CLIMATE & CLEAN AIR COALITION
TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

a UNEP convened initiative

State of Super Pollutant Abatement Finance

The first framework and taxonomy for tracking global abatement finance flows

CLIMATE POLICY INITIATIVE

October 2026

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Executive summary

Super pollutants have contributed around half of global warming to date, making their abatement an important complement to long-term carbon dioxide (CO_2) reductions and an "emergency brake" for near-term warming. **Despite their importance, finance explicitly targeting super pollutant abatement represents only a small fraction of global climate finance.**

Cutting super pollutants offers one of the most immediate and cost-effective ways to slow near-term warming, sustain decarbonization that limits the peak, and help bring temperatures back down over the coming decades, while improving air quality, public health, and the economy. With a 1.5 °C temperature overshoot now widely assessed as locked in, addressing super pollutants can be one of the biggest opportunities to limit peak warming and shorten the duration of exceedance, while improving people's well-being and delivering greater economic benefits.

Super pollutants are atmospheric pollutants emitted from diverse economic sectors that warm the climate more powerfully than CO_2, many of which also harm human health and the environment. Many are short-lived, meaning that reducing their emissions lowers their atmospheric concentrations within years to decades and can slow warming in the near-term.

Reducing super pollutant emissions can simultaneously deliver substantial health, agricultural, and economic benefits, particularly through improvements in air quality and reduced exposure to harmful pollutants. Measures targeting major sources of super pollutants can address climate change and air pollution simultaneously, generating benefits across different timescales. The UNEP-CCAC assessment *Hidden assets: The economic and health case for climate and clean air action* found that every US$ 1 invested in 25 proven integrated climate and clean air solutions could generate around US$ 15 in economic benefits. These benefits could reach trillions of savings annually over time, far exceeding the implementation costs.

Recognition of the climate and health impacts of super pollutants is growing, but substantially greater investment is needed to translate commitments into action. This growing momentum is reflected in international agreements and pledges, such as the Kigali Amendment (2016) to the Montreal Protocol (1987) and the Global Methane Pledge (2021); regulatory measures, including the European Union (EU) Methane Regulation (2024); and implementation efforts such as the Climate and Clean Air Coalition's Super Pollutant Country Action Accelerator, launched at the 30th United Nations Climate Change Conference (COP30). Countries are increasingly incorporating action on super pollutants into their National Determined Contributions (NDCs). For example, as of January 2026, 91 percent of Parties to the Paris Agreement had included methane in their latest NDCs, a 20 percent increase over the pre-2020 period.

Prior to this report, no comprehensive assessment has examined the current investment levels targeting super pollutant abatement measures. Existing analyses, including CPI's *Landscape of Methane Abatement Finance* and the *State of Global Air Quality Funding series*, cover only methane and black carbon, and show that finance targeting these pollutants represents a very small share of global climate finance. This report addresses

that evidence gap by establishing a baseline of current financial flows and introducing a taxonomy for consistently identifying and tracking super pollutant finance. **It adopts an abatement measure-based approach, rather than reporting finance flows by individual pollutants,** reflecting how investment is channeled into concrete, implementable actions across sectors in the real economy, many of which reduce multiple super pollutants.

This report offers a first framework for tracking the volume of finance dedicated to super pollutant abatement. By establishing clearer criteria for identifying eligible investments, the framework aims both to improve finance tracking and to help direct more finance towards abatement solutions, creating a virtuous circle of better data and increased investment. In turn, this provides a foundation for identifying funding gaps, improving accountability, guiding policy and investment decisions, and mobilizing finance to achieve climate, air quality, and sustainable development goals.

The report forms part of the joint body of work by Climate Policy Initiative and the Climate and Clean Air Coalition (CCAC) on super pollutant investment analysis and builds upon CPI's *Landscape of Methane Abatement Finance* report series. The framework tracks super pollutant abatement finance across nine sectors for 2023 as project-level commitments, with this being the latest year for which sufficiently comprehensive and consistent data was available. It is underpinned by a taxonomy of super pollutant abatement measures, developed through literature review and expert consultation with key stakeholders. At its core, the taxonomy classifies eligible investments as either targeted or additional beneficial measures,[1] with each solution contributing to the abatement of at least one super pollutant.

Key findings

In 2023, total tracked finance targeted at super pollutant abatement reached US$ 9 billion, equivalent to approximately 0.5 percent of all climate mitigation finance that year (Figure ES1). This is strikingly low given that super pollutants have contributed around half of global warming to date and that their abatement can deliver substantial health, agricultural, and economic benefits. Because this figure reflects only finance that could be identified and tagged as targeting super pollutant abatement, actual investment may be higher.

