

The Societal Benefits of the EU Methane Regulation

Policy Brief



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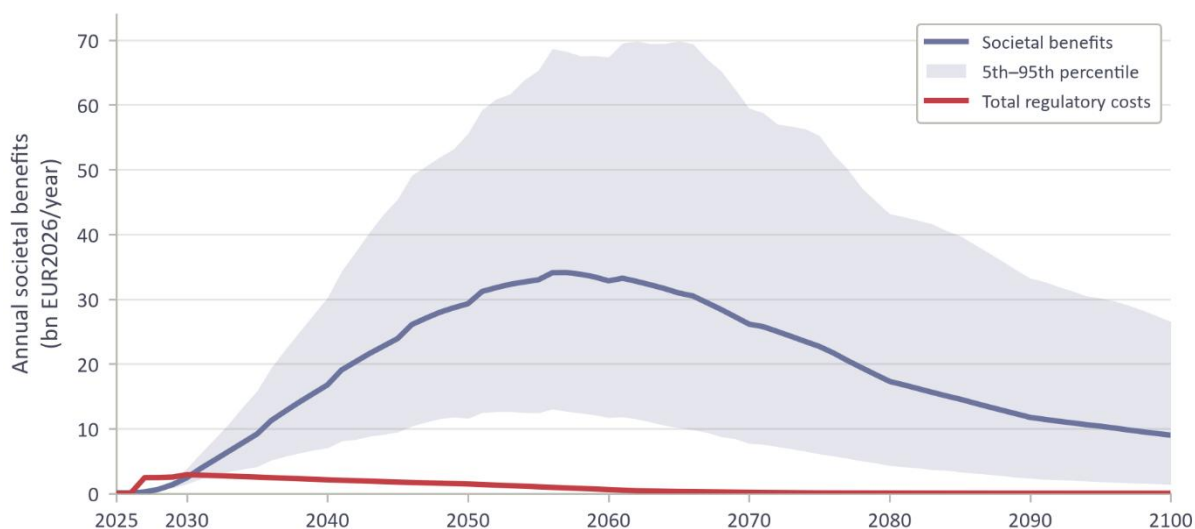
This publication was produced with financial support from the European Climate Foundation (ECF).

October 2026

At a Glance

The EU Methane Regulation can generate societal benefits far in excess of its costs. Under full and timely implementation, the present value of avoided climate, health and economic damages over the modelling horizon amounts to around €704 billion, compared with around €49 billion in regulatory costs.¹ This implies roughly €14 in societal benefits for every €1 spent on implementation. Costs are concentrated in the early years, while the benefits build over time and remain substantial for decades.

Figure 1: Annual global societal benefits of the EU Methane Regulation dwarf regulatory costs under full and timely implementation



Source: DIW Econ

The Regulation can eliminate a large share of the methane associated with European fossil-fuel demand. Under full and timely implementation, around 80 Mt of methane emissions are avoided cumulatively by 2050, with the largest reductions coming from oil imports, followed by natural gas and coal imports. Avoided methane emissions from domestic fossil-fuel production make a smaller, but still material, contribution. The technologies needed to achieve these reductions are already commercially available. Many oil and gas measures are inexpensive because captured methane can be sold or used, leaving substantial mitigation potential at zero or negative net cost.

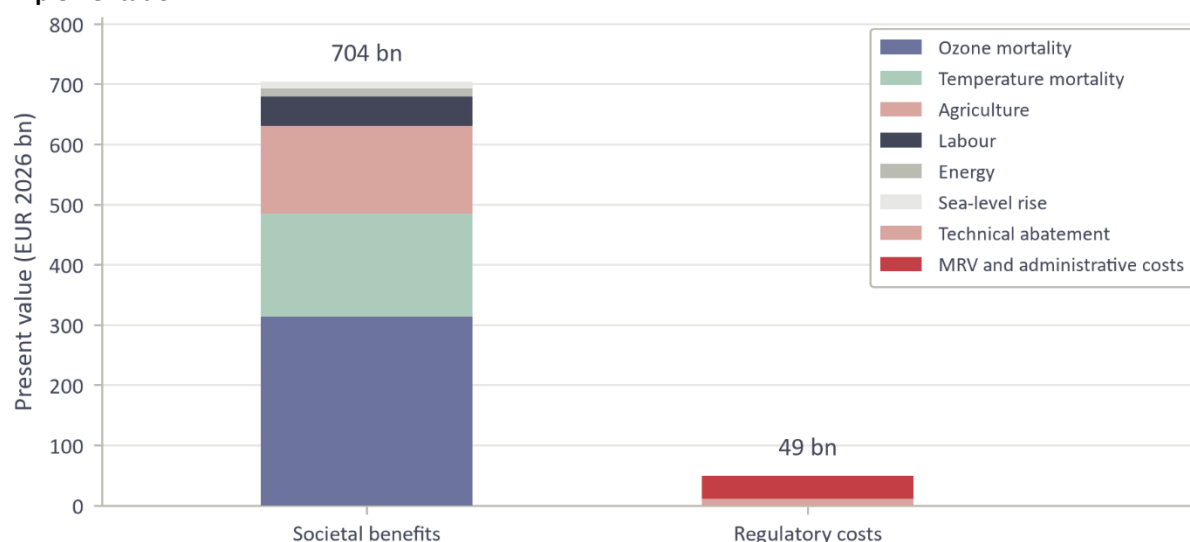
¹ The full and timely implementation scenario assumes that all fossil-fuel imports meet an illustrative methane-intensity threshold of 0.2% by 2030, with reductions beginning in 2027, alongside full deployment of the modelled domestic mitigation potential by 2030. Fossil-fuel demand and import patterns follow the baseline. Societal benefits are modelled globally through 2300, with ozone-related mortality modelled through 2100. Present values are discounted to 2025 using GIVE's Ramsey-style framework calibrated to a 2% near-term discount rate and expressed in constant 2026 euros.

As climate change is already taking a growing toll on human lives, the health benefits alone make a compelling case for implementing the EU Methane Regulation. By reducing both warming and ground-level ozone, full and timely implementation of the Regulation could prevent around 155,000 premature deaths worldwide over the modelled period. This is still a conservative estimate. Our central valuation captures respiratory mortality from methane-induced ozone but not cardiovascular mortality, ozone-related morbidity or several other health effects.

The Regulation would generate benefits across several major damage channels. Under full and timely implementation, lower methane emissions would avoid around €145 billion in climate-related agricultural damages and €48 billion in heat-related labour-productivity losses over the modelling horizon. They would also avoid around €14 billion in additional energy costs and €11 billion in damages from sea-level rise. These estimates still exclude several important impacts, including ozone-related crop losses and ecosystem and biodiversity damages.

Delaying or weakening implementation would forgo substantial climate, health and economic benefits. Compared with full and timely implementation, a three-year delay combined with a weaker 0.4% methane-intensity threshold would result in around €185 billion in additional societal damages and around 40,000 additional premature deaths, equivalent to a loss of about a quarter of the Regulation's potential societal benefits and health gains. Methane is both highly potent and relatively short-lived, making early and ambitious reductions particularly valuable.

Figure 2: Present-value societal benefits exceed implementation costs by around 14 to 1 under full and timely implementation



Source: DIW Econ

Regulatory and compliance costs are real, but they are small compared with the damages avoided.

Much of the estimated burden comes from establishing monitoring, reporting, verification and administrative systems rather than from methane abatement itself. These costs are highest during the build-up phase and decline once measurement infrastructure and expertise are in place. Existing studies also suggest only limited effects on final energy prices. Rather than undermining energy security, effective methane regulation can strengthen it by reducing avoidable gas losses and improving transparency and resilience across fossil-fuel supply chains.

