



Methane doesn't read the label

Nobody counts the methane released from mining Japan's imported coal. Someone should, starting with a disclosure initiative like the one Japan already runs for gas.

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About

This brief explains why Japan governs methane in the LNG it imports but not the coal it consumes, why that distinction is becoming unstable, and how existing institutions could close the gap. The gap matters now because the UN Secretary-General's [Call to Action on Methane](#) named coal mining a priority for 2030 and flagged metallurgical coal methane as "largely overlooked."

Read the report online at:

<https://ember-energy.org/latest-insights/methane-doesnt-read-the-label>

Key highlights

308.1 kt

Coal mine methane emissions embedded in the coal arriving at Japan's eleven blast furnace mills in 2024 were equivalent to 25.4 Mt CO₂e (GWP20), roughly 4.6 times Japan's entire reported domestic energy-sector methane inventory, yet current Scope 3 reporting does not explicitly capture them.

+46%

Counting coal mine methane across Nippon Steel's full 33.13 Mt mill-gate intake would add roughly 46% to the Scope 3 emissions it reports in Categories 1 and 3, on the 100-year basis. Weighted for methane's near-term warming (GWP20), the same volume would more than double them.

13.62 Mt

Indonesian coal was booked into Japan's residual "Coal for Coking N.E.S." line in 2024 – more than nine-tenths of what Japan recorded as coking coal from Indonesia.

Japan already governs methane in the gas it imports, and it can do the same for coal

When coal is mined, methane escapes from the seam. The same methane is unevenly measured and, for metallurgical coal, barely regulated. The exemption rested on two claims – that methane should be counted at the mine (Scope 1), not the mill (Scope 3), and that mine-level data was unavailable. But the situation is changing on both fronts.

Japan is better placed than any other importer to act on that shift. Through the [CLEAN initiative](#), Japanese buyers already ask their LNG suppliers to disclose upstream methane. This shows that an importing country can create transparency through purchase relationships. Coal moves through the same trading houses, and the data can be produced, but the coal side has no operational mechanism to request it.

Currently, no institution holds that function. The Ministry of Economy, Trade and Industry (METI) treats coal as energy security, the Ministry of the Environment (MoE) inventory stops at Japan's border, as UNFCCC rules require, and steel-sector accounting excludes upstream methane by default. The emissions fall into the gap between mining and steel.

Coal mine methane adds roughly [27%](#) to steel's 20-year climate impact, yet that cost stays outside coal markets, and outside the plans to decarbonise steel.

The lever for change is accountability. Once coal mine methane is counted in steelmakers' Scope 3, investors can price it, procurement standards can reference it, and buyers can ask their suppliers for the data.

A coal-side framework would combine three elements Japan already operates for LNG. These include disclosure requests from buyers, standardised methane data from suppliers, and independent aggregation. CLEAN provides the template, and a first

coal-methane disclosure cycle modelled on it would establish Japan's own standard while the international rules are still forming.

01

Two CLEAN reporting cycles lifted LNG project methane disclosure from 35% to 64%

Japanese buyers ask their LNG suppliers for upstream methane data through the terms of existing sales and purchase agreements, with JOGMEC convening and aggregating the results, to produce the first project-level methane baseline of its kind. No regulation was required, and no new institution. The same buyers and trading houses run Japan's coal supply chain, but nothing equivalent has been asked.

02

The coal arriving at Japan's three largest steelmakers in 2024 carried an estimated 308.1 kt CH₄, or 4.6 times the country's entire reported domestic energy-sector methane inventory of 67 kt CH₄

That is 25.4 Mt CO₂e on a 20-year basis, and more than double Japan's reported waste-sector methane of 124 kt CH₄. Nippon Steel accounted for 181.7 kt CH₄ of it, from 33.13 Mt of coal received at its seven blast-furnace mills, against 24.87 Mt of disclosed coking coal. On the 100-year basis used in corporate reporting, that is 5.4 Mt CO₂e, or 46% of the Scope 3 it reports in Categories 1 and 3; on the 20-year basis, it is 15.0 Mt CO₂e, enough to more than double them. Whether any of it is captured in corporate disclosures is unclear, and none of it sits inside the accounting framework of [Japan's Global Methane Pledge](#).

03

Japan's customs recorded the Indonesia-to-Japan coal flow at 52% "for coking", Indonesia counted the same as 39% "coking" and commercial tracking pegged it at 2% "metallurgical"

Exemptions follow declared end use, but methane follows the seam. The two customs agencies roughly agree on the total tonnage and diverge on how much of it is "coking". A label this unstable says nothing about methane intensity, yet coal phase-out policies, finance taxonomies and disclosure frameworks still rest on it.

CLEAN transfers governance, not abatement technology, and disclosure alone will not cut emissions. The next steps are verified intensity metrics and pricing that reflects them.

By August 2027, the EU will set its methane rules for coking coal, and from 2030 imported fuels must meet a maximum methane intensity to enter the EU market. None of this bind Japanese steelmakers, but they inherit both consequences: the higher-methane cargoes that start looking for other buyers, and rules they had no hand in writing. [China](#), too, has begun curbing coal mine methane at home.

From FY2028, Japan's GX Surcharge will price carbon in imported coal but not the methane mined with it, while blast-furnace relining decisions now underway will lock in coking-coal demand into the 2040s. Japan has eleven months to shape the emerging rules or adopt those written elsewhere.

Improving methane management in the steel value chain is one of the most effective climate actions this decade and critical to a resilient industrial transition. Investors, including Fidelity International, representing US\$9.85 trillion in assets under management, recognise methane from metallurgical coal as a material consideration for the steel value chain. Japan has an opportunity to lead on enabling stronger mine-level measurement, verification and disclosure within its supply chains and support practical methane abatement.

Sue Lyn Stubbs

Fidelity International



The “metallurgical” label decides what gets reported, but it does not decide what leaves the mine. Japan has already built, through CLEAN, the buyer-led architecture it needs, and can extend it across the region’s coal and gas supply chains. If Japan leads, East Asia helps write the rules; if it waits, rules will be written elsewhere.

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A leadership model that stops at gas

Japan already governs methane in gas imports. The Coalition for LNG Emissions Abatement toward Net-zero (CLEAN) has shown that buyer-side disclosure works in LNG, lifting the share of projects that disclose methane data from 35% to 64% in two reporting cycles and producing the first project-level baseline of its kind.

The same traders, steelmakers, and Japan Organisation for Metals and Energy Security (JOGMEC) divisions sit at the centre of a coal supply chain where no equivalent system exists, and where upstream methane is comparable in scale and less well measured.

What counts as coal mine methane

Coal mine methane (CMM) is the gas released due to mining activities; it can be released before, during and after mining. It is distinct from coalbed methane and coal seam gas, which are extracted as commercial gas products and accounted for in the gas sector. Abandoned mine methane also sits outside this report. All figures in this report refer to methane from operating mines.

1.1 CLEAN: a buyer-led disclosure initiative

Governance through purchase terms, not regulation

CLEAN was announced in [July 2023](#) at the LNG Producer–Consumer Conference in Tokyo, co-hosted by METI and the International Energy Agency (IEA), under a joint statement pledging support for methane abatement across the LNG value chain. The [founding buyers](#), JERA and KOGAS, send disclosure questionnaires to their upstream suppliers, while JOGMEC, with METI’s backing, operates the platform that aggregates responses. The premise is that buyers hold the leverage, and the responsibility, to govern methane in their supply chains.

Unlike the European Union (EU)’s producer-focused approach, Japan embeds methane in purchase relationships. Disclosure questionnaires go directly to projects holding active sales and purchase agreements (SPAs) with participating buyers. This makes disclosure a part of the commercial relationship rather than a regulatory requirement.

But CLEAN’s leverage stops short in two ways. It stops at only gas. Further, it attaches no exclusion or pricing penalty. As a result, disclosure never becomes a true condition of market access.