Tracked finance is concentrated in a small number of sectors and technologies. Waste received 42 percent, primarily for wastewater treatment and waste-to-energy projects. This was followed by transport (31 percent), largely driven by green ammonia and hydrogen production for maritime transport. Agriculture and land use change and forestry (LULUCF) accounted together for 24 percent, while industry, residential, energy generation, and fossil fuel activities together received just 3 percent of tracked finance.

Financing patterns also reveal a divide between mature and emerging markets. East Asia and the Pacific (driven by China) and Western Europe attracted the largest volumes of finance (30 percent and 14 percent, respectively), driven primarily by domestic private investment in commercially viable infrastructure. **In contrast, developing regions such as Sub-Saharan Africa (13 percent) relied heavily on international public finance** to support

[1] Targeted measures directly reduce super pollutants, whereas additional beneficial measures contribute indirectly to super pollutant abatement.

waste management, sanitation, investments in rice and livestock productivity and resilience linked to food security and the economic development of smallholder and pastoralist systems, and other development-oriented investments with super pollutant mitigation co-benefits. **The observed distribution partly reflects regional and country priorities, but it is also shaped by data limitations, particularly the absence of dedicated reporting and tagging frameworks for super pollutant finance.** For example, public finance data, such as official development assistance, are generally more comprehensive and detailed for developing regions. By contrast, tracking private and domestically financed activities in higher-income countries remains challenging, potentially leading to an underestimation of finance flows in these regions.

Public and private finance currently play distinct roles, with a clear divide between international public finance and domestic private finance. Public finance accounted for 54 percent of tracked finance, of which US$4.3 billion was international and US$0.5 billion domestic, and was essential for supporting investments in developing countries and sectors with limited commercial returns, such as wastewater management, agriculture, and basic environmental services. Private finance accounted for 45 percent of tracked finance and was predominantly domestic, with US$3.6 billion in domestic finance compared with US$0.5 billion in international finance, and was concentrated in commercially viable investments such as waste-to-energy and green hydrogen.

Current super pollutant abatement finance is strikingly small relative to the scale and economic value of the opportunity. The *Hidden Assets* Assessment estimated that implementing 21 clean air and near-term climate solutions would require US$ 500 billion annually in 2030, roughly one third of the initial US$ 1.5 trillion (around 0.7 percent of global GDP) estimated for all 25 solutions. The remaining cost is associated with four long-term climate solutions. By 2035, the full package could generate economic benefits equivalent to 2.8 percent of global GDP. **Although not directly comparable with the financial flows tracked in this report, these estimates illustrate the scale of investment required and its potential for economic returns.**

Tracked finance is also distributed unevenly across super pollutants. Methane accounted for the largest share, receiving approximately 59 percent of all tracked finance, reflecting its significant contribution to warming, greater policy attention, and the availability of clearer targets and investment data. However, its comparatively large share does not indicate that methane abatement is adequately financed.

Even methane abatement finance falls far short of investment needs. Robust analysis quantifying aggregate investment needs for super pollutant abatement does not currently exist but is available for methane, the super pollutant that contributes most to global warming. Methane abatement finance totaled US$ 5.2 billion in 2023, equivalent to just 18 percent of the estimated investment needed annually to meet current national commitments related to methane and 4 percent of the investment required to achieve a level of emissions reduction consistent with the Global Methane Pledge.

Data and reporting limitations on investments constrain the transparency of super pollutant abatement finance. Private finance remains particularly difficult to track due to limited project-level reporting and inconsistent corporate disclosures, while the absence of dedicated super pollutant tagging frameworks for both public and private finance affects the identification of domestic and international flows. These limitations are especially

pronounced in areas such as fossil fuels, transport, residential energy, and industry, where available data are insufficient to fully assess investment levels and trends. As a result, low tracked finance in these sectors should not necessarily be interpreted as low levels of actual investment.

Recommendations

This report identifies priorities for strengthening the tracking of finance targeting super pollutant abatement, including further development of the finance tracking methodology to improve data quality and transparency. Key priorities include improving the consistency and completeness of finance reporting across public and private actors, expanding sectoral coverage, and leveraging new data sources to address reporting gaps and provide policymakers with richer insights. They also include integrating super pollutant considerations into sustainable finance taxonomies, NDCs, and disclosure frameworks to help scale investment and monitor progress.

These improvements will enhance transparency, strengthen the evidence base, and support more effective allocation of finance towards super pollutant mitigation.

Scaling investment in super pollutant abatement requires attention to three key aspects:

(i) Strengthening an enabling environment through stronger policies, institutional capacity, and standardized investment disclosures;

(ii) Developing investable project pipelines by translating technical mitigation opportunities into bankable projects; and

(iii) Mobilizing finance and scaling delivery through fit-for-purpose financial instruments.