The wider significance goes beyond the Regulation itself. The EU co-launched the Global Methane Pledge and has supported stronger methane action internationally. The Methane Regulation is one of the first attempts by a major importing market to translate that ambition into enforceable requirements covering the emissions embedded in imported fossil fuels. This matters at a time when implementation of international methane commitments remains uneven and the United States, which co-launched the Pledge with the EU, has rolled back parts of its federal methane-policy framework. Effective implementation would therefore strengthen the EU's role in translating international methane ambitions into binding policy.

Our findings are consistent with assessments by the European Commission (2021), Climate Analytics (2026), Öko-Institut (2026) and other recent studies, while extending the analysis across a broader set of fossil fuels and over a longer time horizon.

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1. EU Methane Regulation in a contested political phase

The European Union adopted its first dedicated regulation on methane emissions from the energy sector in 2024. The rules seek to curb emissions from the production and supply of oil, fossil gas and coal, initially by improving the measurement and verification of emissions and restricting practices such as routine venting and flaring (European Commission, 2024). For operations within the EU, the Regulation introduces monitoring, reporting and verification requirements alongside obligations to detect and repair leaks and address emissions from inactive wells and coal mines.

Its more consequential innovation, however, lies beyond the EU's borders. Because the EU imports almost all of the oil it consumes, around 85% of its fossil gas and roughly one third of its solid fossil fuels (Eurostat, 2026b), much of the methane associated with European energy demand originates abroad. The Regulation therefore progressively extends its requirements to fossil-fuel imports. Importers have been required to provide information on the origin and methane-management practices of their supplies since 2025 (European Commission, 2024). Under the legislation as adopted, from January 2027, fossil-fuel imports under contracts concluded or renewed since August 2024 must comply with monitoring, reporting and verification standards equivalent to those required within the EU. Methane-intensity reporting follows from 2028. From August 2030, imports under new or renewed contracts must meet maximum methane-intensity values² to be established by the European Commission.

The Regulation's provisions for imports are particularly important because we estimate that more than 75% of the methane emissions associated with Europe's fossil-fuel consumption occur before the fuels reach the EU. Methane is the principal component of natural gas, but it is also released during oil production and from coal mines. Leaks, venting and incomplete flaring can release methane throughout fossil-fuel production and processing. Over 20 years, a tonne of methane has roughly 80 times the warming effect of a tonne of carbon dioxide; even over 100 years, the effect is around 30 times greater (IPCC, 2021). Reducing these emissions can therefore have a particularly strong effect on near-term warming.

² The maximum methane-intensity values that will apply from 2030 have not yet been set. Under the Regulation, the Commission must first assess different threshold levels by August 2029, including their implications for global methane reductions, security of supply, EU competitiveness and potential market distortions. The final values will then be adopted through delegated acts and set separately for crude oil, natural gas and coal, with the Regulation requiring them to reflect the best-performing production classes while preserving security of supply (European Commission, 2024).

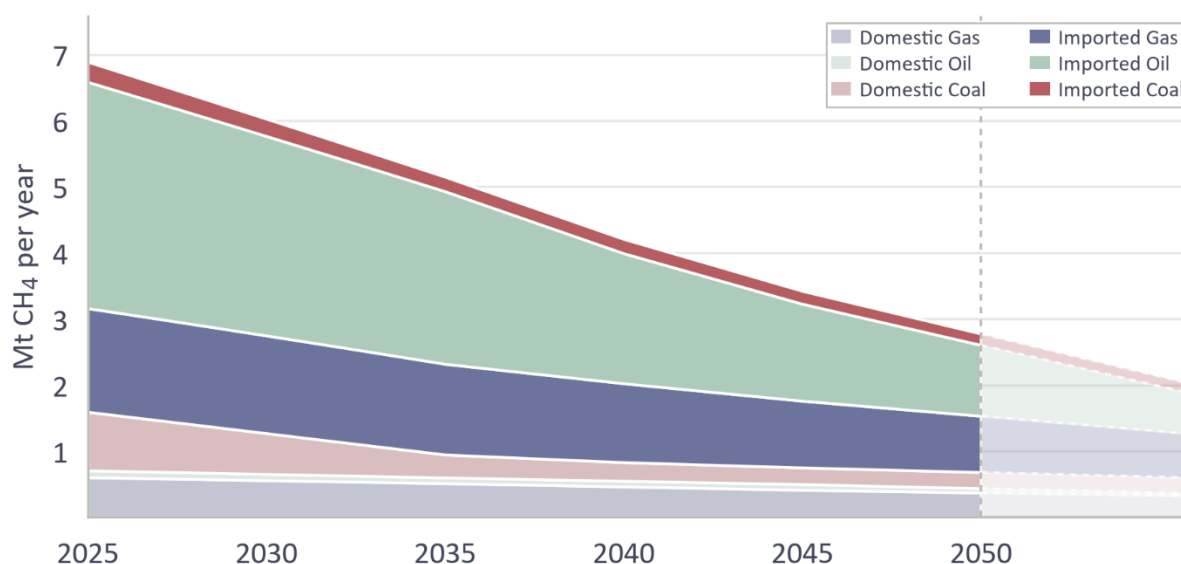
But the anticipated implementation timetable is now under political pressure. In September 2026, French President Emmanuel Macron called for the January 2027 requirements to be postponed by one year, a position backed by a large group of other EU member states (Reuters, 2026). The argument is primarily one of energy security. Disruption to global energy markets following the United States-Israel war on Iran has tightened fuel supplies and heightened concerns that producers unable to demonstrate compliance in time could redirect cargoes away from Europe. Any amendment would still need to pass through the EU legislative process, although a one-year postponement now appears likely given the European Commission's support and broad backing among Member States (EU Observer, 2026). Fossil fuel industry associations have even called for a three-year postponement, contending that the international verification and compliance infrastructure needed to implement the rules is not yet sufficiently developed (IOGP, 2026b).

The ongoing debate largely misses the importance of timely implementation and the costs of delayed or weakened action. Europe's exceptional summer of 2026 offered another reminder that physical climate risks are already material and growing. Western Europe experienced its hottest summer on record, while heat stress, drought, low river flows and wildfires affected large parts of the continent (Copernicus, 2026). At least 35,000 excess deaths were recorded across Europe during two consecutive heatwaves (The Guardian, 2026), while similar climate extremes are becoming more frequent across the world. Against this backdrop, postponing measures aimed at one of the most powerful short-lived greenhouse gases has consequences of its own. Delaying the Regulation in response to industry concerns over short-term compliance costs means accepting additional climate, health and economic damages without strong evidence that doing so would materially improve energy security. Our analysis shows that full and timely implementation of the EU Methane Regulation delivers societal benefits that far exceed regulatory costs, while having immaterial effects on energy prices and security of supply.

2. Methane remains a major climate risk for the EU

We estimate methane emissions associated with EU fossil-fuel consumption at almost 7 Mt in 2025, with about 75% released in producing and transit countries rather than within the EU itself (see Figure 3). The EU's falling fossil-fuel demand will reduce this footprint over time, but only gradually. Under the IEA's Stated Policies Scenario (IEA, 2025c), which reflects policies already in place or under development, the EU will continue to consume substantial volumes of coal, oil and gas well beyond 2030. In our baseline, this translates into a reduction in consumption-based methane emissions of about 13% by 2030 and 60% by 2050 compared with 2025. Without improvements in the methane intensity of fossil-fuel supply, declining demand alone reduces methane emissions too slowly and leaves substantial emissions in place for decades.