Measurable results within two reporting cycles

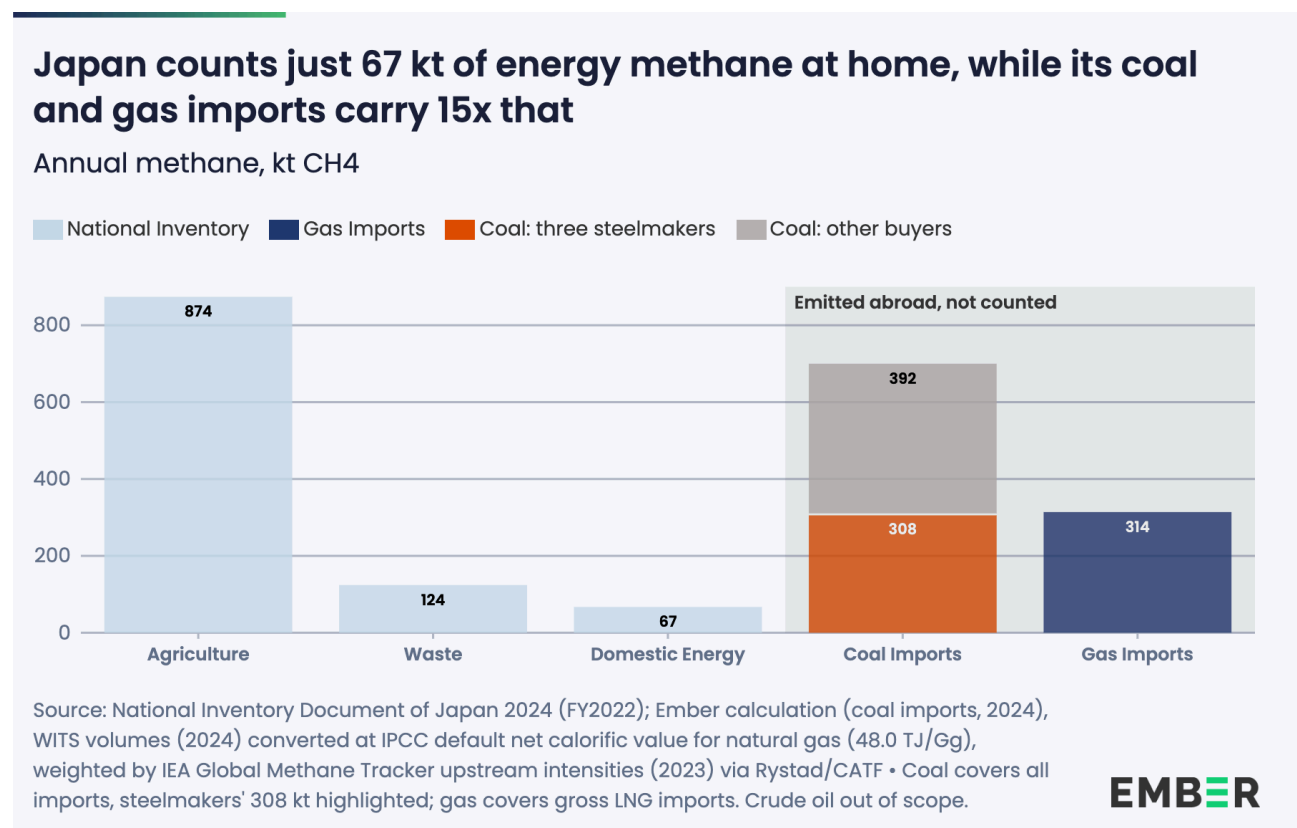
By October 2025, CLEAN had expanded to [27 participating LNG buyers](#) across Japan and South Korea, covering roughly [25% of global LNG consumers](#) and [40% of producers](#), though participation remains voluntary and is short of full coverage. Between 2024 and 2025 reporting cycles, questionnaire response rates by LNG sellers rose from [80%](#) to [95%](#), and project-level data provision rose from 35% to 64%. It generated the first buyer-driven, project-level methane disclosure baseline in LNG markets.

End-use agnostic, and only as a start

CLEAN does not distinguish LNG by end use, making its buyer-side architecture transferable to sectors where methane remains ungoverned, including coal. The UN Secretary-General’s 2026 [methane call](#) cites CLEAN as a notable example of buyer-side LNG governance while naming metallurgical coal methane an [overlooked issue](#) in steel decarbonisation. Disclosure alone is [insufficient](#) to drive methane performance, but Japan has already built the architecture. Therefore, it can extend that architecture to coal while the rules are still being written or adapt later to standards set elsewhere.

1.2 Awareness without a mechanism inside JOGMEC

JOGMEC's LNG and Methane Management Division [hosts CLEAN](#) and partners with [UNEP's International Methane Emissions Observatory \(IMEO\)](#). Further, in partnership with Pertamina and JGC, it ran a two-year [methane measurement and abatement](#) project at onshore gas production facilities, aiming at OGMP 2.0 Level 5 in Indonesia. Its Coal Development Department finances coal resource development globally and has commissioned coal mine methane research on governance, regulation, and measurement technologies. Yet no buyer-disclosure mechanism comparable to CLEAN has emerged on the coal side.



For example, in its [2025 H1 coal market update](#), JOGMEC reported the Queensland coking coal mine accidents of March–April 2025, including the Moranbah North methane fire, as a supply and [price disruption](#), with no reference to methane or its governance implications.

Japan's methane governance covers LNG but not coal

Existing Potential route Absent

	LNG	Coal
Governance Element	CLEAN since July 2023	None
Governance Backstop	METI → JOGMEC	None
Secretariat	JOGMEC LNG & Methane Management Division	None
Buyer Coalition	27 Companies 25% demand; 40% supply	None
MRV Framework	OGMP 2.0 + IMEO	IMEO Steel Methane Program not yet participating
Core Actors	Buyers, producers, JOGMEC, IMEO	Steelmakers, Trading Houses not yet convened
Commercial Lever	SPA-linked disclosure	SPAs and equity available not yet utilised
Current Outcome	Project-level methane baseline 2025	No disclosure

Source: Ember compilation from CLEAN, JOGMEC, UNEP IMEO and company disclosures.
LNG data October 2025; coal status August 2026.

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Furthermore, JOGMEC's own coal-side research has described each element of the gap in its own research. Its FY2023 report [surveys](#) the GHG Protocol value-chain framework and separately names Australia and Indonesia, Japan's [two largest metallurgical coal suppliers](#), yet does not apply the framework to those imports. Its [FY2024 report](#) introduces IMEO's [Steel Methane Programme](#) as an emerging OGMP 2.0-style framework and observes that under [IFRS S2 industry guidance](#), coal mine methane is Scope 1 for coal miners but not captured under Scope 3 for steelmakers. Therefore, it falls between the two. The same report examines mine gas monitoring across the US, Australia, Poland and Japan as a safety question with occupational thresholds of [1-2%](#), rather than the parts-per-million resolution OGMP 2.0 [Level 4 and 5](#) required for climate reporting.

JOGMEC appears to have the capacity to act on coal. Where it has been asked to act on methane, it has acted thoroughly, taking a two-year measurement programme to

Indonesia. Its coal work shows the same awareness of methane, disclosure frameworks and supply-chain emissions, but reads methane as a price signal or a safety threshold. Nothing published on that side yet treats it as an emission to be governed.

The same limitation also appears in policy. Japan's Global Methane Pledge submission confines [fossil fuel measures to LNG](#), via CLEAN. Its [11% methane target](#) and 26.7 Mt CO₂e FY2030 ceiling are set against the territorial inventory, which counts the residual methane from the Kushiro mine but not the 699.9 kilotonnes (kt) of methane (CH₄) embedded in Japan's 2024 coal import, 57% of which came from coking coal.

1.3 Locked into coal with unverified methane

Import dependence and blast-furnace lock-in

Japan imports [99.7% of its coal](#). Despite declining thermal coal use, [80.6 million tonnes \(Mt\) of blast furnace capacity](#), operated by Nippon Steel, JFE Steel, and Kobe Steel, locks in continued coal dependence. Together, they account for 86% of Japan's total crude steel production ([Nippon Steel 50%, JFE 29%, Kobe 7%](#), 2023 share). Output fell from [96 Mt](#) in 2021 to [84 Mt](#) in 2024, but this reflects cyclical demand, rather than a structural transition. Even under decarbonisation pathways such as Nippon Steel's COURSE50, which injects hydrogen into the blast furnace rather than replacing it, [blast-furnace steelmaking](#), and therefore [coking coal demand](#), is likely to persist into the 2030s.

Indonesia's rising share is measured with low confidence

Japan's annual coking coal imports declined from 64 Mt in 2021 to 55 Mt in 2025. Across those five years, Australia's share slipped from 54% to 50%, while Indonesia's rose from 20% to 26%, making Indonesia the second-largest supplier of the coal Japan classifies as coking, and the one whose methane is hardest to verify.

Ember rates Indonesia's national estimate as [low confidence](#), because its UNFCCC reporting is outdated and uses [Tier 1 methods](#) – global emission factors applied to aggregated national production, rather than measured mines. Indonesia's own inventory puts national coal mine methane at around 0.2 Mt; [GEM and IEA assessments](#) put it 6 and 14 times higher, respectively. Nothing requires anyone to find out which is closer, so switching origin would only shift the uncertainty elsewhere.