These mutually reinforcing actions should be advanced in parallel, with priorities adapted to national and sectoral contexts. Together, they provide a roadmap by highlighting the opportunities for accelerating investment in super pollutant abatement across key emitting sectors.

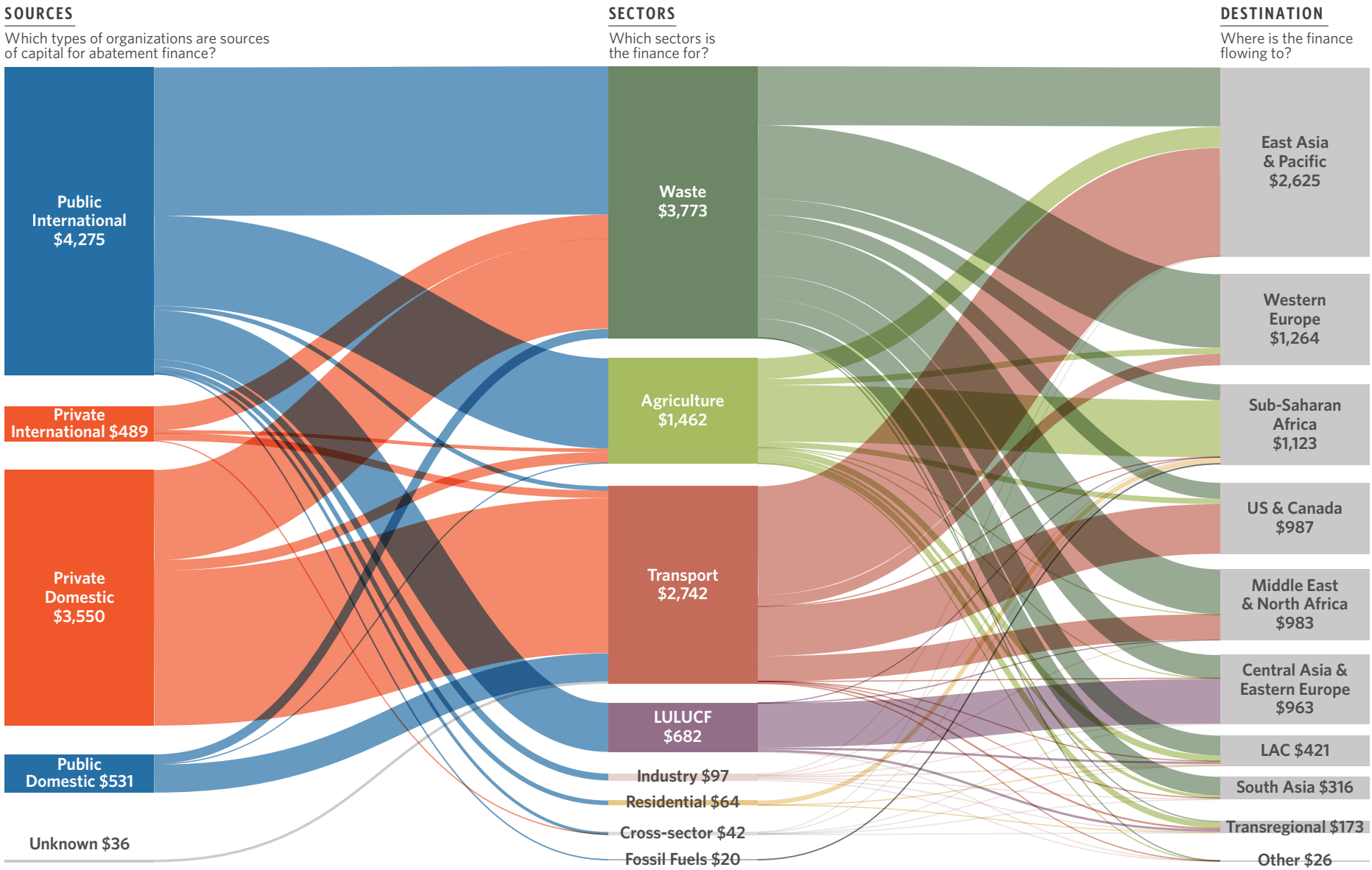
Table ES1 summarizes the key actions under each and provides illustrative examples of initiatives that are already helping to advance super pollutant finance (see Section 3 for further discussion and examples).

LANDSCAPE OF SUPER POLLUTANTS ABATEMENT FINANCE IN 2023

Values in US$ million

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9 BILLION US$ IN 2023



LULUCF: Land Use, Land-Use Change, and Forestry
LAC: Latin America & Caribbean
Other destinations include Unknown ($18) and Other Oceania ($8).

