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COUNTRY PROFILE – BRAZIL[1]

2023 STEEL POLICY SCORECARD

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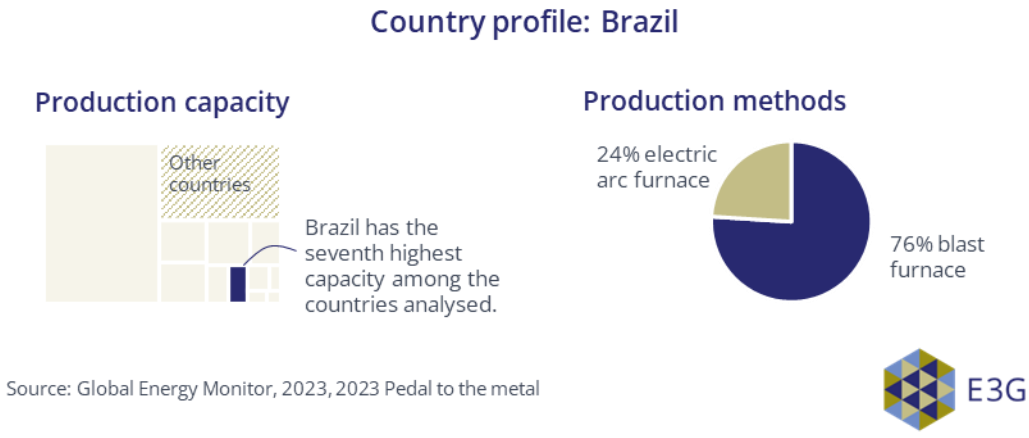
A possible future green steel powerhouse

Brazil was left without clear direction for many years, but the Lula administration's wave of policies, plans and aspirations are now starting to steer a new course for Brazil. If the government embeds steel decarbonisation in its push to be a green powerhouse, then Brazil, with its abundant renewable energy and iron ore resources, could become a green steel powerhouse.

Brazil needs to do more policy work and develop climate policy leadership to get to that position. The current clear shift in direction is an excellent start, with many policies and processes underway that could substantially change Brazil's position going forward.



[1] This document supplements the main **2023 Steel Policy Scorecard report: Raising ambition on steel decarbonisation**.

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Priority recommendations for Brazilian steel decarbonisation policy

Brazil has great potential to be an important green iron and steel exporter. The following policies can help realise this potential:

> Secure the value-add of a green steel sector to the Brazilian economy, by providing investment security for industrial actors; facilitating the creation of international purchasing clubs and assisting the establishment of international commercial and bilateral agreements; enhancing this agenda during its G20 2024 Presidency.

> Embed climate ambition in the new drive for green reindustrialisation with a dedicated roadmap setting ambitious steel sector emissions reduction targets for 2030 and 2050. This would accompany current spending programmes such as the Growth Acceleration Plan and the Ecological Transformation Plan, and go hand in hand with a plan to green domestic and international steel demand.

> Accelerate the development of an emissions trading scheme (ETS), coupled with government support to steel plants in transition. Plans to safeguard the domestic market against oversupply of high-carbon steel in international markets should also be put in place.

A large producer with an unusual energy profile

Brazil is currently the ninth largest steel producer globally, with 51 million tonnes per annum (Mtpa) steelmaking capacity.[2] Brazil's ample renewables potential and iron ore resources are great prerequisites for producing green iron through hydrogen-based DRI technology (H_2-DRI). However, there are no H_2-DRI plants in the project pipeline and 76% of steel in the country is produced in blast furnaces.[3] Usually such furnaces use coal, but in Brazil 11% of primary steel production uses biochar instead.[4]

Brazil is the only place in the world that uses charcoal in small furnaces. The approximately 1.2 million hectares of planted forests dedicated to the steel industry represent 13% of Brazil's total planted forest area.[5] Areas for biochar production can be obtained through the expansion of planted forests by restoring degraded areas. Charcoal certified according to clear environmental

[2] Instituto Aco Brasil, 2022, **Consolidated industry data for 2022**, accessed November 2023

[3] Global Energy Monitor (GEM), 2023, **Pedal to the Metal 2023**

[4] Biochar is a form of charcoal derived from burning organic material from agricultural and forestry wastes.

[5] Ministry of Agriculture, Forestry and Fisheries of Japan, 2019, **Country Report Brazil**

and social sustainability requirements has a role to play in achieving near-zero emission steelmaking. Guaranteeing the protection of conservation areas, adopting modern coking technologies to reduce methane emissions and promoting good rural employment practices are crucial. Additionally, mapping degraded areas and their proximity to steel plants is essential for technical and economic viability.