Figure 3: EU27 baseline methane emissions by fuel and origin



Note: Beyond 2050, fossil-fuel activity is extrapolated using the annual decline observed between 2040 and 2050 until it reaches zero; emissions from abandoned wells and mines are reduced linearly to zero by 2065.

Source: DIW Econ

Oil and gas imports dominate the EU's remaining cumulative methane footprint. Oil demand declines relatively slowly because petroleum products remain difficult to substitute in sectors such as aviation, shipping, petrochemicals and parts of road transport (IEA, 2025b). Gas can be expected to remain in the energy system for longer than coal, supporting variable renewables in power generation and continuing to provide heat in industry and buildings, where alternatives are often harder to deploy quickly. At the same time, the structure of European gas supply has changed substantially since Russia's invasion of Ukraine. The sharp reduction in Russian pipeline deliveries has increased Europe's reliance on

LNG, particularly from the United States, and this dependence has increased with the Middle East crisis in 2026 (IEEFA, 2026).

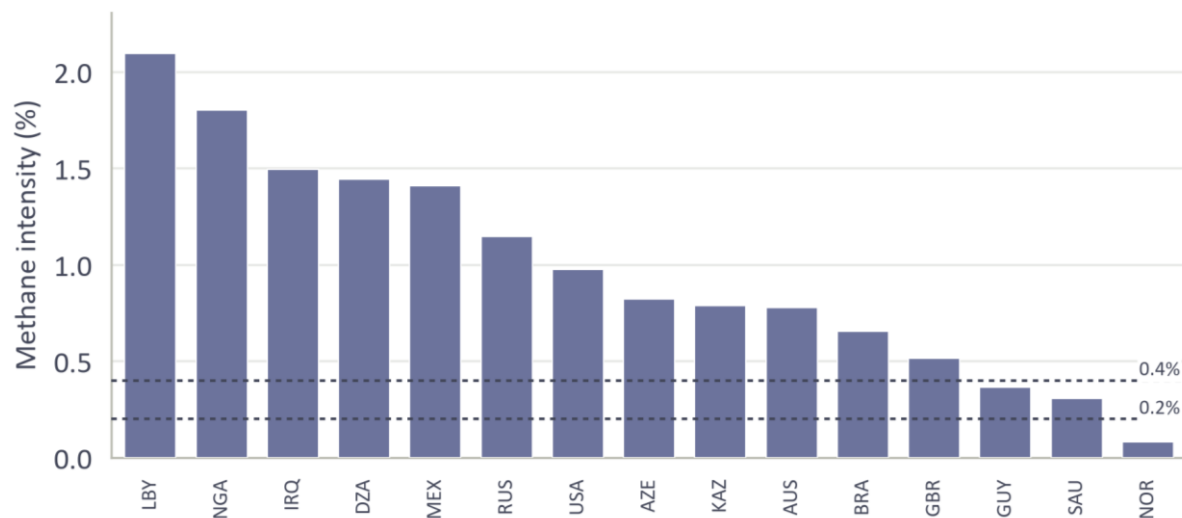
Methane emissions are concentrated upstream, particularly during fossil-fuel extraction and processing. Coal releases methane that has accumulated in geological formations during extraction, particularly from deep underground mines. Emissions can persist after mines close, sometimes for years or decades (GEM, 2024). Oil production releases methane through venting, fugitive leaks and incomplete flaring, often because fossil gas is produced alongside crude oil (IEA, 2025a). Fossil gas presents a particular challenge because methane is itself its principal component. It can escape during production and processing, through pipelines and compressor stations, and, in the case of LNG, during liquefaction, shipping³ and regasification (IEA, 2026a).

Methane intensities vary sharply across countries, fuels, fields and operators (see Figure 4). Norway shows how low they can fall under stringent regulation and tight operational controls (RMI, 2026). Elsewhere, weaker incentives to capture methane, repair leaks or curb venting and flaring can leave emissions several times higher. For most major suppliers, current methane intensities remain above the 0.2% and 0.4% benchmarks⁴, in some cases by a wide margin.

³ The EU Methane Regulation currently does not cover methane emissions from LNG shipping. Following Öko-Institut (2026), we include shipping in the imported-gas footprint and apply the illustrative thresholds to the broader supply-chain boundary. The resulting mitigation estimates therefore include reductions beyond those directly required by the Regulation's production-intensity standard.

⁴ In the policy debate, a methane intensity of 0.2% has emerged as an important reference point, particularly for oil and gas. Climate Analytics (2026) treats 0.2% as an international "good practice" benchmark and estimates that applying such a standard to EU fossil-fuel imports could cut methane emissions by more than 3 Mt a year at current trade levels. Other assessments, including work by Öko-Institut (2026), examine thresholds in the 0.2–0.4% range to illustrate how the eventual level could affect mitigation outcomes. These values should therefore be understood as plausible analytical benchmarks rather than as agreed EU limits.

Figure 4: Methane intensity of the EU27's fifteen largest fossil-fuel suppliers



Note: Composite methane intensity for each source country, calculated from the methane emissions associated with its oil, gas and coal supplies to the EU, weighted by the energy content of the respective import flows.

Source: DIW Econ

3. The EU Methane Regulation could substantially curb the bloc's methane footprint

The technologies needed to cut fossil-fuel methane emissions already exist. Around 70% of methane emissions from fossil-fuel operations could be avoided with technologies available today (IEA, 2025a). For oil and gas, the reduction potential exceeds 75%, through measures such as leak detection and repair, equipment replacement, vapour recovery and better management of associated gas. Coal emissions can be reduced through methane capture and use, flaring or oxidation. The EU Methane Regulation provides the policy lever to turn this readily available technical potential into real-world emissions cuts.

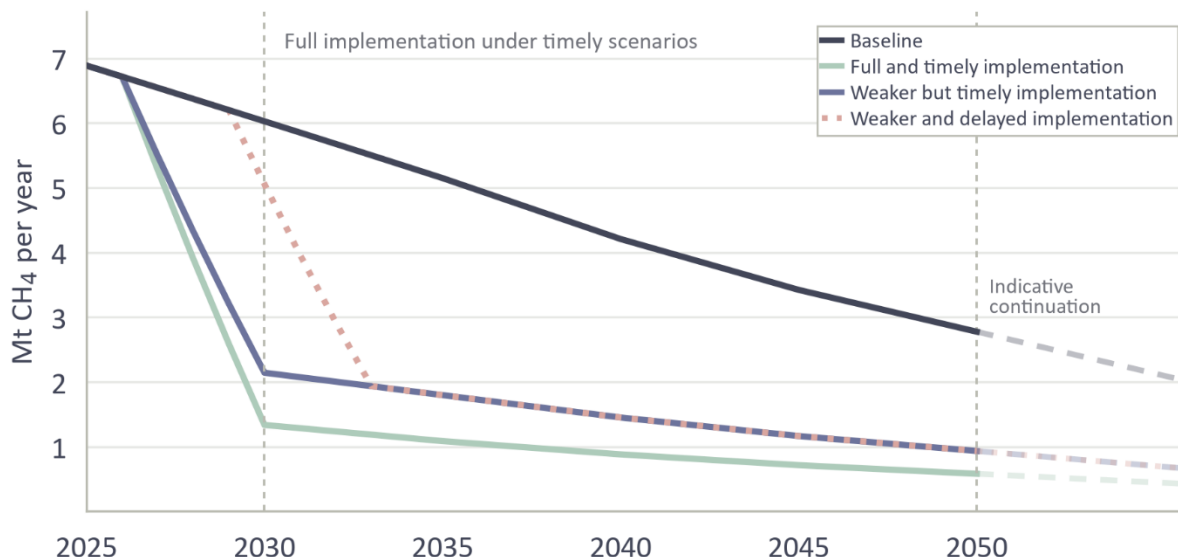
We model the potential impact of the EU Methane Regulation on the bloc's methane footprint across several implementation scenarios. In the timely implementation scenarios, methane reductions begin in 2027 and gradually increase towards full compliance with either a 0.2% or 0.4% methane-intensity threshold for imports from 2030. The phase-in between 2027 and 2030 reflects the introduction of import-related monitoring and verification requirements and the incentive for producers to prepare for the binding methane-intensity requirements that follow. We also assess a delayed and weakened scenario, in which implementation is postponed by three years, as called for by the oil and gas industry⁵ (IOGP, 2026b, 2026a), and the binding threshold is set at 0.4%. The 0.2% and 0.4% thresholds should be understood as illustrative benchmarks rather than predictions of the final EU limits, which have yet to be determined. The lower benchmark is technically plausible (IEA, 2026b) and has already been used as a central reference point in assessments of the Regulation in other studies (Climate Analytics, 2026; Öko-Institut, 2026).