The coal methane gap in steel sector emissions: visible, material, and unassigned

The methane released from mining the coal Japan imports is now measurable, and large enough to matter for steel's emissions, yet it goes uncounted and ungoverned. The gap travels through a label. Finance and reporting frameworks that exclude thermal coal leave coal declared "metallurgical" untouched, yet no two customs or commercial systems draw that line the same way, so the methane stays off the books.

2.1 The scale of the problem

Coal mining emitted around [35 Mt](#) of methane in 2025, comparable to the gas sector. Metallurgical coal alone contributes an estimated [12 Mt CH₄](#) a year, about 990 Mt CO₂e on a 20-year basis, adding around [27% to steel's short-term climate impact](#) once upstream methane is counted. For the gassiest mines, methane alone can [double](#) blast-furnace steel's emission intensity.

Japan's eleven blast-furnace mills took in 54.5 Mt of coal in 2024, carrying an estimated 308.1 kt CH₄ of upstream methane, 4.6 times Japan's entire reported domestic energy-sector inventory of [67 kt CH₄](#). That is 9.2 Mt CO₂e on the 100-year basis used in corporate reporting, or 25.4 Mt CO₂e weighted for methane's near-term warming (GWP₂₀).

Three companies own those mills. Nippon Steel alone received 33.13 Mt at its seven mills: the [24.87 Mt of coking coal](#) it discloses, plus about 8 Mt of [PCI](#) and captive-power

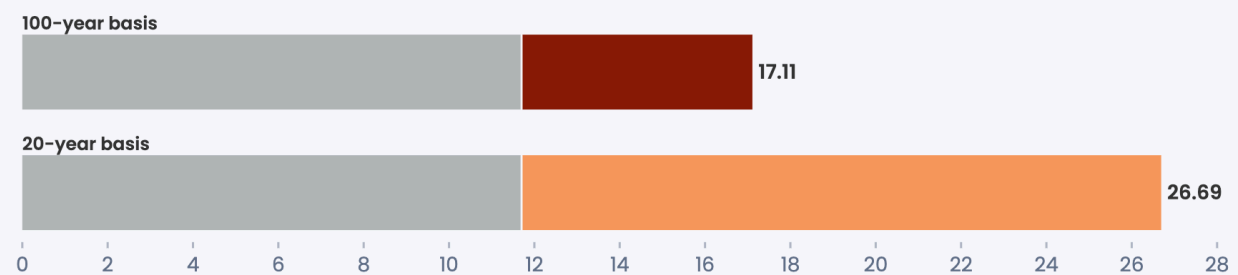
thermal coal, outside the coking boundary, but inside the mill gate. Ember estimated the imported methane emissions using IEA methane intensities: 181.7 kt CH₄ for Nippon Steel, 100.5 kt for JFE Steel and 25.9 kt for Kobe Steel. The gap follows intake more than grade, though JFE's coal carries more methane per tonne.

Coal's upstream emissions belong in Scope 3 Categories 1 and 3. Nippon Steel's 181.7 kt CH₄ is 5.4 Mt CO₂e on the 100-year basis or 46% of the 11.7 Mt CO₂e that the company reports across those two categories. On a 20-year basis, this is 15.0 Mt CO₂e. Whether on a GWP-20 or GWP-100 basis, the coal mine methane emissions are substantial to a steelmaker's Scope 3 emissions.

Coal mine methane adds 46% to Nippon Steel's Scope 3 Categories 1 and 3 — or 2.3 times over 20 years

Reported Scope 3 Categories 1 and 3 (11.70 Mt CO₂), plus estimated coal mine methane from 33.13 Mt of mill-gate coal intake. FY2024, Mt CO₂e.

■ Reported Scope 3 C1 + C3 ■ Coal mine methane (100-year) ■ Coal mine methane (20-year)



Source: Ember analysis, Nippon Steel FY2024 Scope 3 disclosure; coal mine methane from mill-gate intake × IEA/WMD origin intensities • GWP20 = 82.5, GWP100 = 29.8 (AR6). Categories 1 and 3 are where coal's upstream methane belongs; against total reported Scope 3 (15.64 Mt CO₂) it is 35%. Methane covers all 33.13 Mt arriving, not only the 24.87 Mt disclosed as coking coal.

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How much methane arrives depends on where the coal was mined, not just how much of it is mined. Depending on origin, fugitive methane can add [0 to 140%](#) to steel's short-term climate impact, a spread no purchasing decision currently reflects.

Australia's reported intensity has [fallen 0.1 tCH₄/kt as surface mining grew](#), but satellite evidence suggests open-cut emissions are underestimated. Therefore, it is likely the decline is partly an artefact of measurement rather than a real reduction.

And Australia is among the better-measured origins. Ember scores 59 coal-producing countries on the [quality](#) of their reported coal mine methane: five reach good

confidence, but none supply Japan. Australia rates medium; Indonesia, low, but the gap in the top band is measurement, which a buyer can ask its suppliers to close.

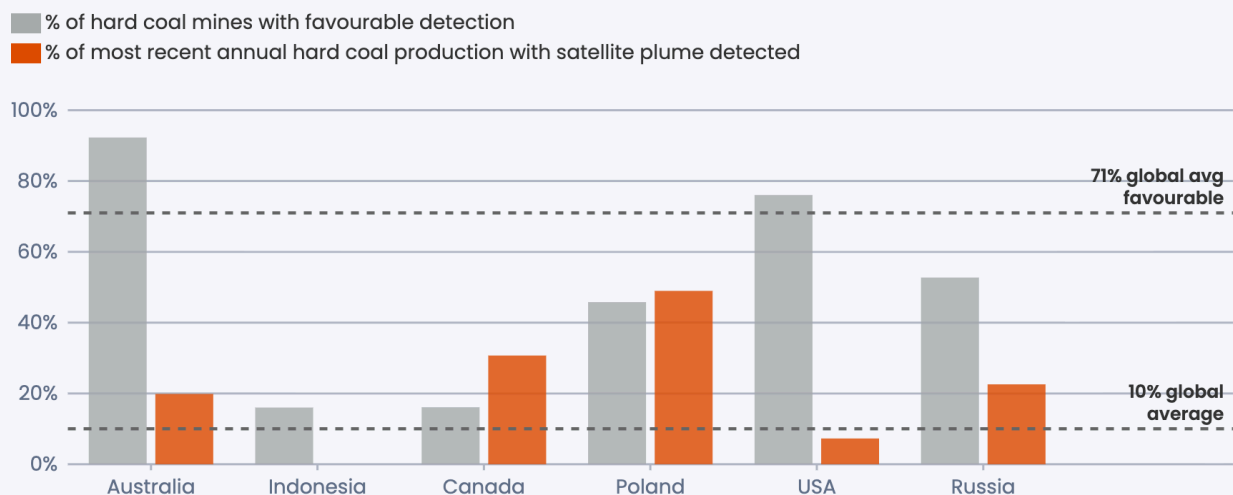
Data visibility arrived without usability

Coal mine methane is increasingly measurable, but measurement is not governance. Only [10%](#) of global hard coal production has ever had a methane plume attributed to it, largely because of where institutions choose to look.

Satellites (Carbon Mapper's [Tanager-1](#), IMEO's [MARS](#), Japan's [GOSAT-GW](#)) are one layer. Ground sensors, aircraft surveys, and operator measurements add to what satellites cannot monitor, particularly at underground mines and in cloud-covered or mountainous terrain.

Satellite can see most coal mines, but most coal mines aren't being looked at

Share of hard coal production in favourable detection conditions vs share with detected plumes, 2024



Source: Ember's Coal Mine Methane Tracker

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Japan's three principal coal suppliers show the full spread:

- **Australia: observable but undercounted.** [92% of mines](#) sit under conditions suitable for satellite detection, and emissions are reported mine-by-mine under the Safeguard Mechanism. Yet, independent estimates put fugitive methane [40%](#)

to [80%](#) above UNFCCC inventories – at Hail Creek, satellite estimates [repeatedly exceeded](#) reported emissions by multiples even as reported emissions fell and [credits were issued](#).

- **Indonesia: effectively unmeasured.** [84% of production](#) sits in [hard-to-monitor regions](#), underground mines are excluded from inventories, and the energy ministry's [168 kt](#) CH₄ for 2024 compares with Ember's estimate of [722 kt](#).
- **Canada: a counter-case.** Only [16% of hard coal mines](#) are classed as favourable for satellite observation, yet plumes have been detected across 31% of production because Carbon Mapper and institutional attention were directed there.

