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No EU ETS Pathway for Coal Mine Methane. The Commission Closed the Door. Geneva Opens in Twelve Days.

Europe's only active coal mine methane debate just got its most important answer — and its most urgent deadline.

Kaj Embrén — Founder • Juneia Mallas — Lead Researcher • Richard Mattus — Technical Advisor

82×	42M t	~70%	$20/t	0
Methane potency vs CO2 (20-yr)	Coal mine CH4 per year	VAM share of emissions	VAM abatement cost	Commercial VAM-RTO projects in the EU

The EU flag on a bed of coal — the continent's methane regulation is in force. Its enforcement is not. © Shutterstock

THE NUMBER

0

The number of commercial VAM-RTO projects operating in the European Union, as of April 2026. The EU Methane Regulation is in force. The technology has been commercially proven for nineteen years. The UNECE Best Practice Guidance on VAM Mitigation was completed in 2025. The cost of abatement is around $20 per tonne of CO_2 equivalent — a fraction of every alternative on the market. And the number of operating projects in the EU is zero.

Yesterday, Ember and the Clean Exit Campaign convened the most substantive public panel discussion this space has yet seen: a policy officer from the European Commission's DG Energy, a project adviser from the Research Fund for Coal and Steel, a Polish policy analyst from Instrat, a technology provider who has built and operated these systems in three countries, and the lead author of the UNECE Best Practice Guidance. They agreed on the diagnosis. The next conversation happens in Geneva.

Everyone in the room agreed

The webinar, moderated by Kaj Embrén, opened with Sabina Assan — Coal Mine Senior Analyst at Ember — setting the scene with data that left little room for ambiguity. Coal mining is a major contributor to EU methane emissions, second only to oil or gas. Ventilation air methane from just eleven active mines accounts for the majority of those emissions. The short-term warming impact of EU coal mine methane in 2023 was comparable to the total annual CO_2 emissions of Austria.

Dr. Lena Höglund Isaksson of IIASA, in a pre-recorded contribution, confirmed that VAM oxidation represents approximately 10% of the total technical mitigation potential across all sectors globally through 2030 — energy, agriculture and waste combined. As a single measure, that is extraordinary. As a single measure that is also cheap, proven and deployable without new infrastructure, it is almost without precedent in climate action.

None of that was contested. What was contested — or more precisely, what remained unresolved — was how to build the financial architecture to make any of it happen in Europe.

Biothermica VAMOX installation, Central Appalachian Region, U.S. — the technology that works everywhere except the EU. © Biothermica

Poland: where the regulation meets reality

Almost all active underground coal mining in the EU is now in Poland. That makes Poland the test case for everything. Zuzanna Charkowska of Instrat gave the panel a ground-level read that was precise and sobering.

In 2024, 75% of coal mine methane in Poland was vented to atmosphere. 100% of ventilation air methane was emitted. The national environmental fee for methane: approximately €0.10 per tonne. The entire Polish mining industry pays around €40,000 per year for its methane — against a backdrop of nearly €2 billion in annual state aid.

The EU Methane Regulation was supposed to change the calculus. It has not yet done so. Poland has still not introduced a penalty regime — legally due in August 2025. There is no draft legislation, no indicated penalty level, no timeline. Meanwhile, the methodology Polish mines are using to calculate their emissions against the 2027 venting threshold has been adopted so leniently that PGG, the country's largest thermal coal producer, already reports itself as compliant. Under the current approach, it faces no obligation to act until 2031.

The regulation exists. In the one country where it most needs to operate, its implementation has been effectively neutralised.

No EU ETS pathway. And the voluntary market just blinked.

The panel's most consequential exchange came when Guy Drouin, president of Biothermica Technology, pressed the Commission directly. Drouin has built three VAM-RTO units in the United States and sold the first carbon credit for a VAM project on the California cap-and-trade market in 2016. His diagnosis of the EU was unambiguous: no carbon market recognition of VAM abatement as a tradable offset, no enforceable destruction efficiency mandate, and therefore no bankable project.