The mitigation potential in the full and timely implementation scenario is substantial (see Figure 5). By 2030, EU methane emissions are around 78% lower under the 0.2% threshold than in the baseline, while the 0.4% threshold reduces emissions by around 65%. To isolate the effect of the Regulation, we hold fossil-fuel demand, import patterns and domestic production constant relative to the baseline. Over time, these annual reductions add up to substantial cumulative savings. Between 2027 and 2050,

⁵ The weaker and delayed scenario is a stylised illustration informed by industry proposals, rather than a direct representation of their latest demands. While recent IOGP (2026b) calls focus on postponing MRV equivalence and related reporting requirements, earlier joint industry proposals also mentioned a broader conditional three-year postponement of the binding methane-intensity thresholds under Article 29(2) (IOGP, 2026a). Our scenario illustrates the potential consequences of a broader loss of policy ambition.

full and timely implementation avoids around 79 Mt CH₄ relative to the baseline, compared with around 65 Mt CH₄ under the weaker but timely scenario.

Figure 5: EU27 methane baseline and mitigation scenarios



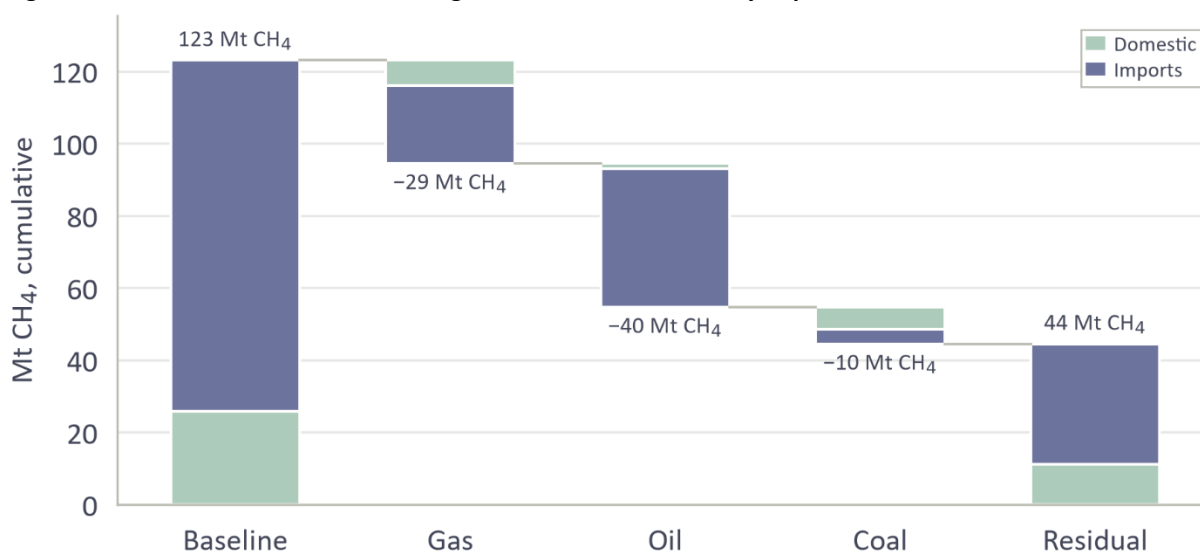
Note: Full and timely implementation assumes a binding methane-intensity threshold of 0.2% and full compliance by 2030 for all imported fossil fuels, while the weaker but timely scenario assumes a corresponding threshold of 0.4%. Both scenarios assume full implementation of the modelled mitigation potential for domestic fossil-fuel production by 2030. The weaker and delayed scenario applies a 0.4% threshold and postpones implementation by three years.

Source: DIW Econ

Delaying and weakening implementation would surrender a sizeable share of the EU Methane Regulation's abatement potential (see Figure 5). Compared with timely implementation at a 0.2% threshold, the delayed scenario, which combines a three-year postponement with a 0.4% threshold, reduces cumulative methane mitigation to 2050 by around 25 Mt CH₄, or roughly one-third. Because methane is short-lived, these forgone reductions matter particularly in the near term. Emissions released during the delay raise atmospheric methane concentrations and near-term warming and cannot simply be made up by cutting the same amount later.

The largest reductions occur outside the EU itself, where most of the methane associated with European fossil-fuel consumption is emitted. Of the roughly 79 Mt CH₄ avoided between 2027 and 2050 in the full and timely implementation scenario, around 64 Mt CH₄ is associated with imported fossil fuels (see Figure 6). Oil imports account for by far the largest share, at around 38 Mt CH₄, followed by gas imports at around 22 Mt CH₄ and coal imports at around 4 Mt CH₄. Domestic reductions account for the remaining roughly 15 Mt CH₄. The Regulation's principal leverage therefore lies in using access to the European market to change production practices beyond Europe's borders.

Figure 6: EU27 cumulative methane mitigation under full and timely implementation, 2027-2050



Note: Gas imports include both international pipeline transmission and LNG imports. The full and timely implementation scenario assumes a binding methane-intensity threshold of 0.2% and full compliance by 2030 for all imported fossil fuels.