Where coal mine methane is measured tracks where measurement is required, not where the coal is. [Poland](#), though not a major supplier to Japan, shows the same under the EU Methane Regulation, where that attention is required rather than chosen. Japan's own supply chain spans that range, from the United States, rated [medium](#) for methane visibility, to Mozambique, a growing source that has [yet to report](#) coal mine methane emissions to the UNFCCC.

The data can be produced. Yet for coal, no channel exists to receive, process, or act on it – the function JOGMEC already performs for gas.

Elkview

Ten [methane plumes](#) have been attributed to the Elkview metallurgical mine in British Columbia between September 2022 and June 2025, the largest quantified at [2.5](#) tonnes of CH₄ per hour. In January 2024, Nippon Steel paid [USD 1.3 billion](#) for 20% of Elk Valley Resources, which operates Elkview and three other BC mines, turning a long-standing offtake into co-ownership.

2.2 Measured, but in no one's remit

Coal mine methane sits outside most steel reporting by default. Among major accounting and disclosure frameworks, only [ResponsibleSteel V2.1.1](#) and [worldsteel's Life Cycle Inventory methodology](#) explicitly require net coal mine methane within the cradle-to-gate emissions of purchased coal.

The others include upstream coal within Scope 3 in principle but impose no methane-specific or mine-level requirement. [GHG Protocol Scope 3](#) and the [Steel Science-Based Target-Setting Guidance](#) place purchased-coal emissions in Scope 3 (Category 1 or the mandatory Category 3 fuel-and-energy target) without isolating mine methane. The [IFRS S2 industry guidance](#) provides no steel-specific Scope 3 metric. Mine-gate methane is therefore captured, if at all, only through generic default factors.

The policy-level gap reinforces the reporting gap. No Japanese ministry treats methane from imported coal as part of its climate remit. METI treats coal primarily as an economic resource. Its 2025 Strategic Energy Plan values coal for its “[relatively low cost per unit of energy](#)” while describing its climate impact only as the “highest greenhouse gas emissions among all fossil fuels.” The MoE inventory stops at Japan’s border, as UNFCCC rules require, while steel disclosure follows global frameworks centred on mill-gate CO₂. With negligible domestic mining, agriculture and waste dominate Japan’s territorial methane profile, leaving coal mine methane largely outside the climate conversation.

Even the new GX is blind to imported coal mine methane emissions

Green Transformation (GX) is Japan’s national decarbonisation programme, legislated in the 2023 GX Promotion Act. It works through two pricing instruments:

- **GX-ETS.** An emissions trading scheme mandatory for large emitters since April 2026, covering participating firms’ direct CO₂. Allowances are allocated free until 2033, and there is no absolute cap.
- **GX Surcharge.** Formerly the Fossil Fuel Surcharge, a levy on fossil fuel importers from FY2028, charged on the fuel’s carbon content.

Both price carbon where it is imported or burned, but neither price the methane released to extract it. GX’s blast-furnace benchmark runs from [raw material intake to crude steel](#), so coal mine methane, released before the coal reaches the mill, falls entirely outside it, as does methane intensity, the quantity the EU Methane Regulation governs.

The [¥20 trillion](#) (roughly USD 130 billion) transition finance programme and over 60% of Green Innovation Fund steel [R&D](#) stay weighted toward blast-furnace technologies, CCS and hydrogen injection, rather than electric arc conversion. This is at a point where [61% of Japan’s steel capacity](#) faces reinvestment, conversion or closure by 2035.

[IEEFA's June 2026 assessment](#) finds that blast-furnace pathways do not address upstream methane from extraction. Nor would displacing them. Displacement reduces how much coal flows through the supply chain over time, while methane governance addresses what is already in it.

GX's price signals are weak even for the carbon they do cover. There is no emissions cap, free allowances until 2033, and [prices too low](#) to drive fuel switching, which makes the methane omission more visible as Japan leans harder on carbon pricing. The two regimes that do regulate coal sit at opposite ends of the chain. Australia's Safeguard Mechanism is at the producer end, and Japan's GX-ETS at the buyer end, and neither differentiates coal by verified methane performance.

Certification carries the blind spot too. Japan's GX Steel programme certifies reductions on a [mass-balance](#) basis, allocating emission cuts across products rather than measuring their full footprint, an approach Japan's own Carbon Footprint guidelines [question](#) for product-level claims. Its boundary is the steelmaker's Scope 1 and 2, so a product can qualify as "green steel" while the coal behind it carries upstream methane the label never counts.

Under [METI's Green Steel for GX](#) push, [JISF](#) set out product-specific carbon-footprint rules for steel in October 2025, and the [building lifecycle-carbon regime](#) starting [FY2028](#) will require cradle-to-gate emission intensities for steel – drawn from that same certification. Both inherit the blind spot on coal mine methane.

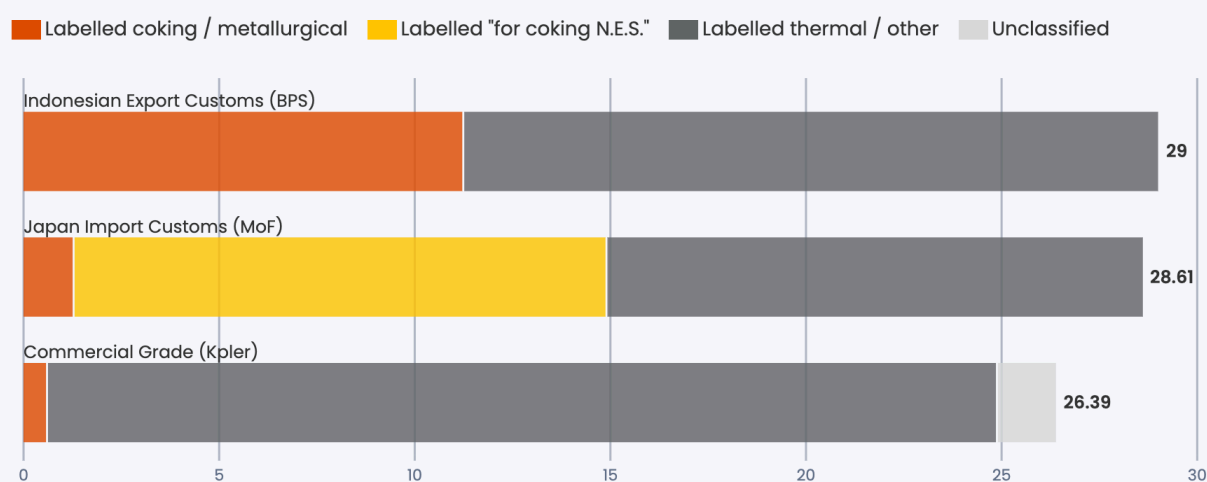
2.3 Coal mine methane emissions for steelmakers are hiding behind labels

Coal mine methane goes unaccounted for, whatever the coal is called. Yet the metallurgical label can change how the coal is treated by financial institutions and regulations. Most banks' coal policies, and the [SBTi standard for financial institutions](#), exclude thermal coal and leave metallurgical coal alone. The [EU Methane Regulation](#) caps venting at thermal coal mines from 2027 and defers the equivalent rule for coking coal mines to a delegated act due by August 2027; both apply to mines inside the EU. [Imports](#) run on a separate track that, as written, does not distinguish thermal and coking coal: importers must show MRV equivalence from 2027, report methane intensity from 2028, and meet a Commission-set maximum intensity value from 2030.

The report counts every tonne of coal arriving at the mill gate, not the share labelled metallurgical. Metallurgical coal is a commercial and end-use category, not a property of the coal, and not a synonym for coking coal. The grades inside it are real – steelmakers [blend](#) hard coking, semi-soft coking and [PCI-grade](#) coal to specification – but the boundary is not fixed. PCI counts as a metallurgical grade, yet it is [essentially high-quality thermal coal](#) that can be sold into the thermal market. The coal does not change as it crosses from one system to the next, but the category applied to it does, and none of these labels tracks the methane released at the mine.

The same coal is "coking" or not depending on who classifies it: 52% to Japan's customs, 2% to commercial grade tracking

Indonesian coal shipped to Japan in 2024, by classification system (Mt)



Source: BPS Indonesia (exports), MoF Japan (imports), Kpler • Each bar = that system's own total reported flow (incl. anthracite). The two customs agencies agree on total tonnage to within 0.4 Mt (1.4%).