Source: Climate Policy Initiative

Table ES1. Roadmap for coordinated action to scale up super pollutant abatement finance

Governments	MDBs, DFIs, international organizations and development partners	Private actors
1. Strengthen enabling policy, institutional and data frameworks		
Embed super pollutant abatement into international and national climate, economic and financial policy frameworks. Integrate super pollutants into NDCs, clean air plans, sector roadmaps, and sustainable finance taxonomies to strengthen access to implementation financing. This could include financing through UNFCCC financial mechanisms, bilateral financing, concessional loans from development institutions, and private climate finance. Policy frameworks, including regulations, can also create incentives for private sector investment in super pollutant abatement.. **Example:** Colombia's NDC 3.0 includes quantified black carbon reduction targets, outlines a national methane reduction roadmap, and includes HFCs in the coverage of key sectoral mitigation targets.	**Support policy design, taxonomy development, institutional coordination, regulatory capacity, economic assessments, and integrated monitoring, reporting, and verification systems.** Provide technical assistance to ministries, regulators, subnational governments, utilities, and public agencies so that super pollutant action can move from broad recognition to accountable delivery. **Examples:** CCAC-Clean Air Task Force (CATF) Fossil Fuel Regulatory Program and CCAC-Initiative for Climate Action Transparency (ICAT) practical guide provide regulatory capacity building assistance and national transparency frameworks, while UNEP International Methane Emissions Observatory's (IMEO) Methane Alert and Response System (MARS) is the first public global satellite detection and notification system providing actionable data on very large methane emissions around the world. Climate Bonds Taxonomy reflects the latest credible measures for methane abatement and provides a global benchmark of best practices.	**Strengthen disclosure of super pollutant-related investment, emissions, and operational data.** Participate in sector platforms and provide project-level information that helps identify abatement opportunities, investment needs, implementation barriers, and best practices, including project-level finance reporting aligned with a standardized super pollutant taxonomy. **Examples:** The Oil and Gas Methane Partnership 2.0 (OGMP 2.0) promotes measurement-based reporting of methane emissions by oil and gas companies. The Dairy Methane Action Alliance promotes value-chain transparency and supports private-sector actors in developing methane reduction plans and actions across dairy supply chains.
2. Convert technical opportunities into investable pipelines		
Translate targets into sector-specific investment pipelines. Promote project clustering, using public capital as seed funding, especially in underfunded or fragmented sectors. **Example:** California's manure digester programs have clustered dairy farmers to capture methane from manure, with public grants supporting the necessary infrastructure.	**Provide technical and financial support for project preparation and aggregation.** Support feasibility studies, cost-benefit analysis, early-stage structuring and aggregation models in lower-capacity markets. **Examples:** Inter-American Development Bank's (IDB) Too Good to Waste programme provides pre-investment support to advance waste methane abatement measures towards bankability. The World Bank's Global Methane Reduction Platform for Development (CH4D) supports countries in developing and scaling methane reduction programmes across the agriculture and waste sectors.	**Develop bankable projects, supply chain investments, and carbon-credit-generating activities.** Package projects with clear capital needs, expected outcomes, offtake requirements and measurable results so that project pipelines are credible to financiers. **Example:** Brazil's Bom Futuro restoration-focused concession grants restoration rights to a private developer, who finances forest restoration through the sale of carbon credits while assuming responsibility for damages caused by illegal invasions and wildfires, which can reduce the risk of fire-related black carbon emissions.
3. Mobilize fit-for-purpose finance and scale delivery		
Use public finance to unlock investment. Address affordability, upfront cost and equity barriers, while ensuring super pollutant-related finance supports genuine abatement and avoids lock-in. **Example:** Brazil's National Zero Methane Program aims to stimulate the production and use of biomethane and biogas through public banks, dedicated financing, and a line of credit.	**Deploy catalytic capital and dedicated finance channels.** Use grants, concessional debt, guarantees, first-loss capital, and blended finance where commercial bankability is weak, but climate, air quality, and health value is high. **Examples:** World Bank's Global Flaring and Methane Reduction (GFMR) trust fund supports methane and flaring reduction in oil and gas through grants and technical assistance. AIM for Scale's Innovation Package for Integrated Solutions for Livestock Productivity focuses on investments to accelerate the adoption and scaling of cost-effective innovations that improve the livelihoods, resilience, and food security of farmers—particularly small-scale livestock producers.	**Invest in own operations, supply chains and measurable abatement.** Use corporate capital expenditure or secure funds to abate emissions in own operations or supply chains, including through sustainability-linked instruments or the sale of carbon credits where outcomes can be measured. **Example:** Therm Solutions develops carbon-finance programs that incentivize food-sector businesses and farmers to reduce refrigerant emissions and divert food waste, generating carbon credits from the resulting super pollutant reductions.