The Brazilian steel company Aço Verde Brasil has built what is deemed to be the first carbon-neutral integrated steel plant in the world, using biochar derived from planted forests.[6]

Positive signals from the public and private sector – but little concrete action

Brazilian companies are starting to position themselves as producers of green iron, both locally and internationally. Vale is a Brazilian multinational and the world's largest iron ore miner. It is setting up mega-hubs in Saudi Arabia, the United Arab Emirates and Oman to feed DRI furnaces.[7] It also recently signed an agreement with Swedish H2 Green Steel to investigate the feasibility of developing green industrial hubs in Brazil – with an eye to producing hot briquetted iron with green hydrogen. If extended to include the next step – green steelmaking, the value-add to the Brazilian economy could be even greater.[8]

Green iron and steel production fit well with the Lula government's focus on developing Brazil as a green powerhouse. Recent national policies, such as the Growth Acceleration Plan, the Ecological Transformation Plan and the Multi-year Plan (Plano Plurianual 2024–2027), are sending signals in this direction. There is also a growing Brazilian narrative around green neo-industrialisation.

What is also required now are: clear regulatory signals for industry and steel decarbonisation, including emissions reduction targets; and dedicated government funding for steel decarbonisation in form of direct grants or tax incentives. Already, public banks offer some support. More might be needed, especially if the price premium on green steel increases. This could happen with the potential introduction of a mandatory carbon market domestically and due to other mechanisms worldwide, such as the EU CBAM.

[6] Global Energy Monitor, AVB Açailândia **steel plant** (accessed January 2024)

[7] Vale, November 2022, **Vale signs agreements to develop Mega Hubs in the Middle East and provide decarbonization solutions for steelmaking.**

[8] E+ Energy Transition Institute, 2022, **Scoping Paper on the Brazilian Steel Industry Decarbonization**

Huge clean energy potential to take advantage of once tangible targets and policies are in place

Brazil generated nearly 93% of its electricity from clean sources in the first nine months of 2023.[9] With huge remaining renewable energy potential, it is well positioned to swiftly achieve a net zero power system and fuel its green reindustrialisation aspirations. This would give the country a significant competitive edge in a decarbonising world. Private sector action is already starting to power growing steel capacity with new clean energy, thanks to solar and wind being the cheapest sources of energy in Brazil.[10] A recently announced ArcelorMittal joint venture partnership is set to meet 38% of the company's power needs in Brazil until 2030 through dedicated wind power installations.[11]

The country's national energy plan refers to integrating hydrogen in the steel sector.[12] The next step will be to set tangible targets and policies to achieve this goal; a hydrogen strategy (PNH2) is under development. Brazil's ten-year energy plan, published in 2022, included an assessment of the hydrogen technical production potential from various energy sources, including fossil fuels, biomass and renewables, up to 2050. It did not include any production, capacity, consumption or end-use targets, but a certification scheme based on hydrogen emissions intensity is planned.

Brazil also has unexplored potential for biomethane, from agriculture and urban residues. This is mainly in the southeastern region, where the country's main steel mills are located. The ecological transformation plan highlights the possible introduction of general programmes to encourage circular economy practices in the industrial sector. It also includes specific ones for managing urban residues and using them as a source of energy.

The Brazilian government can help build green steel markets

Key players in the Brazilian steel industry are unlikely to make bolder moves without greater certainty about demand for green steel products. Brazil joining the IDDI in July 2023 sends a clear signal on the government's intention to scale up its ambition on public procurement, an important policy lever. This should be followed by clear green steel procurement targets or requirements. In addition,

[9] Reuters, October 2023, **Brazil set to widen lead as cleanest major power sector**

[10] Instituto de Energia e Meio Ambiente (iema), October 2022, **Solar and wind farms are contracted for the best price in the last energy auction**

[11] ArcelorMittal, April 2023, **Arcelor Mittal establishes renewable energy JV with Casa dos Ventos in Brazil**

[12] Federal Government Ministry of Mines & Energy, 2021, **Baseline to support the Brazilian Hydorgen Strategy**

the Brazilian government could pursue bilateral offtake agreements with key countries, such as China, Germany, Mexico, South Korea and the USA. Ideally, it would do so in parallel with a process to identify internationally aligned green steel definitions and standards.

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About E3G

E3G is an independent climate change think tank with a global outlook. We work on the frontier of the climate landscape, tackling the barriers and advancing the solutions to a safe climate. Our goal is to translate climate politics, economics and policies into action.

E3G builds broad-based coalitions to deliver a safe climate, working closely with like-minded partners in government, politics, civil society, science, the media, public interest foundations and elsewhere to leverage change.

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