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The clearest evidence is a single trade flow read three ways. In 2024, the coal shipped from Indonesia to Japan was 39% "coking" by Indonesia's export customs, 52% "for coking" by Japan's import customs, and only around 2% "metallurgical" by Kpler's commercial-grade tracking – the broadest of the three labels producing the smallest number. The two customs agencies roughly agreed on the total tonnage, then disagreed on how much of it was coking. The gap is not a single-year artefact – it has run between 2.6 and 4.1 Mt in every year since 2021.

The inconsistency is built into the categories themselves. The Harmonized System distinguishes coal only at the six-digit level, on measurable thresholds. Below that, each country defines "coking coal" categories. Japan has no single criterion. Above 8% ash,

the schedule distinguishes “other coking coal” from plain “other” – a distinction only a declaration can make. At or below 8% ash, it offers no thermal line at all, so any low-ash bituminous cargo that is not heavy coking coal is entered under a heading that says nothing about coke. Japan’s statistics then merge the two into Coal for Coking N.E.S. (その他のコークス用炭). These two lines carry more than nine-tenths of everything recorded as “for coking” from Indonesia. Every coal line is free of [customs duty](#), so nothing at the border depends on where the boundary falls.

Both descriptions can be tested against where the coal was unloaded. In 2024, every tonne of hard coking coal landing in Japan, from every origin, Indonesia included, was discharged at a port serving a coke oven. The residual line behaves differently. According to Kpler’s mill-gate records, the three steelmakers received only a small fraction of the 14.9 Mt recorded as “for coking” from Indonesia.

The problem is not that any of these labels is wrong. Each does legitimate work in the system that created it – but none was built to say anything about methane. Refining the definitions cannot change that. Methane is released when the seam is cut, before the coal is washed or sorted into grades at all, and a single mine’s output is divided between coking, PCI and thermal products by the market rather than by the geology. The category can keep doing its commercial work, but climate meaning has to come from the mine, where methane can be measured, reported and verified, rather than inferred from a tariff line.

What rests on “metallurgical”

Urgewald’s October 2025 [Still Burning](#) finds that 146 of 318 major global financial institutions restrict coal financing, but only 14 extend those restrictions to metallurgical coal. In Japan, five top commercial banks provided roughly [\\$1.18 billion](#) to metallurgical coal developers through lending and underwriting, between 2022 and 2024, with no methane conditions attached.

SBTi’s [Net-Zero Criteria for Financial Institutions](#) require the in-scope coal value chain to cover all thermal coal grades but only *recommend* metallurgical. Japan’s Petroleum and Coal Tax (石油石炭税), an excise levied on use, [exempts](#) coal certified for steelmaking from the ¥1,370/t (roughly USD 9/t) levy that other imported coal pays, and the Japan Iron and Steel Federation (JISF)’s [September 2025 submission](#) asked for that exemption to be made permanent.

The exception is the Climate Bonds Initiative, whose [2024 Steel Criteria](#) already require coal suppliers to demonstrate methane intensity below 5 kg CH₄ per tonne of coal, with

MRV and reporting to the steelmaker at OGMP 2.0 Level 5 “adapted for coal or equivalent practice”. The machinery to govern coking-coal methane exists, but it lacks wider adoption.

The exemption’s foundations are wearing thin

For policymakers and financial institutions, the case for exempting metallurgical coal is weaker than it was. For steelmakers, methane has to be accounted for from **all** coal consumed, not just the share classified as “metallurgical.”

The metallurgical coal exemption rested on two claims. The first was that methane should be counted at the mine (Scope 1), not the mill (Scope 3), and the second was that mine-level data was unavailable. Both have been overtaken. On the responsibility side, IFRS S2 establishes the reporting responsibility even where it sets no steel-specific metric, and the EU’s Corporate Sustainability Reporting Directive (CSRD) does the same. On the data side, Australia’s Safeguard Mechanism, IMEO’s Steel Methane Programme, and satellite verification.

The shift is visible on the demand side too. In June 2026, investors representing around US\$9.85 trillion in assets [declared](#) methane in the steel value chain a material climate, regulatory, and operational risk, calling for site-level measurement and abatement by producers and steelmakers.

The relevant boundary is the steelmakers’ procurement, not customs classification: responsibility follows the buyer and its supply chain, as Scope 3 requires. The evidence and investor expectations behind the carve-out have changed. The politics has not – and neither has the gap a buyer-side mechanism could close.

Envisioning the first disclosure cycle for coal mine methane for Japanese steelmakers

Japan's steelmakers and trading houses buy a large enough share of the seaborne coal trade that their purchasing terms move the market – and they already use those terms to get methane data from LNG suppliers. Extending that to coal needs no new institution or law. It needs a buyer to ask.

3.1 Commercial relationships already exist

CLEAN was built on concentrated, long-term relationships between a small number of buyers and producers. Japan's coal supply chain has the same architecture, long-term contracts, repeated counterparties, and upstream equity stakes, and in several cases the same participants.

Mitsubishi holds [a 50% stake](#) in BHP Mitsubishi Alliance (BMA), operator of five Bowen Basin coal mines. [Mitsui](#), [Itochu](#), and [Marubeni](#), [all LNG buyers within CLEAN](#), between them hold equity positions and long-term offtake agreements across Australian and Indonesian coal.

Japan's integrated steelmakers are increasingly embedded. Nippon Steel's recent investments – [20%](#) in Canada's Elk Valley Resources (2024) and [20%](#) of Queensland's Blackwater coal mine (2025) – sit on top of minority stakes across a string of Australian coking coal mines held since the 1990s, lifting its coal self-sufficiency to [35%](#). JFE added [10%](#) of the Blackwater coal mine in 2025, on top of long-held coking coal stakes in

[Byerwen](#) and [Sonoma](#) coal mines. Kobe, by contrast, has no publicly disclosed equity in any coking coal mine.

That reach extends to the least-measured part of the supply. Badan Pusat Statistik Indonesia (BPS) data show around [42%](#) of Indonesia's reported coking coal went to Japan over 2021–2025, so a Japanese disclosure request would travel to most of the stream nobody currently measures.

Shared actors do not, by themselves, establish that CLEAN transfers. Coal contracts, counterparties, disclosure rights and confidentiality arrangements differ from LNG, and a coal disclosure cycle would have to work within those differences. What the overlap does establish is narrower but still material – the commercial relationships through which a disclosure request would travel already exist.

An import methane performance standard has already been [modelled](#) for Japan, though only for gas and oil – coal was left out. Operational risk is already evident. The [2024 Grosvenor](#) and [2025 Moranbah](#) methane incidents disrupted supply and investment, contributing to a [7.2%](#) year-on-year fall in exports from Queensland's four main coal ports in H1 2025, and leading Peabody Energy to abandon a [USD 3.8 billion](#) acquisition of Anglo American's Queensland assets.

3.2 Three things a first cycle would ask for

CLEAN's core insight is transferable: methane can be governed through procurement. A coal analogue needs no new institutions, only the same logic – a convening body requesting contract-linked disclosure, backed by independent verification. The governance layer that surfaces and prices methane can be built today, even while the abatement stack remains uneven.

Is “governing” coal methane comparable to gas methane?

In mechanism, yes. A buyer asks, a supplier discloses, a convening body aggregates. In economics, no. In gas, the methane that leaks is the product, so producers already have a reason to keep it in the pipe. In coal, it is often treated as a waste stream – so it will be governed only if buyers ask.

JOGMEC already operates each component through CLEAN. The same trading houses hold coal equity stakes, the same satellite infrastructure detects emissions, and the same buyer concentration exists in coal markets. What has not yet happened is the first request.

- **Coordinated disclosure requests.** A convening body would run a disclosure cycle that requests mine-level methane data from suppliers through buyers' existing commercial relationships (long-term offtake agreements and equity partnerships). As under CLEAN, questionnaires would be issued and linked to active sales and purchase agreements.
- **Standardised mine-level data inputs.** Suppliers provide mine-level methane data from national reporting systems, satellite detection, and emerging frameworks (IMEO's Steel Methane Programme), with country-level intensities as interim input where mine-level data are not yet collected.
- **Independent aggregation and verification.** A coordinating body aggregates and standardises the data for comparability across suppliers and alignment with international [monitoring, reporting and verification \(MRV\)](#) practice.