1. Introduction

As exceeding 1.5 °C is now widely assessed as unavoidable, the central tasks have shifted to limiting peak warming, shortening the duration of exceedance, and returning temperatures below the threshold (UNEP 2026c). Cutting super pollutants[2] offers one of the most immediate ways to slow near-term warming, sustain decarbonization efforts that limit peak warming, and help bring temperatures back down over the coming decades, while improving air quality, public health, and economic outcomes.

Super pollutants are a group of atmospheric pollutants that warm the planet far more intensely than CO_2, many of which also harm human health and the environment. These substances represent one of the most powerful levers for limiting near-term warming, as many of them, known as short-lived climate pollutants (SLCPs), have relatively short atmospheric lifetimes. Reducing emissions of super pollutants, along with long-term decarbonization, is essential for establishing a safer climate both during our lifetimes and for generations to come. Some super pollutants also contribute to the millions of premature deaths and trillions of dollars of economic costs caused by air pollution each year.

The super pollutants considered in this report, along with their atmospheric lifetimes and global warming potential, are listed in Table 1 (see Table A.1 for the major human sources of each).

Collectively, super pollutants account for roughly half of current warming (IPCC 2021b, fig. 2.c). Super pollutant and CO_2 mitigation act on different timescales, and both are needed to meet climate goals. Targeted action to cut super pollutants could approximately double the avoided warming by 2050, increasing it from about 0.25 °C to roughly 0.5 °C, and triple it by 2100, from around 0.5 °C to about 1.5 °C.[3]

In addition to slowing near-term warming, reducing super pollutants has the potential to deliver substantial benefits for air quality, public health, and economic development. Measures targeting their major sources can often reduce CO_2 and multiple air pollutants at the same time, generating benefits across different timescales.

2 "Super pollutant" is not a standard scientific classification and its definition varies across organizations. The category sometimes includes nitrous oxide, other fluorinated gases (e.g., sulfur hexafluoride), and substances that lead to the formation of tropospheric ozone—namely carbon monoxide, non-methane volatile organic compounds (NMVOCs), and hydrogen, which are sometimes called "indirect greenhouse gases." Black carbon is typically included, though it is technically an aerosol and a major component of $PM_{2.5}$ air pollution. $PM_{2.5}$ air pollution consists of tiny solid and liquid particles suspended in the air that influence the climate through both warming and cooling effects—mainly by absorbing or reflecting sunlight, rather than trapping Earth's heat like greenhouse gases. Black carbon primarily absorbs sunlight and therefore warms the climate, whereas co-emitted organic carbon (another $PM_{2.5}$ component) mostly reflects sunlight and cools the climate; the overall climate impact depends on several factors, including how much of each is emitted from a particular source. Targeting black carbon-rich sources for mitigation will have the largest climate benefits (CCAC 2025f).

3 Aggregated from data by CCAC (2025) from UNEP and FAO (2024); UNEP and CCAC (2021); UNEP (2011). These estimates do not factor in the potential decline of cooling pollutants that are often emitted together with them, such as organic carbon with black carbon or ammonia with nitrous oxide. However, decarbonization policies are generally responsible for the largest reductions in cooling aerosols.

Table 1. Super pollutants covered in this report

Super pollutants	Atmospheric lifetime	Warming potential relative to CO_2		Major human sources by sector and/or precursors	Contribution to 1750–2019 global warming (°C)
		GWP20	GWP100		
CH_4 (methane)* **	~12 years	~80x	~30x	Agriculture, Fossil Fuels, Waste	0.595
N_2O (nitrous oxide)*	~120 years	~270x	~270x	Agriculture, Industry, Waste (wastewater)	0.108
NMVOCs (non-methane volatile organic compounds)**	Minutes to years	~2x	~0.4x	Transport, Industry, LULUCF	0.247
CO (carbon monoxide),*****	Weeks to months	~6x	~2x	Transport, Industry, Residential	
$PM_{2.5}$**	Days–weeks	N/A	N/A	BC (as a component)	N/A
BC (black carbon)**	Days–weeks	~2400x	~660x	Residential, Transport, Industry, LULUCF, Energy	0.063
Fluorinated gases (e.g. hydrofluorocarbons (HFCs))	~1 to >200 years depending on compound	~4100x	~1500x	Industry	0.102
NO_x (nitrogen oxides)**	Hours to days	N/A	N/A	Transport, Energy, Industry	N/A
O_3 (tropospheric ozone)**	Weeks to months	N/A	N/A	CH_4, CO, NMVOCs, NO_x	N/A

Notes – Table modified from CCAC's "Super Pollutant Factsheet" (CCAC 2025f). (1) Sources of Global Warming Potential (GWP): CO_2, CH_4, NMVOCs (as ethane), HFCs (as HFC-134a), N_2O from IPCC AR6 WGI (IPCC 2021a); CO, BC from IPCC AR5 WGI (IPCC 2013). GWPs are for emitted compounds. (2) Tropospheric ozone is a secondary pollutant formed in the atmosphere through chemical reactions involving precursor gases in the presence of sunlight. (3) $PM_{2.5}$ (particulate matter with a diameter of $_{2.5}$ micrometers or less) is not classified as a super pollutant, but its components include black carbon. (4) Contribution to global warming is based on calculations of the change in the mean global surface air temperature from IPCC AR6 (Table 6.SM.2). (5) GWP20/100 refers to the warming impact of a pulse of emissions over a 20/100-year horizon, relative to that from CO_2.
* Depletes the ozone layer; ** Air pollutant, *** Air pollutant precursor.

