO₂e savings in their scope 3 emissions.

Carbon Lite is based on CO₂e emission reduction projects in our supply chain and assured by DNV (Det Norske Veritas).



Carbon neutral downstream operations

Also in our downstream businesses we are pursuing sustainable operations, with decarbonisation road maps developed. Our first sites will be carbon neutral in 2022, among others using electrical heating systems for the buildings replacing natural gas and electrification of internal transport.



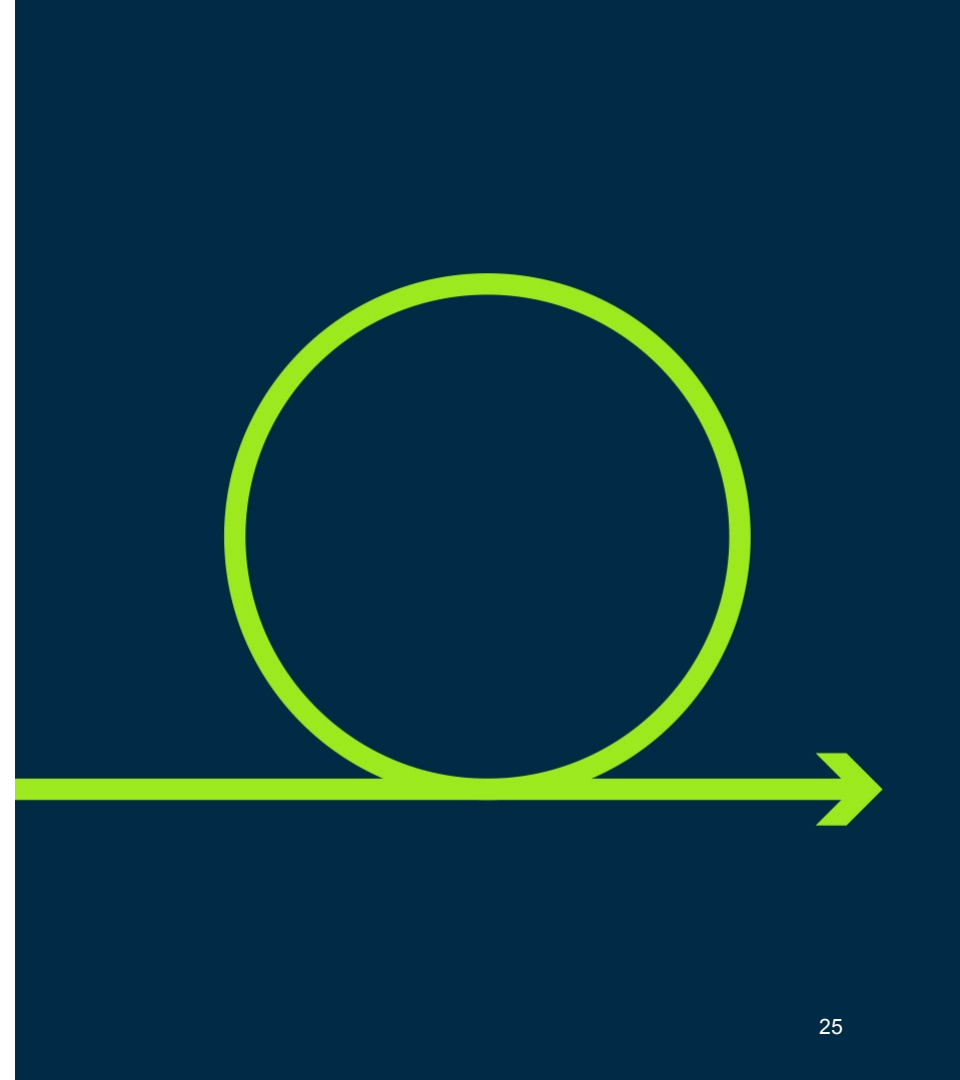
Recycled content

By increasing use of recycled content we aim to increase circularity and reduce CO₂e emissions. Our research shows that customers are aiming to achieve at least 30% recycled content by 2030.

Our ambition is to work with our partners to make better use of the ferrous scrap pool.

Our asset configuration and continuous focus on energy efficiency enable structurally high recycled contents in steelmaking.

Working with partners, we are exploring ways to manage the impact of scrap quality (impurities) on product performance.