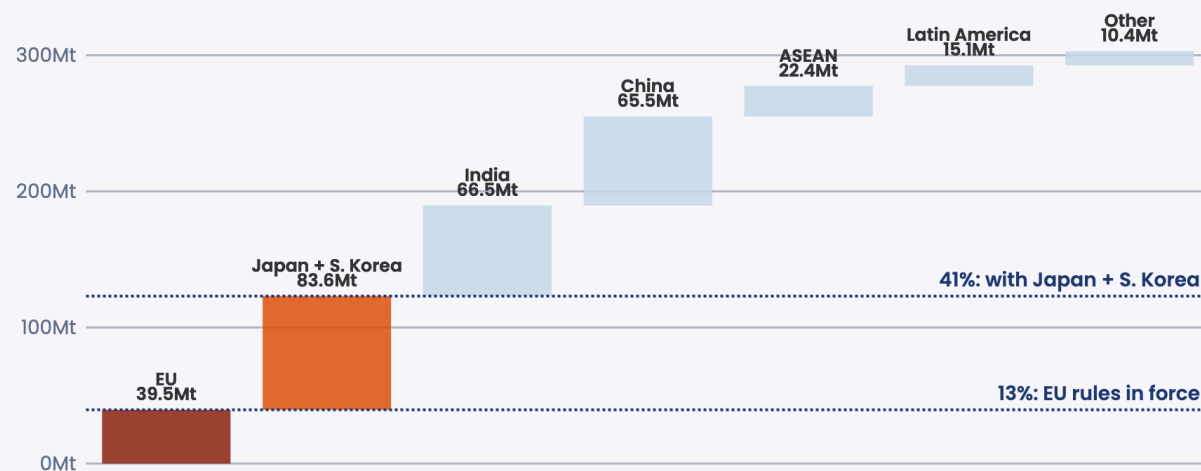
The mechanism does not require a new policy architecture. Methane can be added to instruments Japan already operates – methane targets in voluntary industry commitments, eligibility conditions on investment incentives, thresholds in green public procurement – and, where GX's boundary is widened to reach upstream emissions, MRV requirements in the allowance system itself.

3.3 What changes with data availability

Mine-level methane intensity (tCH₄/kt coal) is the starting point. Underground mines, [over half](#) of coal mine methane, concentrate emissions in ventilation shafts and drainage systems that can be metered; surface mines are where monitoring is currently weaker. Because low reported intensity may simply reflect poor measurement, the question is not which mines emit the least, but which improve MRV, reduce emissions, or should be prioritised for closure.

Japan and South Korea would take methane-rule coverage from 13% to 41% of seaborne metallurgical coal

Seaborne metallurgical coal imports, 2024, cumulative Mt.



Source: Argus Seaborne Coal Outlook (market total, EU), MoF Japan and KCS Korea customs (Japan + South Korea), Climate Analytics • EU rules in force; Japan and South Korea alignment proposed here.

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At the import level, intensity becomes decision-useful. Weighting Japan's coal imports by mine-level intensity would yield supplier-specific Scope 3 exposure, directly relevant to GX compliance, procurement, and climate accounting. The relevant unit is total coal imports, as methane is a property of the mine. Across Japan's full 2024 import of 165.8 Mt, the country- and grade-based estimate comes to roughly 700 kt CH₄, of which this report quantifies the 308 kt attributable to the three integrated steelmakers. What such a signal measures should stay constant regardless of what it is later used for – continuous, verified emissions rather than a binary pass/fail label.

Buyer concentration is what makes this tractable. Japan and South Korea together import 83.6 Mt of coal classified as coking, roughly 28% of the [303 Mt](#) global seaborne metallurgical coal trade. Adding the EU's import-methane rules, phasing in from 2027 would bring the covered share of seaborne metallurgical coal to roughly 41% – and Climate Analytics models a wider four-importer coalition cutting [4.4 Mt CH₄](#) a year, though Japan does not need the coalition to exist before it acts.

An import-weighted methane signal changes three things visible inside existing decision frameworks.

- **Methane intensity** becomes part of mill-gate Scope 3 reporting, where it currently disappears at the mine gate.
- **The metallurgical coal exemption weakens further**, resting as it does on a label no two systems apply the same way.
- **GX's carbon pricing** gains the upstream signal it currently lacks: the same project-level data CLEAN already collects for LNG.

IEA estimates [about half](#) of coal mine methane can already be cut with existing technology; the mechanism's job is to make that visible. Disclosure attaches a questionnaire to contracts buyers already hold, as CLEAN shows for LNG. Verification sits outside it – CLEAN works [with OGMP 2.0](#) under UNEP's IMEO review, and IMEO's Steel Methane Programme could offer the same for coal, though no Japanese steelmaker has joined. Abatement costs sit at the mine and can be [shared](#) through buyer-producer negotiation.

3.4 Importance of the next eleven months

The premise that coal methane sits outside active governance is expiring. The [EU Methane Regulation](#), in force since 2024, will set coking coal venting requirements by [5 August 2027](#). In 2025, coking coal mines accounted for [90 of 109](#) satellite-detected super-emitter events in Poland while making up only 25% of national production; and discussion is underway on [pricing methane in imported fuels](#), potentially through the emissions trading system or an extension of CBAM.

China, the world's largest coal producer and steelmaker at around [63%](#) of global metallurgical coal capacity, has [begun governing](#) coal mine methane at home, through venting limits, utilisation targets, and carbon-credit eligibility. Australia, the anchor of Japan's coking coal supply, exports the [overwhelming majority](#) of its black coal production, making methane governance primarily a question for importing countries. Without equivalent action, Japan risks becoming the destination for higher-methane coal displaced from Europe.

The window is also closing from the inside, [fixing coking coal](#) demand into the 2040s. [ACCR's 2025 analysis](#) identifies six relining decisions for Nippon Steel, JFE and Kobe falling in 2026–2030, and three more in 2031–2035, each committing a furnace to a further 20-year campaign. Some calls are already in: Nippon Steel has shut the [No. 3 blast](#)

[furnace](#) at Kashima, and JFE will replace [a Kurashiki blast furnace](#) with a 2 Mtpa electric arc furnace by 2028, but the rest – including Nippon Steel's Kimitsu and Kobe's remaining Kakogawa furnace – will land on either side of the EU's 2027 decision.

As frameworks consolidate elsewhere, Japan's position shifts from rule-setter to rule-taker: to govern methane through these cycles, the mechanism must be operating before the steelmakers sign, putting a first coal-disclosure cycle inside the eleven months between now and the August 2027 EU decision.

Conclusion

From data to accountability

Coal mine methane is now measurable and increasingly comparable across jurisdictions. Japan already asks its gas suppliers to report it, but nobody has asked its coal suppliers.

Japan is uniquely positioned to build that mechanism. Through CLEAN, it built disclosure, standardised aggregation, and coordinated supplier engagement for LNG, demonstrating that an importing country can use buyer relationships to create upstream methane transparency. Coal should not remain outside that logic.

Ember's recommendations track the UN Secretary-General's latest [Methane Call](#), which urges governments to treat coal mine methane as a "fix-it-first" opportunity by mandating mine-level measurement and public reporting, time-bound mitigation plans for high-emitting sites, and enforceable post-closure requirements. On the buyer side, it proposes a common methane intensity benchmark, against which importing countries could require fossil fuels to fall below a threshold and prioritise low-intensity suppliers. Its framing names metallurgical coal as the overlooked case, but the recommendation is written for coal production as a whole.

For Japan, Ember recommends:

- **Buyers.** Steelmakers and trading houses should account for the methane in the coal they buy and part-own: disclose it, fold it into Scope 3 reporting and climate targets, and set out how they will cut it. Those with internal carbon prices should extend them to coal mine methane, a sizable emission they currently carry unpriced – and one that makes each blast-furnace relining decision look cheaper than it is.
- **Government.** A first CLEAN-style coal methane disclosure cycle needs a convening body, and Japan already has one in JOGMEC, which coordinates CLEAN's public-private platform. It should start with the steelmakers and trading

houses that already hold offtake and equity ties — Japan would then be setting the standard rather than adopting one later.

- **Finance.** The metallurgical coal exemption – only 14 of the 146 institutions that restrict coal financing extend those restrictions to it – rests on a label that does not track what the coal is or where it goes. Financial institutions should ground coal finance restrictions in verified measurement rather than coal classification, so a self-declared label can no longer decide what it financed.
- **Standards and advocacy.** Standards bodies should bring coal mine methane inside responsible steel assessment boundaries. For civil society, the relining decisions now underway commit mills to coking coal into the 2040s, and on that timeline, abating upstream methane and campaigning for phase-out are complementary rather than competing.