He asked Dinko Raytchev of DG Energy whether the EU ETS could be reformed to include coal mine methane. Coal mining is outside the scope of the EU ETS and will not be brought into scope. When asked directly whether that was under discussion, the Commission's answer was no.

Raytchev pointed instead to Article 22.4 of the Methane Regulation — a provision allowing member states to design incentive systems using fees, charges, or penalties — and called for creative, case-by-case approaches. "There is a way forward," he said. "I share the optimism." That optimism, for now, is ahead of any identified mechanism.

Which brings the question to the voluntary carbon market — the other lever that practitioners in Australia, California and China have used to make VAM projects viable. And here, the timing of this issue is striking.

This week, Microsoft — the single largest buyer of carbon credits in the voluntary market — informed project developers that it is pausing new carbon removal purchases. Microsoft has historically accounted for an estimated 80 to 90% of all global engineered removal purchases. Its $1 billion Climate Innovation Fund, launched in 2020, has contracted more than 45 million tonnes of removal credits — more than twenty-five times the volume contracted by the next largest buyer. The pause, attributed to financial considerations and portfolio review, has no confirmed timeline.

The Microsoft pause applies specifically to the engineered removal end of the market — direct air capture, biochar, soil sequestration — not to abatement credits of the kind a VAM project would generate. That distinction matters. But the underlying signal matters more. The

voluntary carbon market has been structurally dependent on a handful of large corporate buyers, with one dominant above all others. When that buyer pauses, the market pauses with it. A financial architecture built on voluntary demand of this kind is not an architecture — it is a weather system.

> *"A financial architecture built on voluntary demand of this kind is not an architecture — it is a weather system."*

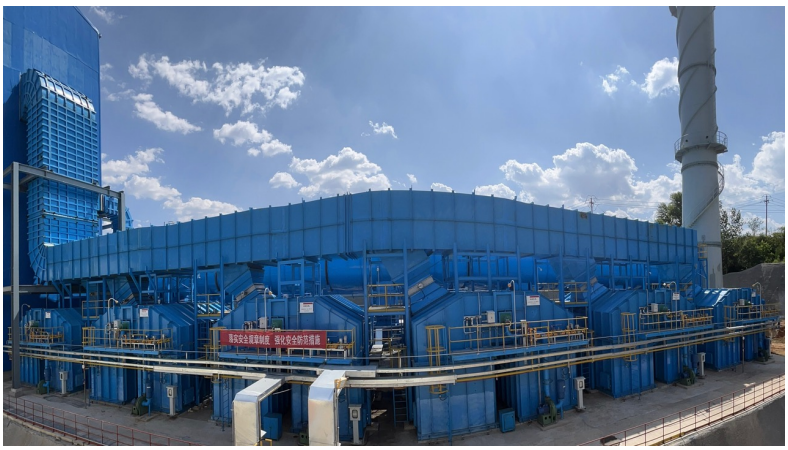
For VAM abatement in Europe, this is not an argument against carbon markets as part of the solution. California demonstrates that a compliance carbon market — one that creates a reliable price signal through cap-and-trade demand for offset credits, with emissions reporting obligations but no direct abatement mandate on the mines themselves — can make VAM projects financeable and durable. Australia is building a similar mechanism. The enabling factor in both cases is a stable, predictable credit price attached to a mandatory compliance system — not a voluntary purchasing decision that can be paused. It is an argument against assuming the voluntary market, in its current form, can substitute for that. The credits VAM projects need to generate must be attached to a mandatory compliance framework — not to the purchasing decisions of a single technology company reviewing its sustainability budget.

The EU has the world's most developed carbon pricing mechanism. It has explicitly ruled out using it for coal mine methane. The voluntary market has just demonstrated, in real time, what happens when its anchor buyer reassesses. The financial architecture question — the one the panel could not resolve yesterday — is more urgent this week than it was last week.

"The missing link is value"

Richard Mattus has spent thirty years in industrial emission control and fifteen years as independent consultant and since 2004 inside the UNECE system working on this specific problem. His summary of the global picture at yesterday's webinar was methodical and, in context, pointed.