In 2025, exposure to human-caused ambient air pollution ($PM_{2.5}$ and ozone) was linked to an estimated 6.4 million premature deaths worldwide, with an additional 2 million premature deaths caused by household air pollution (UNEP 2026a). Ambient air pollution alone is associated annually with millions of new cases of childhood asthma, heart attacks, chronic obstructive pulmonary disease (COPD), diabetes, stroke, dementia, and lung cancer (UNEP 2026a).[4] Health damages associated with both ambient and household air pollution reached around US$ 8.1 trillion in 2019, equivalent to 6.1 percent of global GDP in purchasing power parity (PPP)-adjusted dollars (World Bank 2022). Beyond human health, air pollution also damages agriculture, ecosystems, and infrastructure. A 2025 World Bank assessment estimated the economic damages associated with ambient $PM_{2.5}$ pollution as US$ 4.5–6.1 trillion a year, equivalent to 4.7–6.5 percent of global GDP (World Bank 2025a; Clean Air Fund 2025b). Methane-driven ozone, in particular, drives tens of millions of tonnes of losses in staple crops such as wheat, rice, and maize (UNEP and CCAC 2021; Shindell et al. 2012).[5] Research suggests that by mid-century, reducing super pollutant emissions could avoid around 144 million premature deaths and prevent hundreds of millions of new cases of air pollution related diseases through improvements in overall air quality (UNEP and FAO 2024; UNEP and CCAC 2021; Shindell et al. 2012; UNEP and WMO 2011; UNEP 2026a).

Mitigation of super pollutant emissions can generate significant economic benefits, relative to implementation costs. The UNEP and CCAC report *Hidden Assets: the economic and health case for climate and clean air action* (UNEP 2026a) found that every US$ 1 invested in 25 proven integrated climate and clean air solutions could generate around US$ 15 in economic benefits, even excluding non-market welfare benefits, the return reaches US$ 4 for every US$ 1 invested. It further estimated that implementing 21 clean air and near-term climate solutions would require US$ 500 billion annually in 2030 – roughly one third of the initial US$ 1.5 trillion (around 0.7 percent of global GDP) estimated for all 25 solutions. The remaining cost is associated with four long-term climate solutions. By 2035, the full package could generate economic benefits equivalent to 2.8 percent of global GDP. Counting direct market benefits alone, such as reduced healthcare spending, higher labor productivity, and avoided physical damages, the returns exceed the implementation costs within ten years. Although not directly comparable with the financial flows tracked in this report, they illustrate the scale of investment required and its potential for economic returns.

Mitigation efforts can also stimulate economic activity and technological innovation: by accelerating the adoption of cleaner technologies across transport, energy, agriculture and industry, and by creating direct commercial value—for example, through the sale of captured methane (biogas) in the fossil fuel, agriculture and waste sectors (IEA 2021; UNEP and CCAC 2021).[6] Efforts to reduce super pollutants can also support more inclusive and equitable development pathways.[7]

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4 Exposure to both household and ambient fine particulate matter contributes not only to premature mortality, but also to a substantial burden of disease and disability among people living with air-pollution-related conditions (WHO 2025). Particularly in developing countries (like parts of Asia and Sub-Saharan Africa), these emissions are often caused by an overreliance on solid fuels such as biomass and coal for cooking and heating, with the WHO estimating that more than 2.1 billion people still depend on these fuels (WHO 2025).

5 Reducing methane emissions by 32 percent below 2020 levels by 2030 could avoid over 180,000 premature deaths, and nearly 19 Mt of avoided crop losses annually by 2030. The value of these benefits is estimated to exceed US$ 330 billion annually by 2030. When factoring in the broader social cost of methane, the benefit would be even greater (UNEP 2025a).

6 Methane-intensive activities such as smallholder agriculture and informal waste management are deeply embedded in local livelihoods across many developing economies. Scaling up anaerobic digestion and biogas systems, for example, has the potential to create millions of local green jobs, particularly in rural areas, while strengthening circular and low-carbon economies (WBA 2021).