Zero-carbon logistics

Zero-carbon Logistics is a logistics sustainability framework focusing on outbound deliveries to customers. The target is to achieve 30% reduction by 2030 and to be net zero by 2045 through improvements in network and modal, fleet efficiency, and energy efficiency. This programme won the Steelie Award 2021 for Excellence in Sustainability. Since 2019 it has achieved 15% of reduction in the absolute emissions (CO₂e) in three years' time.

Collaboration with logistics suppliers and customers is at the core of the program. We also collaborate with NGOs to make an impact outside Tata Steel's value chain.



Zeremis™

Carbon Lite

To support our joint
short-term ambitions



An aerial photograph of a winding asphalt road through rolling green hills. A white car is driving on the road. The landscape is lush and green, with a river visible in the distance. The sky is clear and bright.

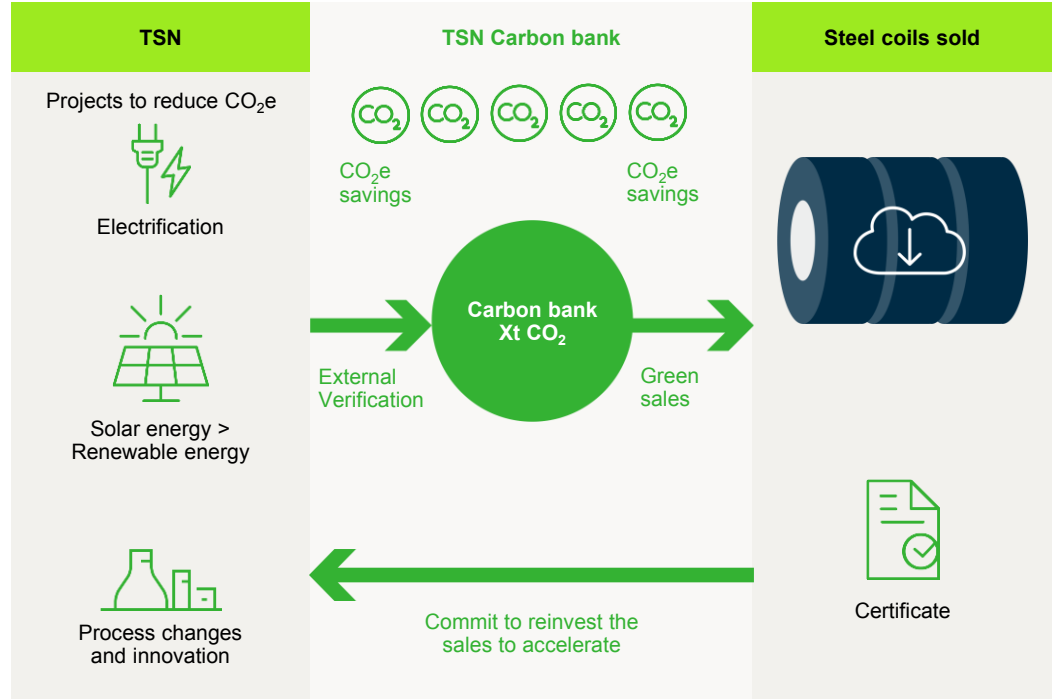
Zeremis™

Carbon Lite

- Enables you to reduce your carbon footprint now
- A flexible solution that lets you choose the CO₂e intensity reduction that you need
- Independently assured by DNV
- CO₂e savings can be reported as a reduction in scope 3 emissions

Recent carbon savings realised by Tata Steel Nederland are independently certified and compiled in our central carbon bank

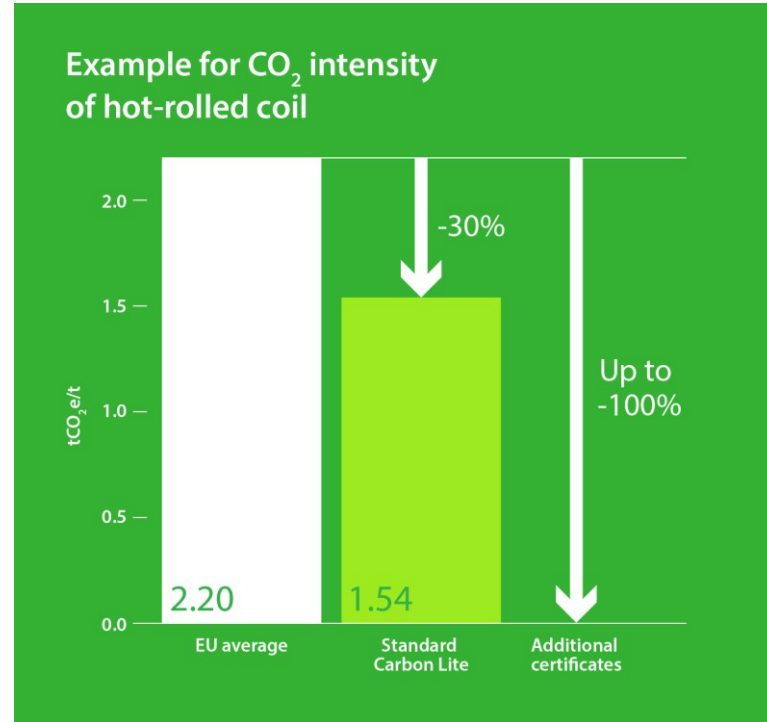
Our Carbon Lite solution draws on credits from this bank in the form of certificates, meaning you can meet your specific carbon reduction targets.