The metallurgical coal exemption was built on a world where coal mine methane was invisible, and that world is passing. A category that no two jurisdictions apply consistently is a weak boundary for an exemption to rest on.

This is not to propose a better way to classify coal. Rather, Ember proposes decoupling climate governance from coal classification altogether. Responsibility follows the supply chain; climate obligations follow measured emissions.

Even the industry's remaining defence, that coking coal cannot yet be replaced, has become an argument for governing its methane rather than exempting it. The question is no longer whether methane will be governed, but whether Japan helps shape those rules or simply adapts to them.

Methodology

Japan methane by source.

Values are methane mass, kt CH₄. Domestic sectors are from the [National Greenhouse Gas Inventory Document of Japan, 2024](#) (FY2022), back-converted from CO₂eq at the AR5 GWPI00 of 28 that the inventory itself uses; imported coal and LNG upstream methane are Ember calculations, as embedded import methane falls outside every territorial inventory.

Agriculture (874 kt CH₄): NID 2024 categories 3.A Enteric Fermentation (8,661 kt CO₂eq) + 3.B Manure Management, CH₄ (2,709) + 3.C Rice Cultivation (13,068) + 3.F Field Burning (30) = 24,468 kt CO₂eq, divided by 28.

Domestic energy (67 kt CH₄): 1.A Fuel Combustion (38.4 kt CH₄) + 1.B Fugitive Emissions (29.2 kt, of which 18.2 kt from coal mining, post-mining, and abandoned mines) = 67.5.

Waste (124 kt CH₄): 5.A Solid Waste Disposal (1,637 kt CO₂eq) + 5.B Biological Treatment (86 kt CO₂eq) + 5.C Incineration and Open Burning (9 kt CO₂eq) + 5.D Wastewater Treatment (1,733 kt CO₂eq) = 3,465 kt CO₂eq, divided by 28. Industrial processes (1.5 kt) and LULUCF (2.9 kt) are excluded.

Imported coal (700 kt CH₄): Japan's entire 2024 coal import ("[Attribution to Japan's total coal import](#)"), of which the three integrated steelmakers' mill-gate intake is 308 kt ("[Attribution to three steelmakers](#)") and other buyers 392 kt.

Imported LNG (314 kt CH₄): Japan's 2024 LNG imports by origin ([World Integrated Trade Solution](#), HS 271111; 65.89 Mt) converted at the [IPCC](#) default net calorific value for natural gas, 48.0 TJ/Gg (1.15 toe/t at 41.868 GJ/toe, [IEA](#)) and weighted by upstream gas methane intensities from the IEA Global Methane Tracker 2024 (2023 estimates) as converted to Gg CH₄/Mtoe by [Rystad Energy for Clean Air Task Force \(2024\)](#). For each supplier:

$$\text{Methane (kt CH}_4\text{)} = \text{LNG volume (Mt)} \times 1.15 \text{ (toe/t LNG)} \times \text{Intensity (Gg CH}_4\text{/Mtoe)}$$

Intensities applied: Australia 2.0, Malaysia 4.8, United States 5.3, Russia 6.1, Papua New Guinea 7.5, Indonesia 7.0, Brunei 6.8, Oman 3.6, Qatar 3.2, other origins 6.0; weighted average 4.15. The NCV's 95% range (46.5–50.4 TJ/Gg) implies 304–329 kt.

Blast-furnace mill coverage.

The analysis covers all operating integrated blast-furnace steelworks in Japan owned by the three major producers.

Company	Steelworks	No. of sites
Nippon Steel	Kimitsu, Oita, Kashima, Kitakyushu (Yawata), Nagoya, Muroran, Wakayama	7
JFE Steel	Fukuyama, Mizushima (Kurashiki), Chiba	3
Kobe Steel	Kakogawa	1
Total		11

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Coal import allocation.

Kpler cargo records are used for mill-level attribution, while Japanese Ministry of Finance statistics are used for national import totals. The two datasets differ by approximately 3–4% in 2024 but do not materially affect the attribution. Discharge ports were matched to coke-oven sites using Kpler destination records.

Company	Total Intake (Mt)	Metallurgical (Mt)	Thermal (Mt)	Unclassified (Mt)	Company Disclosed (Mt)
Nippon Steel	33.13	25.85	7.02	0.26	24.87 (a)
JFE Steel	16.5	12.32	3.86	0.32	16.2 (b)
Kobe Steel	4.91	3.72	1.19	0	4.66 (c)
Total	54.54	41.9	12.06	0.58	

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Grade splits are Kpler commercial classifications. Company disclosures use different reporting boundaries and are therefore not directly comparable: (a) coking coal, FY2024, [Nippon Steel Sustainability Report](#); (b) total coal with no grade split, FY2024, [JFE ESG Data Book](#); (c) combined coking coal and coke, FY2024, [Kobe ESG Data Book](#). All broadly corroborate the aggregate coal intake estimated here, but none discloses the grade split on which the methane attribution depends.

Customs classification and source data.

Coking coal is identified differently in each national customs schedule. Indonesia identifies it in a single line (2701.12.10); Japan splits it by grade into Heavy Coking (2701.12-011, -091) and Coal for Coking N.E.S. (2701.12-019, -092); South Korea into Hard and Other Coking. Figures are drawn from official customs statistics: Indonesia ([BPS-Statistics](#)), Japan ([Ministry of Finance](#)) and South Korea ([Korea Customs Service](#)).

Country methane intensity calculation.

Country-specific methane intensities (t CH₄/kt coal) were derived by combining [IEA Global Methane Tracker 2024](#) estimates of coal mine methane emissions by producing country, which cover operating mines only, with [World Mining Data 2026](#) coal production statistics for the corresponding coal categories. For each country and grade:

$$\text{Methane Intensity} = \frac{\text{Coal Mine Methane Emissions (t CH}_4\text{)}}{\text{Coal Production (kt)}}$$

Separate intensities were calculated for metallurgical (coking) and thermal (steam) coal where emissions and production data permitted.

Country intensities are conservative estimates in two respects: they exclude abandoned mine methane entirely, and they are likely understated for Australia and Indonesia, where independent evidence puts fugitive methane above reported inventories. The steelmakers' total is not sensitive to the Indonesian figure: substituting Indonesia's own national inventory for the IEA intensity lowers the 308 kt by under 10%, because most Indonesian coal arriving in Japan goes to power stations rather than blast furnaces.

Default intensity assumptions.

Where country- or grade-specific data were unavailable, these defaults were applied:

Situation	Assumption
Countries without IEA methane estimates (Malaysia, Philippines, Peru)	Global average intensity
Countries with an IEA estimate for one grade only (Viet Nam – thermal only)	Global average for the missing grade
Non-producing regions – third-country transfer (South Korea, Spain, Taiwan, Trinidad and Tobago, New Caledonia)	Global average intensity
Unclassified coal	Metallurgical coal intensity

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Country intensities used in this report:

Country	Coking (t CH ₄ /kt)	Thermal (t CH ₄ /kt)	Methane Data Source	Production Data Source / basis for default
Global average	9.24	3.61	IEA 2024	WMD 2026
Australia	6.60	2.65	IEA 2024	WMD 2026
Canada	2.69	1.18	IEA 2024	WMD 2026
United States	8.92	2.98	IEA 2024	WMD 2026
Indonesia	7.60	2.82	IEA 2024	WMD 2026
China	10.50	3.36	IEA 2024	WMD 2026
Russia	13.21	8.95	IEA 2024	WMD 2026
South Africa	3.09	5.72	IEA 2024	WMD 2026
Colombia	4.09	7.30	IEA 2024	WMD 2026
Mozambique	8.06	6.01	IEA 2024	WMD 2026
New Zealand	4.40	1.96	IEA 2024	WMD 2026
Kazakhstan	18.11	7.76	IEA 2024	WMD 2026
Viet Nam	9.24*	12.54	IEA 2024 (thermal); coking = global avg	WMD 2026

Global-average intensity (9.24 coking / 3.61 thermal) applied where no country-specific IEA estimate exists – Malaysia, Philippines, Trinidad and Tobago, New Caledonia, Peru – or where the cargo's origin is a third-country transfer point – Spain, South Korea, Taiwan.

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Attribution to Japan's total coal import.

This national estimate (700 kt) and the steelmaker estimate (308 kt) are not nested. The former allocates all customs tonnage by customs category; the latter classifies mill-gate receipts by commercial grade. The 398 kt of customs-classified coking coal and the 308 kt at the mill gate therefore cannot be reconciled line by line.

