



CarbSteeler

Steel Industry Decarbonization

Optimization of steel industry decarbonization routes to achieve climate goals at the lowest cost

The challenge of transitioning the industry

The steel industry accounts for about **7% of global CO₂ emissions** and relies on long-life assets, such as blast furnaces. Defining which routes to adopt, when to invest, and at what scale involves dozens of competing technologies, uncertain gas, carbon, and energy prices, and climate goals. Without integrated modeling, there is a risk of allocating capital to less competitive assets or those with a higher risk of obsolescence.

CarbSteeler's optimized solution

Through a **cost optimization model**, **CarbSteeler** represents steel industry plants across the planning horizon as the market evolves. With total data flexibility, the model adapts to your reality. By inputting operation variables (input costs, operational constraints, and climate policies), the solution designs the **ideal trajectory to achieve your emission goals with the lowest total cost**.

What does CarbSteeler deliver?



Optimal investment plan

Defines which technological routes to adopt, when, and at what capacity in each plant. CarbSteeler sizes expansions, retrofits, and new plants to avoid idle or prematurely obsolete assets.



Emissions trajectory and goals

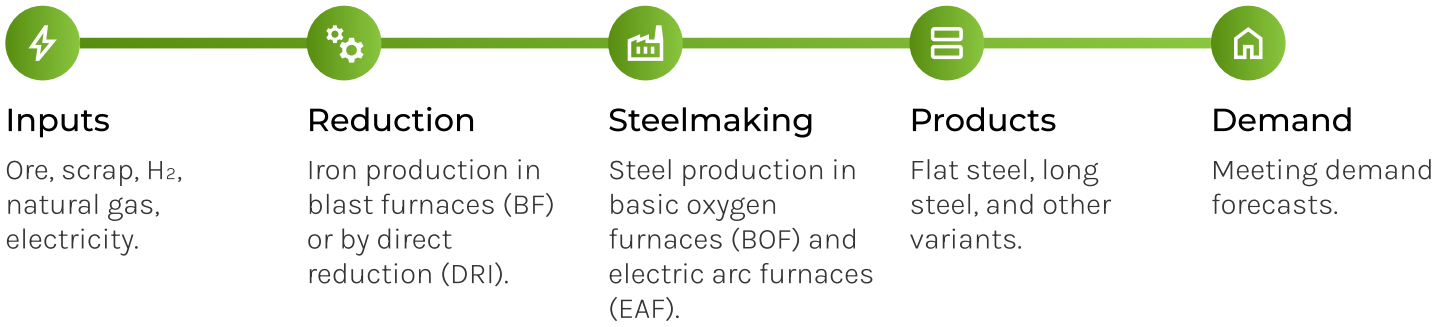
Projects the sector's CO₂ curve under each policy and quantifies the effort required to meet neutrality goals. Analyzes carbon taxes and demand scenarios to evaluate direct effects on decarbonization.



Transition cost

Calculates the total cost of decarbonization. Reveals the impact on steel production costs and which routes and policies deliver the most CO₂ reduction per unit of investment, supporting business decisions and policy design.

Modeling the entire **steel supply chain**



Complete technological portfolio

Analyzes conventional routes and transition solutions, generating interactive dashboards.

Public policy and market scenarios

Evaluates how climate goals, taxes, prices, and subsidies redirect investments.

Proprietary data and regionalization

The model is not tied to fixed data: you define the premises and customize your scenario.

One model, multiple **user profiles**



For the industry

Represents individual plants, detailing their processes and constraints, in order to plan decarbonization investments and the optimal deployment schedule for each asset.



For the government

The systemic view of the sector allows the analysis and design of public policies (carbon tax, goals, and incentives) and anticipates their aggregate effect on emissions and cost impact.



For associations

Supports sector studies with a consolidated view of the industry, comparing transition routes and the costs of neutrality on a national scale.

A global benchmark in energy transition

UK PACT

CarbSteeler was conceived from an in-depth study of the decarbonization of the steel industry in Brazil, funded by **UK PACT**. The model reflects the excellence of **PSR**'s more than 30 years of global operation in **Research, Development, and Innovation**. More than a tool for the steel industry, CarbSteeler's flexible architecture is the ideal starting point to model the transition of other energy-intensive industries.