7 Gender considerations are relevant across all super pollutant sectors. Differences in exposure to air pollution and climate impacts, together with persistent social and economic inequalities, mean that women and gender minorities often face higher risks while benefiting less from investments and interventions aimed at reducing super pollutant emissions (CCAC and Oxfam 2025).

Recognition of the climate and health impacts of super pollutants is growing, as reflected in international agreements, pledges, regulatory measures and implementation efforts. The Kigali Amendment (2016) to the Montreal Protocol (1987) is driving global phase-downs of HFCs, with implementation efforts in Rwanda, Japan, and the European Union (EU) supporting transitions to refrigerants with lower global warming potential (EEA 2025; CCAC 2026d). Methane action has expanded through pledges such as the Global Methane Pledge (2021), philanthropic initiatives such as the Global Methane Hub (2021) and regulation such as the EU's Methane Regulation (2024).

Recent initiatives are broadening political attention and implementation support. The Climate and Clean Air Coalition (CCAC) launched the Super Pollutant Country Action Accelerator at COP30. The programme supports governments in Official Development Assistance (ODA)-eligible countries in reducing super pollutant emissions through dedicated in-government coordination, targeted technical assistance, and implementation support. Also on the sidelines of COP30, countries made a first-of-its-kind commitment to tackle major sources of black carbon (Clean Air Fund 2025a). Complementing these policy efforts, the Super Pollutant Action Initiative, created in 2026 by the Beyond Alliance, aims to channel US$ 100 million in corporate funding by 2030 towards high-impact projects targeting methane, black carbon, and refrigerant gases worldwide (Beyond Alliance 2026). Achieving the objectives of these initiatives will require a significant increase in investment across multiple sectors and regions.

Scaling finance begins with understanding current investment levels. Without a dedicated baseline for measuring investment flows, it is impossible to identify financing gaps, target resources effectively, monitor progress, or assess whether global efforts are keeping pace with mitigation needs. Yet no comprehensive framework exists for tracking finance for super pollutant abatement. To date, only a few studies have quantified finance for individual super pollutants, focusing on methane (CPI 2023b) and black carbon (Clean Air Fund 2025b), while other super pollutants receive little or no systematic attention.

Current tracking captures only part of the wider investment landscape relevant to super pollutant abatement. Some investments are explicitly described as targeting super pollutants and can therefore be identified in the existing datasets. Others, such as broader energy, agriculture, transport and development investments, could deliver super pollutant mitigation benefits without being identified as such. The absence of consistent definitions, tagging systems, and disclosure makes investment flows difficult to track and limits understanding of where finance is being directed.

The limited evidence available also suggests that investment remains well below what is needed across super pollutants and sectors. The gap can currently be quantified most clearly for methane, where annual investment needs are estimated at between US$ 29 billion and US$ 127 billion through 2030, depending on the level of ambition and implementation scenario (UNEP 2025a). Mobilizing finance is complicated by the fact that mitigation opportunities are dispersed across sectors, including fossil fuels, agriculture, waste, transport, residential energy use, industry, and cooling. In addition, policy uncertainty, weak investment incentives, and a limited pipeline of bankable projects hinder action. Moreover, many of the societal benefits of super pollutant mitigation, such as improved air quality and public health, are not reflected in financial returns, reducing incentives for private investment.

Developing a robust baseline for super pollutant finance is therefore a critical first step towards scaling investment. Better tracking can help identify financing gaps, improve accountability, inform policy and investment decisions, and ultimately mobilize the level of finance required to achieve climate, air quality, and sustainable development objectives.

1.1 Scope and purpose of this report

This report applies a finance tracking methodology developed by Climate Policy Initiative (CPI) to provide an initial global assessment of public and private investment targeting super pollutant abatement, aiming to cover both domestic and cross-border finance.

This first iteration of the report tracks global primary investment in activities to abate super pollutants, establishing an initial baseline that can be refined over time. Building on the analytical foundations of the *Landscape of Methane Abatement Finance* (CPI 2023b, 2022) and the *State of Global Air Quality Funding* series of reports (Clean Air Fund 2025b; Clean Air Fund and CPI 2024), CPI has partnered with CCAC to expand the scope of analysis to include additional pollutants.

Given that super pollutants are often co-emitted and mitigated through the same interventions, the analysis adopts an abatement measure-based approach, rather than reporting finance flows by individual pollutant. As a result, finance is tracked at the project level and classified by abatement measure, according to the abatement solution taxonomy developed for this report. This taxonomy identifies and categorizes measures that can reduce emissions across multiple pollutants.

The main goals and structure of this report are as follows:

- **Section 1: Establishing a comprehensive baseline and taxonomy** for tracking progress on public and private finance flows directed toward **super pollutant abatement** globally and regionally.
- **Section 2: Enhancing our understanding of existing investments,** including scalability options, sources, instruments, and sectoral allocation across major super pollutant emitting sectors.
- **Section 3: Providing actionable recommendations to scale up investment in super pollutant mitigation** for financial institutions, corporates, and policymakers; **and identifying priorities for improving super pollutant finance tracking,** including methodological refinements, enhanced data availability, and opportunities to strengthen future editions of the report.