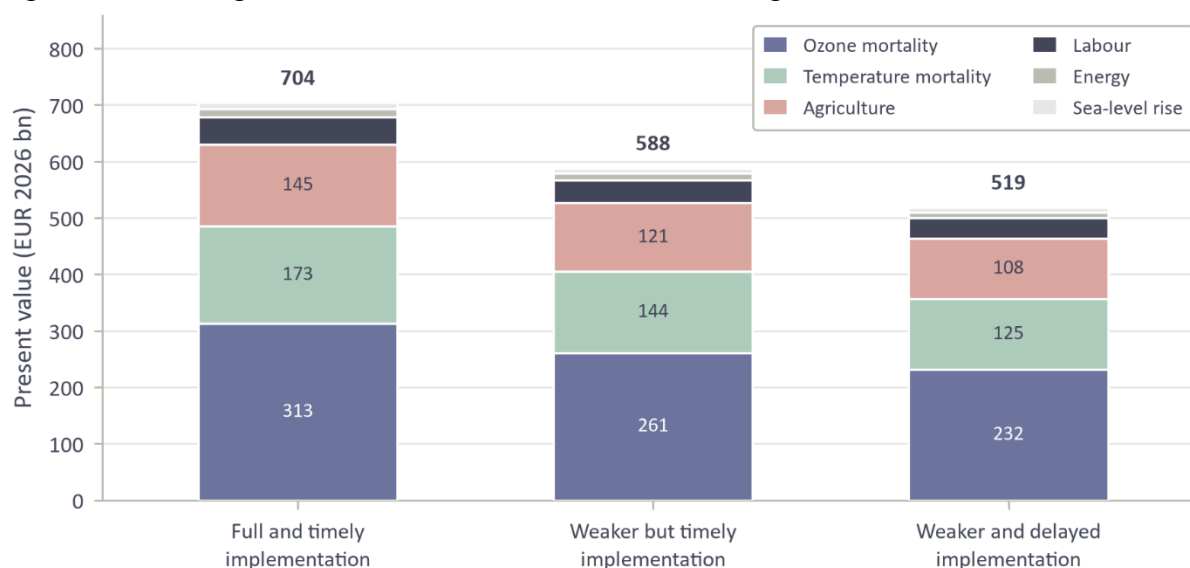
Source: DIW Econ

Methane abatement can also support energy security by reducing avoidable losses from existing fossil-fuel supplies and easing the transition to lower gas demand. The roughly 80 Mt CH₄ cumulatively avoided under full and timely implementation of the Regulation corresponds to around 105 bcm of fossil gas in energy terms, or about 1.3 years of total German fossil gas consumption (BNetzA, 2025). Averaged over the 24 calendar years from 2027 to 2050, this corresponds to about 4.4 bcm a year, roughly as much fossil gas as Slovakia consumes annually (CREA, 2025) and equivalent to around 1.3% of current annual EU fossil gas demand (European Commission, 2025). This is a theoretical energy equivalent rather than an estimate of additional marketable fossil gas. Not all avoided methane can be recovered and used, particularly emissions from coal mines and measures that destroy methane through flaring or oxidation.

4. The societal benefits of the EU Methane Regulation are substantial

Full and timely implementation of the EU Methane Regulation, with a binding 0.2% methane-intensity threshold for imports from 2030, would generate around €704 billion in societal benefits over the modelling horizon (see Figure 7). A timely but weaker implementation based on a 0.4% threshold would still generate around €588 billion. If implementation were both weakened and delayed by three years, benefits would fall to around €519 billion, about 26% below the full and timely implementation scenario. Our model captures temperature-related mortality, agricultural productivity, heat-related labour productivity, energy demand and sea-level rise, alongside ozone-related mortality.⁶

Figure 7: Monetised global societal benefits from the EU Methane Regulation



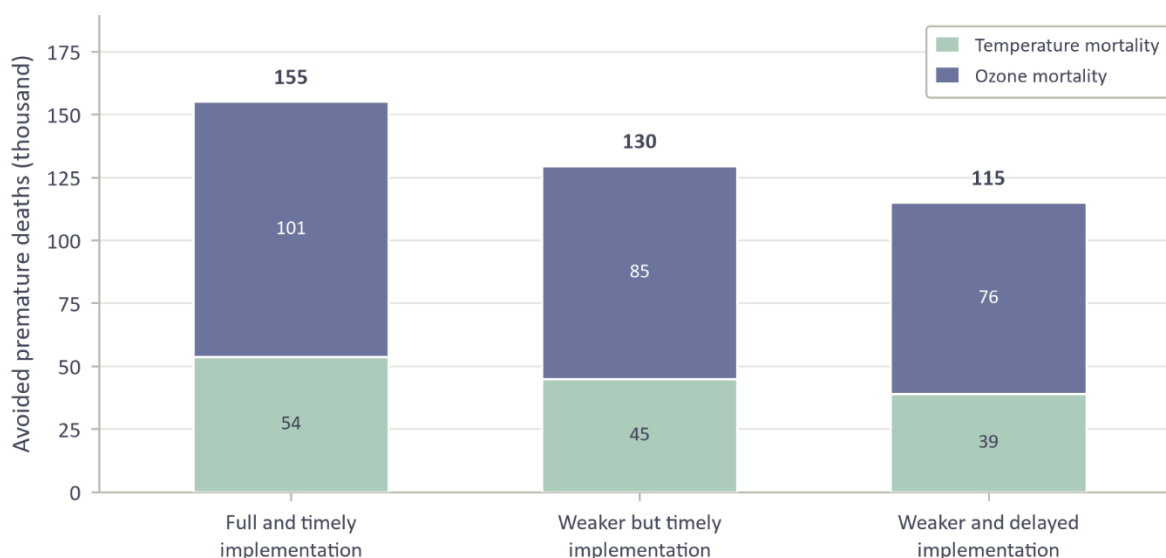
Note: Full and timely implementation assumes a binding methane-intensity threshold of 0.2% and full compliance by 2030 for all imported fossil fuels, while the weaker but timely scenario assumes a corresponding threshold of 0.4%. Both scenarios assume full implementation of the modelled mitigation potential for domestic fossil-fuel production by 2030. The weaker and delayed scenario applies a 0.4% threshold and postpones implementation by three years.

Source: DIW Econ

⁶ We estimate these benefits using an extended version of the Greenhouse Gas Impact Value Estimator, or GIVE, an integrated assessment model developed by Resources for the Future and the University of California, Berkeley (Rennert et al., 2022). The model translates avoided methane emissions into changes in the climate system and, in turn, into economic and health outcomes. These figures represent the present value of avoided damages globally through 2300, with ozone-related mortality modelled through 2100. Present values are discounted to 2025 using GIVE's Ramsey-style framework calibrated to a 2% near-term discount rate and expressed in constant 2026 euros. See Technical Annex in Section A for further methodological details.

The health effects alone are large. Full and timely implementation could prevent around 155,000 premature deaths globally over the modelling horizon.⁷ A timely but weaker implementation based on a 0.4% threshold would prevent around 130,000 deaths, while weakening the threshold and delaying implementation by three years would reduce this to around 115,000, around 40,000 fewer avoided deaths than under full and timely implementation (see Figure 8). These estimates are conservative. Our model captures the respiratory component of ozone-related mortality, but not cardiovascular mortality or several other health effects. Applying the respiratory-to-cardiovascular ratio reported in the Global Methane Assessment (CCA Coalition & UNEP, 2021) would raise the estimated number of premature deaths avoided under full and timely implementation to around 250,000.

Figure 8: Cumulative premature deaths avoided worldwide through the EU Methane Regulation



Note: Full and timely implementation assumes a binding methane-intensity threshold of 0.2% and full compliance by 2030 for all imported fossil fuels, while the weaker but timely scenario assumes a corresponding threshold of 0.4%. Both scenarios assume full implementation of the modelled mitigation potential for domestic fossil-fuel production by 2030. The weaker and delayed scenario applies a 0.4% threshold and postpones implementation by three years.

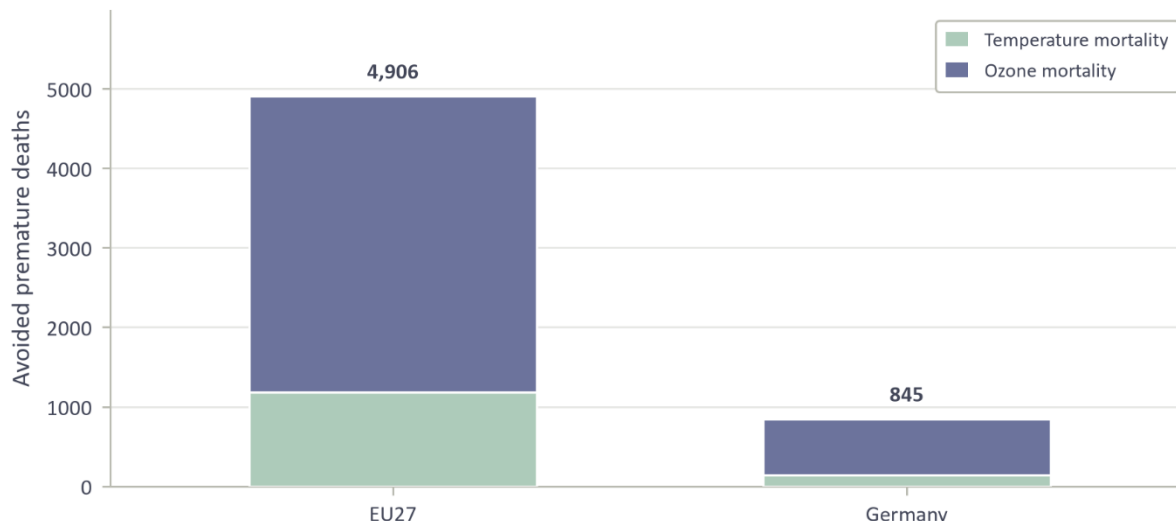
Source: DIW Econ

The benefits of the EU Methane Regulation extend overwhelmingly beyond Europe's borders. Under full and timely implementation, around 3.2% of the approximately 155,000 premature deaths avoided worldwide over the modelling horizon would be avoided in the EU and around 0.5% in Germany (see Figure 9). The same pattern holds for monetised damages. Europe's fossil-fuel consumption drives the

