

## Press release

# 80% of Indonesia's steel industries still using high-emissions tech, lagging global and regional progress

**Jakarta, 18 December 2024** — Indonesia's basic metal industries have seen strong growth in the past few years, with domestic and foreign investments rising 2.5-fold from USD 14.8 billion in 2020 to USD 37.7 billion in 2023. However, the gross majority of this investment is going to projects using emissions-intensive blast furnaces (BF) for ironmaking and basic oxygen furnaces (BOF) for steelmaking, referred to as BF-BOF processes, with 80% of Indonesia's steel industries still relying on these outdated technologies, according to a new report by the [Centre for Research on Energy and Clean Air \(CREA\)](#).

Switching to low-carbon technologies and accelerating the greening of the grid – to fully utilize the country's abundant renewables potential – will future-proof Indonesia's steel industry, especially with the EU's Carbon Border Adjustment Mechanism (CBAM) looming on the horizon.

With other countries quickly transitioning to low-emissions steel production, Indonesia accelerating low-carbon production routes - through Direct Reduced Iron (DRI) and Electric Arc Furnace (EAF) technologies – and discouraging new BF-BOF capacities, would not only ensure that the domestic industry remains competitive in a fast-changing global trade but align industrial growth with national planning. Emissions produced via BF-BOF are lowered from approximately 2.33 tonnes of CO<sub>2</sub> per tonne of steel to just 1.37 tonnes with DRI-EAF.

DRI-EAF process enables the integration of scrap and recycled steel, advancing material efficiency, and being commercially available, which has the potential to move the industry towards a near-and net-zero future through the use of low-carbon reducing agents and for being typically grid-linked – hence, aligned with national power decarbonisation.

Investments in Indonesia's basic metals industry have rapidly increased, from USD 14.7 billion in 2020 to USD 37.7 billion in 2023. Ongoing and announced expansions that will double the country's current crude steel production capacity are tagged to a handful of major private steel players, including both domestic and global manufacturers. From Indonesia, major investments come from Gunung Steel Group; foreign investors include China (Fuhai Group, Ansteel Group, and Delong Group) and South Korea (POSCO).

Once all iron and steel projects in the pipeline are completed, national capacity will increase by 125% for steelmaking and 55% for ironmaking. Out of the 24.5 Mt steelmaking capacity in the pipeline, 22.8 Mt are using BOF, and only 1.7 Mt are using EAF. Meanwhile, from the 5.8 Mt of ironmaking expansion in construction, all use BF. Currently, there is no operational DRI furnace in the country.

Meanwhile, the national iron and steel trade balance has undergone a shift in recent years, where exports show sharp growth after 2020, overcoming imports in valuation. Stark growth is driven by ferroalloy, primarily produced from nickel ores. On the other hand, domestic issues linger as the



national market remains reliant on imports, leading to sustained underutilisation of local industry's production capacities. Between 2019 and 2023, the utilisation rate ranges from 40-90%, while 35-40% of this total domestic output is exported.

In terms of technology development, a major shift has been occurring in the past few years as the global industry signals a pivot towards EAF technology, as highlighted by [the Global Energy Monitor \(GEM\)](#). The share of EAFs in new planned capacities has significantly doubled in recent years, from 41% in 2021 to 92% in 2023. Unfortunately, regional developments show backtracking to the traditional BF-BOF route, quoted as “de-greening” as the trend contradicts net zero commitments. In spite of this, two neighbouring countries show significantly higher EAF investment compared to Indonesia (1.7 Mt), namely Vietnam (17.2 Mt, 12.5-fold) and the Philippines (12.8 Mt, over 10-fold).

CBAM, which will come into effect in 2026, will present both challenges and opportunities for global steel producers and exporters. Budding green steel projects and government deliberations on national steel strategies in Vietnam, Malaysia, Thailand, and the Philippines signal growing momentum. Keeping in mind the 8% economic growth target, [President Prabowo's Asta Cita](#) (eight primary missions), and various ambitious strategic initiatives in infrastructure and manufacturing, Indonesia is well placed to be among the first movers.

Considering the estimated USD 17 to 26 billion of lock-in risks in Indonesia, as quoted by GEM, policymakers, and national stakeholders should recognise the urgency to implement strategic interventions, reforming the domestic iron and steel industry to align with international progress.

#### **From these findings, CREA recommends:**

- **Strict enforcement of proven or most effective trade policies is the first step in restoring trade balance and ensuring a fair and competitive market for Indonesia's iron and steel industry.** Close collaboration between policymakers and domestic stakeholders is necessary to inform decision making as well as identify and address existing regulatory hurdles.
- **As one of Indonesia's national strategic industries, the policy framework for the iron and steel industry decarbonisation should be advanced, setting binding targets that link climate commitments and industrial growth.** Strong ambition in the form of national roadmaps and regulations serves as a signal for investors, shifting investment decisions to better align with the targets and deterring new additions of technologies with high lock-in risks.
- **Given the abundance of renewables potentials, Indonesia should first and foremost unlock them, by prioritising power sector reform to realise ample availability of cost-effective clean electricity that would support steel transition.** Decarbonisation of the iron and steel industry requires the greening of the grid, which implies the significant importance of national alignment towards accelerated and timely development for renewables deployment.

*'Despite Indonesia's iron and steel industry emerging as a key global player, its reliance on emissions-intensive processes, namely blast furnace for ironmaking and blast oxygen furnace for steelmaking, remains a barrier to the sector accessing its full potential. We strongly encourage the government to introduce comprehensive technology roadmaps and policies that restrict coal-dependent production routes, encourage adoption of EAF technology, and promote material efficiency strategies across the steel lifecycle. These actions would serve as a signal for investors to*



*shift their decisions, which will position the domestic industry for long-term competitiveness and sustainability, and most importantly avoid lock-in risks,' said Abdul Baits Swastika, Researcher at CREA.*

*'In order for its iron and steel industry to remain competitive in a rapidly evolving global market, Indonesia must align its industrial growth with national planning, which includes setting binding policy targets linking that growth to domestic climate commitments. The country should start by unlocking its abundant renewables potentials, prioritising power sector reform in order to harness the cost-effective, clean electricity needed to support steel transition. At the same time, infrastructure development should also receive immediate attention to ensure the timely adoption of near-zero steel production technology. Taking these actions will enable iron and steel to preserve its status as a key pillar of Indonesia's economic growth while concurrently helping the country to follow through on its climate commitments, both domestic and global,' said Katherine Hasan, Analyst at CREA.*

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## Contacts

Abdul Baits Swastika  
Researcher, CREA  
+62 857-1655-6472  
[baits@energyandcleanair.org](mailto:baits@energyandcleanair.org)

Katherine Hasan  
Analyst, CREA  
+62 877-8718-6363  
[katherine@energyandclearair.org](mailto:katherine@energyandclearair.org)

## About the research

The study utilises domestic trade data, industry resources, and international reports to analyse Indonesia's expanding iron and steel sector and its environmental implications. The work aims to highlight the current state of the iron and steel industry in relation to industrial decarbonisation and overall national climate commitments, underscoring the need for focused attention and coordinated action from stakeholders and policymakers to bridge gaps between targets and on-the-ground realities. The publication is available [here](#).

## About CREA

The Centre for Research on Energy and Clean Air (CREA) is an independent research organisation focused on revealing the trends, causes, and health impacts, as well as the solutions, to air pollution. CREA was founded in December 2019 in Helsinki and has staff in several Asian and European countries. The organisation's work is funded through philanthropic grants and revenue from commissioned research. [www.energyandcleanair.org](http://www.energyandcleanair.org)