Our standard Carbon Lite solution will be mass balanced. Savings across Tata Steel Nederland will be summed up to create carbon reduction certificates.

Our standard Carbon Lite solution is designed to offer a 30% reduction in CO₂e intensity versus the EU average.

As a flexible solution, Carbon Lite can meet the exact reduction targets you require, so you can go as far as you need to.



Embarking on our journey: Ford Europe

First customer in the automotive sector

- Tata Steel Nederland has signed a memorandum of understanding with Ford in Europe to supply the carmaker with Zeremis green steel
- As Ford already targets the use of low-CO₂ steel in its all-new, all-electric, medium-sized crossover, which will start production in Europe in 2023, the companies intend to explore opportunities to use Tata Steel's recently launched Zeremis Carbon Lite
- "Our customers, like us, want to take care of our planet and we are taking the necessary steps on this journey, providing the vehicles they need to make a positive contribution against climate change, produced in a more sustainable way. Improvements within our supply chain are key, and with the use of green steel we will take a major step towards lowering the CO₂ footprint of our vehicles," said Sue Slaughter, Ford Global Purchasing Director, Supply Chain and Sustainability.



Embarking on our journey: Permastore

First customer in the construction sector

- Permastore leading global manufacturer in tank storages and silos supporting their sustainability strategy and offering in their markets with Zeremis Carbon Lite
- A good example of a global player embracing mass balanced low carbon steel to decrease their product carbon footprint



Embarking on our journey: Hardt Hyperloop


First customer in the new mobility sector

- green steel for the most CO₂-efficient way of transport: Hardt Hyperloop uses Zeremis Carbon Lite
- the first tubes made of special steel for hyperloop with our Zeremis Carbon Lite will go to the European Hyperloop Center for field testing
- steel is the essential material needed to build strong, lightweight tubes for the hyperloop that can withstand an internal low air pressure with sufficient rigidity
- a great example of a customer joining us on our Zeremis Journey



Reinvesting in the future





In the true spirit of partnership, it's our commitment that the value created with our Zeremis™ Carbon Lite sales will be used to fund our Zeremis journey, so we can move faster together towards our goal

Find out more about



Zeremis journey



Carbon lite certificates



Onward selling

Zeremis™ Carbon Lite

Certificate for mass balanced CO₂ emissions reduction

Supplying Entity with Reg Number:	TATA STEEL LMUIDEN 34949331
Supplying Entity Address:	WENCKEBACHSTRAAT 1, VELSEN-NOORD, 1951 JZ, Netherlands
Certificate Number:	ZERCL0122SAMPLE
Presented to:	CUSTOMER NAME
Relating to Order Number:	ORDER NUMBER
Delivered Order Weight (Mt):	X.XX Mt
Product Identity:	1234567 SAMPLE
Product Description:	Hot Rolled Dry
CO ₂ e per metric tonne intensity achieved:	1.54
Note:	This is a 39% reduction based on reduction of the EU average



This certificate attests that Tata Steel Nederland has saved CO₂e and through this has been able to reduce the virtual intensity of the products sold, and that the aforementioned customer has purchased steel with a reduced steel intensity in the material class and of the intensity stated above.

This will enable the stated customer to report a reduction in their scope 3 emissions in accordance with the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. DNV GL Business Assurance Services NL BV has verified the CO₂e savings and the corresponding purchase of Zeremis™ Carbon Lite virtually reduced carbon intensity steel.

More information is available on our website.

Together towards a zero carbon emissions, circular world

Date issued: 03-10-2022



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