⁷ The modelling horizon extends to 2300 for GIVE's climate-related damage channels, including temperature-related mortality, while ozone-related mortality is modelled through 2100. These long horizons ensure that the full consequences of avoided methane emissions are captured. The mortality benefits themselves are much more front-loaded, however, with the bulk of avoided deaths occurring within roughly the first five decades after implementation rather than towards the end of the modelling horizon.

methane footprint, but much of the associated methane is emitted outside the EU and the resulting climate and ozone-related damages are largely borne elsewhere.

Figure 9: Cumulative premature deaths avoided through the EU Methane Regulation in the EU27 and Germany



Note: The full and timely implementation scenario assumes a binding methane-intensity threshold of 0.2% and full compliance by 2030 for all imported fossil fuels and full implementation of the modelled mitigation potential for domestic fossil-fuel production by 2030.

Source: DIW Econ

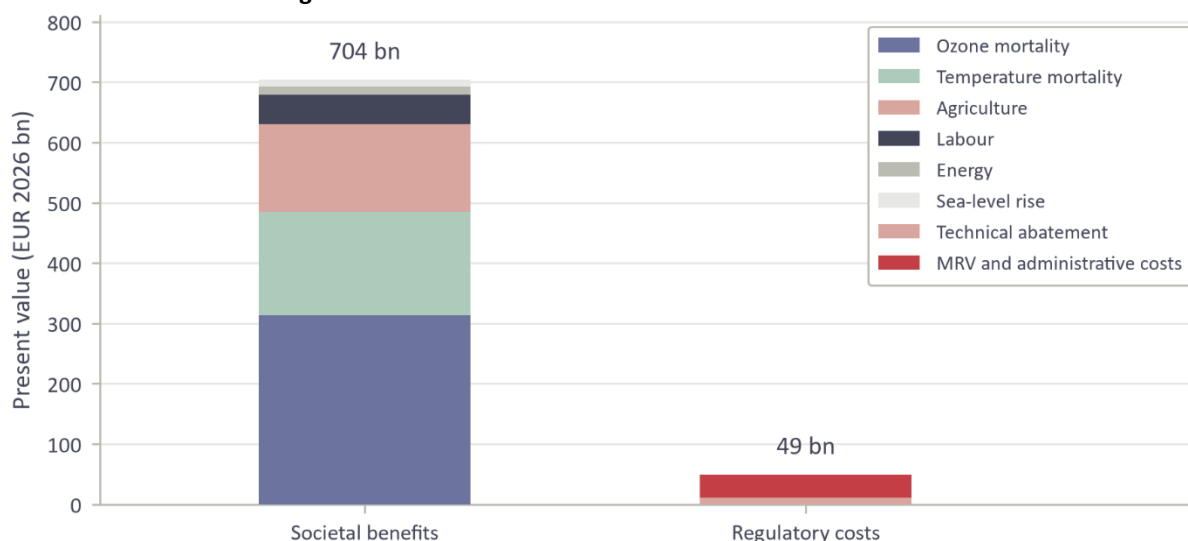
Overall, our estimates of societal benefits should be regarded as a lower bound. For practical reasons, our model captures only the most relevant damage channels. Beyond the omission of cardiovascular mortality discussed above, we exclude ozone-related morbidity, including asthma-related morbidity. We also exclude the effects of methane-induced ozone on crop yields (Chuwah et al., 2015), as well as ecosystem and biodiversity losses (NWF, 2016) and a range of other non-market damages. Even this partial valuation, however, is sufficient to show that the benefits of the Regulation comfortably exceed its costs (see Section 5).

The EU Methane Regulation evidently delivers large climate, health and economic benefits even though it addresses only a share of global methane emissions. Full and timely implementation would avoid around 80 Mt of methane over more than two decades, while human activities worldwide emit roughly 400 Mt every year (IEA, 2026b). Extending similarly effective action globally would therefore have much larger effects. The Global Methane Pledge (2025) gives an indication of the potential scale, with a 30% reduction in global methane emissions by 2030 estimated to prevent around 255,000 premature deaths every year.

5. The societal benefits far exceed the costs of implementation

The economic case for the EU Methane Regulation is strong. Under full and timely implementation, we estimate around €704 billion in societal benefits against around €49 billion in implementation costs (see Figure 10). This means that every euro spent generates around €14 in avoided climate, health and economic damages. Even under the weaker but timely scenario applying a 0.4% threshold, benefits remain around €588 billion compared with €45 billion in costs. Delaying implementation by three years and applying a weaker 0.4% methane intensity threshold would reduce societal benefits by around €185 billion compared with full and timely implementation, while lowering implementation costs by only around €11 billion.

Figure 10: Global present-value societal benefits and implementation costs under full and timely implementation of the EU Methane Regulation



Note: The full and timely implementation scenario assumes a binding methane-intensity threshold of 0.2% and full compliance by 2030 for all imported fossil fuels. The present values comprise societal benefits and regulatory costs occurring between 2025 and 2300, discounted to 2025 using GIVE's Ramsey-style discounting framework calibrated to a 2% near-term discount rate. Ozone-related health benefits are modelled through 2100. All monetary values are converted to constant 2026 euros.

Source: DIW Econ

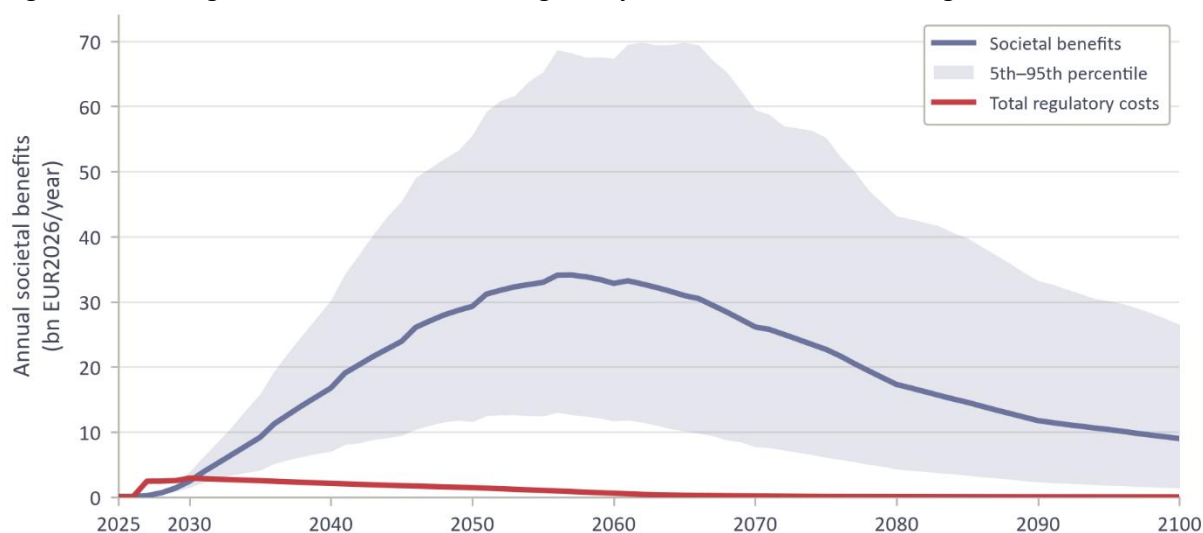
The direct cost of cutting methane is only part of the regulatory burden, and in many cases the smaller part. Our estimates draw on the IEA's country- and technology-specific marginal abatement cost curves. Many measures, including leak detection and repair, vapour recovery, equipment replacement and improved management of associated gas, are inexpensive because captured methane can be sold or used. The IEA (2026b) estimates that more than 35 Mt of methane emissions from fossil-fuel