The RTO technology has been applied in roughly 40,000 industrial installations worldwide. For VAM specifically, around 20 commercial deployments have operated on three continents, several for more than a decade. Safety can be managed. Modular design allows flexibility as mine lifetimes shorten. Experienced suppliers — Biothermica from Canada, Anguil from the US, Dürr and Eisenmann from the EU — are well advanced on their respective learning curves, with experience from having solved relevant safety issues for other industries and having delivered commercial VAM projects around the globe.



Anguil RTO installation on a VAM shaft, China — commercial scale, proven technology, operating today. © Anguil Environmental Systems

The first commercial VAM-RTO demonstration globally was at British Coal in 1994. Europe pioneered this technology. Then underground coal mining closed across France, Germany, Spain and the UK. Poland became the centre of what remains in the EU.

"The missing link," Mattus said, "is to attribute a value to reducing methane emissions — at the order of $20 per tonne of CO_2 equivalent." That is the level at which projects become financeable. Below it, they do not. And that value, in the EU today, does not exist — not through the ETS (which today trades at around EUR 75 per tonne CO_2 but does not include VAM mitigation as an approved climate action), and not reliably through voluntary markets that can be paused by a single corporate decision.

Drouin, asked directly when he expects conditions in the EU to allow a real project, said 2029 — if the regulatory steps currently planned proceed as intended. Andreas Jennet of the Research Fund for Coal and Steel identified the same gap from a different angle: there is a missing last mile between pilot-phase projects and the demonstration-scale installations needed to unlock commercial investment. The technologies are ready. The financial signal is not.

> ***"The engineering challenge has been met. The next hurdle is economic. The technology works. What's missing is the financial architecture to make it truly investable."***
>
> — Richard Mattus, UNECE Best Practice Guidance on VAM Mitigation, 2025

WHO'S MOVING

UNECE Geneva, April 27–28. The 21st session of the UNECE Group of Experts on Coal Mine Methane and Just Transition convenes at the Palais des Nations, jointly with the Coal Subcommittee of the Global Methane Initiative. Further action on the UNECE Best Practice Guidance on VAM Mitigation. The agenda includes VAM and ultra-low concentration gas, outcomes from COP30 preparations, and the 2026–2027 work plan. It is the most technically substantive annual gathering in this space. The Methane Brief will be present.

Microsoft pauses carbon removal purchases, April 2026. The company that has accounted for an estimated 80–90% of all global engineered carbon removal purchases this week informed project developers it is pausing new commitments. The move affects direct air capture, biochar and soil-based sequestration. Microsoft's chief sustainability officer confirmed the programme has not ended, but that pace and volume are under review. The pause has no confirmed timeline. The voluntary carbon market — which had been treated by many practitioners as a potential pathway for VAM project financing in Europe — has no mechanism that prevents this happening again.

EU ETS reform, July 2026. The Commission committed to a full ETS reform proposal by July, following pressure from eleven member states to suspend the system in response to energy price shocks. At this week's webinar, the Commission confirmed explicitly that coal mine methane abatement is not under discussion for inclusion in EU ETS scope. That reform process is nonetheless the most consequential near-term opportunity in European carbon market architecture. The question of whether coal mine methane could generate compliance credits — even via a parallel mechanism — should be on the agenda. It is not.

Australia accelerates. Several large-scale VAM projects are in active negotiation, driven by tightening ACCU compliance obligations under Method 2 reporting. Richard Mattus noted at yesterday's webinar that announcements of new commercial VAM projects are likely within a year. The jurisdiction that pioneered a pilot VAM-RTO demonstration in 1997 (which led to the globally first commercial VAM processing installation, which operated successfully 2007 to 2017), now being followed by new pilot installations of VAM-RTOs, may be on the verge of proving it at commercial scale — three decades later, and with a compliance framework, not a voluntary one, as the enabling mechanism.

ABOUT THE METHANE BRIEF

The Methane Brief grew out of the Clean Exit Campaign — launched June 2025, 500,000+ impressions in six months. Published every two weeks for investors, policymakers, and industry decision-makers who need to act on methane now, not later.

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