Each source country's 2024 customs tonnage (Japan Ministry of Finance) is split into coking coal (Heavy Coking, 2701.12-011 and -091, plus Coal for Coking N.E.S., 2701.12-019 and -092) and thermal and other non-coking coal (anthracite, 2701.11, plus Coal N.E.S. 一般炭, 2701.12-099 and 2701.19) and multiplied by the matching grade intensity from the Country Methane Intensities table.

$$CH4 = \sum_{country, grade} \left(Import\ Tonnage_{country, grade} \times Methane\ Intensity_{country, grade} \right)$$

Because customs data classify every cargo, no unclassified residual arises. Methane is converted to CO₂e at AR6 GWP20 = 82.5 (default, reflecting near-term warming) and AR6 GWP100 = 29.8 (where compared with corporate reporting):

$$CO2e = (CH4 \times GWP)$$

Country	Total (Mt)	Coking (Mt)	Thermal (Mt)	Methane (kt CH ₄)
Australia	108.2	30.3	77.9	406.7
Indonesia	28.6	14.9	13.7	151.8
United States	12.2	6.2	6.1	73.0
Canada	9.5	5.2	4.3	19.0
South Africa	3.2	0.0	3.2	18.4
Russia	1.2	0.2	1.0	11.8
Colombia	1.5	1.2	0.2	6.9
Others	1.3	0.7	0.6	12.4
Total	165.8	58.7	107.1	699.9

Others comprises Kazakhstan (0.3 Mt), Viet Nam (0.3 Mt), New Zealand (0.3 Mt), China (0.3 Mt), Mozambique (0.1 Mt), Peru (0.04 Mt) and Taiwan (<0.01 Mt). Kazakhstan, New Zealand, China and Mozambique use producer-specific intensities; Viet Nam uses its own thermal intensity (thermal being its only grade shipped to Japan); only Peru and Taiwan fall to the global average default. Rows may not sum exactly due to rounding.

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Japan's 165.8 Mt of 2024 coal imports embed an estimated 699.9 kt CH₄ (57.7 Mt CO₂e, GWP20). Coking coal is about 35% of the tonnage but 57% of the methane (397.8 kt), as coking seams are gassier per tonne; thermal and other non-coking coal carry 302.2 kt. Australia, Indonesia, and the United States account for around 90%.

Attribution to three steelmakers.

Company-level methane is attributed on the same grade-intensity basis as the national estimate above, applying Kpler cargo records in place of customs tonnage. Each seaborne cargo in the 2024 Kpler dataset was assigned to its destination steelworks, aggregated by source country and coal grade (metallurgical, thermal or unclassified, following Kpler Product Type), then rolled up to the company level. Domestic transshipments and vessels with unidentified consignees were excluded.

Unclassified cargoes – 0.58 Mt across the three companies, about 1% of intake – are assigned the metallurgical intensity of their origin. The [SBTi Financial Institutions Net-Zero Standard](#) defaults unknown coal to thermal because its purpose is thermal coal exclusion; here the purpose is embedded methane, and metallurgical is the appropriate

default: it is the grade steelmakers buy, coking seams are gassier, and it stops a cargo being metallurgical for an exemption but thermal for its methane. Results:

Company	Total Coal Intake	Reported Scope 3		Coal Mine Methane			Implied intensity
	(Mt)	Category 1 (Mt CO ₂)	Category 3 (Mt CO ₂)	Associated CH ₄ (kt)	GWP100 (Mt CO ₂ e)	GWP20 (Mt CO ₂ e)	(tCH ₄ /kt)
Nippon Steel	33.13	11.41	0.29	181.71	5.41	14.99	5.49
JFE Steel	16.5	18.54	0.72	100.48	2.99	8.29	6.09
Kobe Steel	4.91	4.99	0.34	25.95	0.77	2.14	5.29
Total	54.54			308.14	9.18	25.42	

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Implied intensity (final column) reflects each company's import origin mix, not mine-level performance: Nippon Steel's is lowered by Canadian coal (2.69 tCH₄/kt), JFE's raised by Chinese coal (10.5 tCH₄/kt).

The 46% figure sets Nippon Steel's estimated coal mine methane against the Scope 3 it reports in Categories 1 and 3, which do not include it. Ember estimates 181.7 kt CH₄ across the full 33.13 Mt mill-gate intake, not only the 24.87 Mt disclosed as coking coal, since methane is released in mining every tonne delivered, whatever grade it is recorded under. At AR6 GWPI00 (29.8), that is 5.41 Mt CO₂e, 46% of the 11.70 Mt reported; at GWP20 (82.5), it is 14.99 Mt CO₂e, which would raise the reported total by a factor of 2.3.

Whether the steelmakers' own disclosures already capture any of this cannot be verified: [Nippon Steel](#) and [Kobe Steel](#) report CO₂ rather than CO₂e, and JFE's CO₂e [footnote](#) does not indicate that upstream coal mine methane is included. This report treats inclusion as unverifiable rather than assuming exclusion. Cargo classifications are a proxy for grade, not a record of mill consumption or captive power use; firmer figures would need disclosure of procurement volumes by source and grade.

Indonesian classification reconciliation.

Indonesia's coking coal exports (HS 2701.12.10) are modest to begin with, totalling 119.19 Mt over 2021 to 2025, with Japan the largest single destination in every year:

Destination	2021	2022	2023	2024	2025	Total	Share
Japan	9.00	8.81	9.25	11.24	11.52	49.82	42%
China	6.17	1.93	6.29	8.20	3.80	26.39	22%
Taiwan	3.06	3.22	3.53	2.38	2.41	14.60	12%
Malaysia	1.82	0.26	2.64	2.28	3.10	10.10	8%
Hong Kong	0.99	1.45	1.40	1.24	0.60	5.67	5%
Brunei	1.19	1.05	0.85	1.09	1.14	5.33	4%
Others	3.38	1.26	0.92	0.18	1.55	7.29	6%
Total	25.61	17.98	24.87	26.61	24.12	119.19	100%

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The same Indonesia-to-Japan coal flow is classified differently at each end of the trade, while Japan remains a stark outlier among importers of Indonesian coal. Indonesia records comparatively little of the flow as coking on export; Japan records far more on import, almost all in a residual category defined by declared end-use:

Year	Indonesia Coking Coal Exports to Japan, BPS (Mt)	Japan Coal for Coking Imports from Indonesia, MoF (Mt)	Classification Gap (Mt)		
			Of which Heavy Coking	Of which Coal for Coking N.E.S	
2021	9.00	12.54	0.81 (6%)	11.74 (94%)	3.54
2022	8.81	12.84	1.00 (8%)	11.84 (92%)	4.03
2023	9.25	13.34	1.32 (10%)	12.02 (90%)	4.09
2024	11.24	14.90	1.28 (9%)	13.62 (91%)	3.66
2025	11.52	14.11	1.45 (10%)	12.66 (90%)	2.59
Total	49.82	67.73	5.86 (9%)	61.88 (91%)	17.91

Figures are rounded to two decimal places; totals and differences are calculated from the displayed values. Components may not sum to totals due to rounding.

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Between 2021 and 2025, Japan classified 67.73 Mt from Indonesia as "for coking", against 49.82 Mt that Indonesia exported to Japan under its own coking line, a cumulative gap of 17.91 Mt. Roughly 90% of Japan's "for coking" total from Indonesia sat in the N.E.S. residual each year. Because N.E.S. is defined by declared end-use, not measured coal quality, it is the structural source of the 13.62 Mt grey zone identified in section 2.3.

Import-standard coverage of seaborne metallurgical coal.

Japan (58.67 Mt, Ministry of Finance, "Coal of Coking") and South Korea (24.96 Mt, Korea Customs Service, hard plus other coking coal) imported 83.6 Mt of coking coal in 2024.

Europe (39.5 Mt, Argus definition, wider than the EU-27) and the global seaborne total (303.0 Mt, 2024 actuals) are from [Argus, Seaborne Coal Outlook, Issue 25-6, 13 June 2025](#). Japan and South Korea are therefore 27.6% of the seaborne metallurgical coal market, rising to 40.6% once Europe is included. The denominator is seaborne trade only, excluding overland flows.

Yen-dollar conversion.

Yen figures are converted at the 2025 average of ¥149.5 per US dollar ([Federal Reserve H.10](#)); the ¥20 trillion GX programme is approximately USD 134 billion, rounded to USD 130 billion in the text.

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Cover image

A yellow heavy-duty mining truck stands on ground level inside a quarry. In the background, tiered layers of rock strata rise up toward a partly cloudy sky.

Credit: [Gansham Ramchandani](#) / Pexels

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