operations could currently be eliminated at no net cost. Costs are higher where captured gas cannot readily be used or marketed, and particularly for coal.

Monitoring, reporting and verification are more demanding. Producers supplying the EU must establish more granular emissions measurement, independent verification and systems for transmitting this information through often complex supply chains. These requirements can involve new equipment, specialist services and administrative systems, particularly for producers starting from weak measurement infrastructure. Yet the monetary burden remains relatively small. Carbon Limits (2026) estimates full MRV costs at around 0.03% to 0.6% of production value, with costs highest during the initial build-up and declining as systems and expertise become established. We use the upper end of this range in our cost estimates.

Regulatory costs are concentrated in the early years, when firms invest in abatement and establish monitoring and verification systems (see Figure 11). Societal benefits accumulate more gradually as successive years of methane reductions lower ozone exposure, warming and associated damages. Annual costs therefore initially exceed benefits, but this relationship reverses around 2030. Benefits continue long after most implementation costs have been incurred and peak around 2060 before gradually declining.

Figure 11: Annual global societal benefits and regulatory costs of the EU Methane Regulation



Note: Societal benefits are based on the full and timely implementation scenario, which assumes a 0.2% methane-intensity threshold for imports, full compliance from 2030 onwards and full phase-in of available mitigation options for domestic production. Abatement costs are based on technology-specific and country-specific (except coal) MACCs.

Source: DIW Econ

Concerns about energy security nevertheless deserve attention. Industry-commissioned analysis has warned that substantial shares of EU oil and gas imports could initially struggle to demonstrate compliance (Wood Mackenzie, 2026). The concern is that this could restrict the pool of supply available to European buyers and, in turn, push up energy prices. But most other assessments point to much smaller economic effects. Rystad Energy (2023) estimated average compliance costs of around €0.07/MMBtu for gas and €1.33 per barrel of crude oil, with only limited effects on consumer prices. More recent analysis also finds compliant gas supply comfortably above projected European requirements, including under tighter market conditions (Rystad Energy, 2025, 2026).

The Regulation also does not automatically exclude non-compliant fuels from the European market. Infringements are addressed through penalties, and Member States are required to apply them without endangering security of supply. The more severe market effects identified in some studies should therefore be understood as risks under particular implementation and enforcement assumptions rather than as unavoidable consequences of the Regulation.

Taken together, the economic message is clear. The cost of implementing the Regulation is modest compared with the damages it avoids. The European Commission's (2021) earlier Impact Assessment reached a similar conclusion for a narrower set of domestic measures, finding benefits around 20 times as large as abatement costs. While the two assessments differ in scope and methodology, our results support the Commission's overall finding: Cutting methane is far cheaper than allowing its damages to accumulate.

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A. Technical Annex

A.1 Estimation of the methane footprint and its evolution

The import baseline uses 2024 Eurostat trade flows for crude oil, natural gas and coal (Eurostat, 2026a). These volumes are matched to IEA supplier-country methane intensities, with intra-EU trade excluded to avoid double counting domestic production (IEA, 2025a, 2026b). Domestic oil and gas methane emissions are based on IEA regional estimates for the European Union for 2025 (IEA, 2026b). Domestic active-coal emissions combine Ember-based country estimates with GEM mine-level estimates where appropriate (Ember, 2026; GEM, 2024). Abandoned coal-mine emissions are based on GEM estimates for the EU27 (GEM, 2024).

The emissions boundary varies by fuel and supply route. Imported oil covers upstream production, while imported coal covers methane emissions from active coal mining. Pipeline gas includes upstream production and international pipeline transport. LNG additionally includes feed-gas transmission, liquefaction and shipping, while regasification is excluded. This broader gas supply-chain boundary captures methane emissions associated with bringing imported gas to the EU, extending beyond the formal upstream production boundary of the Regulation's import methane-intensity standard. This approach is consistent with Öko-Institut (2026). For domestic production, oil includes active and abandoned facilities, gas includes upstream, downstream and abandoned facilities, and coal includes active and abandoned mines.

The evolution of fossil-fuel imports and domestic production after 2025 is based on the IEA World Energy Outlook 2025 Stated Policies Scenario (STEPS) (IEA, 2025c). For oil and coal imports, supplier shares are held constant at their 2024 levels. For gas imports, the shares of pipeline gas and LNG, as well as the composition of supplier groups, evolve in line with WEO projections until 2035 and remain constant thereafter, while individual country shares within supplier groups are held fixed.

Beyond 2050, fossil-fuel activity is extrapolated using the absolute annual decline observed between 2040 and 2050, with each fuel declining to zero once that trajectory reaches zero. Regulation scenarios are extended consistently, so avoided methane emissions continue while the corresponding fossil-fuel activity remains. Emissions from abandoned mines and wells are treated separately and decline linearly from their 2050 levels to zero by 2065.

Despite differences in data vintage, emissions scope and the dynamic modelling of emissions over time, our reconstructed baseline is broadly consistent with comparable estimates in the literature, as shown in Table 1.

Table 1: Baseline methane scenario benchmarking

Scope	DIW Econ (2026)	Benchmark
EU27 oil + gas import methane	5.09 Mt CH ₄ /yr (2024)	~5.20 Mt CH ₄ /yr, using 2023 oil + 2024 gas data (155 MtCO ₂ e) (Öko-Institut, 2026).
EU27 gas import methane	1.58 Mt CH ₄ /yr (2024)	~1.68 Mt CH ₄ /yr (2024), from about 50 MtCO ₂ e for pipeline + LNG imports (Öko-Institut, 2026).
EU27 domestic oil, gas and coal methane	~1.59 Mt CH ₄ /yr (2025)	1.80 Mt CH ₄ /yr (2020); BAU projected to 1.08 Mt in 2030 (European Commission, 2021).
EU27 active coal mines	0.746 Mt CH ₄ /yr (2024 anchor)	~1.15 Mt CH ₄ /yr; GEM (2024) does not assign this estimate to one single emissions year

Source: DIW Econ and as indicated.

A.2 Estimation of the EU Methane Regulation's reduction potential

For imports, we model three mitigation scenarios. Full and timely implementation assumes a methane-intensity threshold of 0.2% from 2030. The 0.2% benchmark was explicitly considered in the European Parliament's 2023 negotiating position and is also treated by Climate Analytics (2026) as an international good-practice benchmark. The IEA (2026b) likewise assesses a 0.2% import standard. Timely but weaker implementation follows the same timetable but applies a less stringent threshold of 0.4%, used by Öko-Institut (2026) as an illustrative upper benchmark. Weakened and delayed implementation combines the 0.4% threshold with a three-year delay, representing a stylised scenario, but broadly reflecting recent industry calls for postponement of the importer requirements (IOGP, 2026a, 2026b). The Regulation itself does not yet specify maximum methane-intensity values. These are to be established following the Commission's assessment due in 2029 and apply from 2030.

In the two timely scenarios, mitigation of emissions associated with imported fossil fuels is phased in at 25%, 50% and 75% of the estimated reduction potential in 2027, 2028 and 2029, respectively, reaching 100% in 2030. This anticipatory phase-in is a modelling assumption rather than a requirement of the Regulation. In the delayed scenario, the same pathway is shifted by three years, beginning in 2030 and reaching full mitigation in 2033.

For imported fuels, the thresholds are applied to the emissions boundary described above. For natural gas, methane intensity is expressed relative to the gas supplied. For oil and coal, we follow Climate Analytics (2026) and apply the same benchmark on an energy-equivalent basis. This allows a common intensity benchmark to be applied across fuels while accounting for their different physical characteristics. Our gas boundary is broader than the formal upstream production boundary envisaged for the import standard, since it also captures transport, liquefaction and shipping emissions associated with supplying gas to the EU.

For domestic production, the Regulation prescribes specific mitigation measures rather than a uniform methane-intensity threshold, including leak detection and repair, restrictions on venting and flaring, and requirements for inactive oil and gas facilities and coal mines. For domestic oil and gas, we estimate the technical mitigation potential using the IEA (2026b) Methane Abatement Model and match it to the corresponding baseline emission sources. For domestic coal, we use the GAINS technical potentials reported in the European Commission's (2021) Impact Assessment, corresponding to a 57.6% reduction potential for active mines and 90.2% for abandoned mines.

In the two timely scenarios, domestic mitigation is phased in from 2027 to 2030 at 25%, 50%, 75% and 100% of the estimated technical potential. This is a modelling assumption and does not reproduce the distinct legal deadlines for domestic measures, some of which precede 2027. The domestic pathway is identical under the 0.2% and 0.4% import-threshold scenarios. In the delayed scenario, both domestic and imported-fuel mitigation pathways are shifted by three years, with full mitigation reached in 2033. This illustrates a broader implementation delay than proposals confined to importer requirements.

Our estimated mitigation potential also falls within the range of comparable studies, despite differences in data, emissions coverage and scenario design, as shown in Table 2.

Table 2: Mitigation estimate benchmarking

Scope	DIW Econ (2026)	External benchmark
EU27 domestic oil, gas + coal, 2030	0.86 Mt CH ₄ /yr	0.706 Mt CH ₄ /yr additional reduction under the ambitious mandatory-measures option; GAINS estimates 0.918 Mt total technical potential at all costs (European Commission, 2021).
EU27 imported oil + gas, 0.2% scenario	3.61 Mt CH ₄ /yr in 2030	122 MtCO ₂ e, equivalent to about 4.1 Mt CH ₄ /yr, using 2023 oil and 2024 gas trade (Öko-Institut, 2026).
EU27 imported oil + gas, 0.4% scenario	2.85 Mt CH ₄ /yr in 2030	95 MtCO ₂ e, about 3.2 Mt CH ₄ /yr (Öko-Institut, 2026).
EU27 all fossil-fuel imports, 0.2% scenario	3.84 Mt CH ₄ /yr in 2030	3.09 Mt CH ₄ /yr, based on 2023 trade volumes and a 0.2% standard for oil, gas, LNG and coal (Climate Analytics, 2026).

Source: DIW Econ and as indicated.

A.3 Estimation of societal benefits

We estimate the societal benefits of the EU Methane Regulation by translating avoided methane emissions into avoided societal damages using an extended version of the GIVE integrated assessment model (Rennert et al., 2022). GIVE combines probabilistic projections of population, GDP and emissions

with the FaIR climate model and damage functions for temperature-related mortality, energy use, agriculture and sea-level rise, with climate-related impacts modelled through 2300. We additionally incorporate the heat-related labour-productivity damage function developed by Moore et al. (2026).

To capture methane's additional effect on ground-level ozone, we link the reduced-form ozone-mortality model of McDuffie et al. (2023) to GIVE. The extension uses GIVE's socioeconomic trajectories, population, mortality rates, value of a statistical life and discounting assumptions. Ozone-related mortality impacts are modelled through 2100.

Monetary impacts are valued in the year in which they occur and converted into present values using GIVE's Ramsey discounting framework, which links the discount rate to the pure rate of time preference and projected consumption growth. We use a pure rate of time preference of 0.2% per year and an elasticity of marginal utility of consumption of 1.24, calibrated to a near-term discount rate of 2%, following Moore et al. (2026). All monetary results are subsequently converted to a common 2026 Euro price basis using inflation and exchange-rate adjustments.

Temperature-related and ozone-related mortality are also reported in physical terms as avoided premature deaths. The ozone module captures respiratory mortality based on McDuffie et al. (2023), but does not include cardiovascular mortality. The European Commission's (2021) Impact Assessment uses a broader ozone-mortality estimate that also includes cardiovascular deaths, which are of a similar magnitude to respiratory deaths.

Uncertainty is represented through 1,000 aligned Monte Carlo trials that jointly sample socioeconomic trajectories, climate parameters and labour-damage uncertainty while preserving the same sampled world across model components and policy scenarios. Published GIVE applications use 10,000 trials, including Rennert et al. (2022) and Moore et al. (2026). We use 1,000 trials because the analysis focuses on central estimates and broad uncertainty ranges rather than the tails of the distribution. For the headline EU27 societal-benefit estimate, the resulting simulation standard error of the mean is around 1.3%.

Unlike standard GIVE applications based on individual marginal emission pulses, we run the complete methane-mitigation pathway directly through the model. This captures interactions across emission years and nonlinear responses, including threshold effects in sea-level-rise damages.

A.4 Estimation of costs

We estimate abatement costs by linking the methane reductions in each scenario to technology-specific marginal abatement costs from the IEA (2026d) Methane Abatement Model. For each country,

fuel and year, the required methane reduction is matched to available abatement measures, ordered by net cost and deployed until the required reduction is reached. Costs include annualised capital expenditure and operating costs and, where applicable, deduct the value of recovered methane. Measures with negative net costs are therefore retained. For oil and gas, we use country- and source-specific IEA abatement options. For coal, where the available data are less granular, we use IEA (2026c) technology-cost information and aggregate marginal abatement cost curves as proxies. Costs for abandoned mines are estimated separately using the European Commission's (2021) Impact Assessment, as sufficiently granular abandoned-mine cost estimates are not available from the IEA.

MRV and administrative compliance costs are estimated separately from technical abatement costs. Based on Carbon Limits (2026), we apply the upper-end estimate of USD 80,000 per PJ of regulated fossil-fuel activity as a conservative proxy for monitoring, reporting, verification and related administrative costs. The factor is applied uniformly to domestic and imported oil, gas and coal from 2027 onward. Its application to coal represents a conservative extension beyond the oil and gas scope of the source. No additional verification, certification or administrative costs are added, avoiding double counting.

Costs vary across scenarios with both the stringency and timing of implementation. A weaker methane-intensity threshold requires less abatement and therefore reduces technical abatement costs, while MRV and administrative costs are largely unaffected by threshold stringency because they depend primarily on the volume of fossil-fuel activity covered by the Regulation. In the delayed scenario, both abatement and compliance requirements are shifted by three years. This reduces cumulative expenditure over the modelling period and shifts remaining costs into later years, where they receive a lower present-value weight. The lower costs of weaker or delayed implementation therefore reflect less and later regulatory action rather than greater regulatory efficiency.