1.2 Methodological approach

For this report, super pollutant abatement finance is defined as primary, project-level investments in measures that reduce super pollutant emissions (see Annex Section A.2 for details). The analysis focuses on finance flows in 2023, the latest year for which sufficiently comprehensive and consistent data were available at the time of analysis across the main sources used for CPI's Global Landscape of Climate Finance (GLCF) (CPI 2025b) and complementary sources (see Annex Section A.2.1). While acknowledging several

data limitations, discussed later in this section, the analysis examines tracked finance by source, sectors, and the geographic origin and destination of investments. The dataset was developed by following the methodological approach detailed below:

- **Taxonomy development:** CPI developed a taxonomy of eligible super pollutant abatement measures through a literature review and expert consultation, enabling the tracking of related financial flows and the construction of the first database of related investments and projects (see Section 1.2.1).
- **Keyword identification and manual validation process:** CPI applied a structured keyword identification and manual validation process (see Annex Section A.2.3) to categorize projects from the core GLCF dataset according to the bespoke Super Pollutants Taxonomy.
- **Enhanced data coverage:** CPI assessed data gaps within the super pollutant-screened GLCF dataset to identify sectors and measures that were systematically underrepresented. Based on this assessment, additional external datasets were identified and integrated to address data gaps (see Annex Section A.2.1).

The accompanying data download document provides detailed definitions of financing sources, financial instruments, regional classifications, and country groupings. The full taxonomy of super pollutant abatement measures is provided in the accompanying taxonomy document.

1.2.1 Taxonomy for super pollutant abatement finance

This report follows an abatement measures-based approach using a taxonomy of 174 technologies or activities.[8] It covers nine sectors identified by CCAC as the most relevant to super pollutant abatement (see Table 2). **Measures must abate at least one super pollutant, with many measures abating multiple pollutants. Each measure is tagged for relevant pollutants.** Table 2 provides an overview of the sector and subsectors covered in the super pollutant abatement measure taxonomy. For a comprehensive review, including super pollutant tags, see the Super Pollutants Taxonomy.

[8] The core of the taxonomy was developed by combining measures from CCAC research, including the *Global Methane Status Report* (UNEP 2025a), *Low-M* measures (CCAC 2025e), and *NDC Database* (CCAC 2025b). This framework was then assessed for interoperability with key CPI resources, such as the *Landscapes of Methane Abatement Finance* (CPI 2022, 2023b), *The Global Landscape of Climate Finance* (CPI 2025b), *Methane Abatement in Sustainable Taxonomies* (CPI and Climate Bonds 2025) and the *Landscape of Climate Finance for Agrifood Systems* (CLIC 2025). Additional sectoral and regional CPI taxonomies were assessed, as well as further desk-based research into external academic and grey literature.

Table 2. Non-exhaustive taxonomy of super pollutant measures

Sector	Subsector	Measure categories included	Illustrative examples of measures (and the pollutants they abate)
Agriculture	Crops	Targeted **and** additional beneficial measures	**Targeted:** Ban open burning of agricultural residues (CO; NMVOCs; NO_x; $PM_{2.5}$; BC). **Additional:** Increase soil organic carbon (N_2O).
	Livestock	Targeted **only**	Climate resilience measures and livestock productivity in smallholder and pastoralist systems (CH_4; N_2O).
	Livestock and crops	Targeted **and** additional beneficial measures	**Targeted:** Restoring degraded crop and pasture lands (N_2O). **Additional:** Organic farming (CH_4; N_2O).
	Food and diet	Additional beneficial measures **only**	Healthy diets that reduce red meat consumption and increase plant-based protein sources (CH_4; N_2O).
Commercial and public services	Commercial energy efficiency	Additional beneficial measures **only**	Energy efficiency (including standards) in commercial sector (CO; NMVOCs; NO_x; $PM_{2.5}$; BC).
Energy generation	Existing fossil generation	Targeted **and** additional beneficial measures	**Targeted:** Switch from coal/fuel oil to biomass (BC; NO_x; $PM_{2.5}$; CO). **Additional:** Increase efficiency of power generation (NO_x; $PM_{2.5}$; BC).
	Renewable energy generation	Targeted **only**	Direct replacement of fossil production with solar PV (general solar PV projects not included) (NO_x; $PM_{2.5}$; BC).
	Transmission and distribution	Additional beneficial measures **only**	Transmission and distribution loss reduction (NO_x; $PM_{2.5}$; BC).
Fossil fuel extraction, processing, and distribution	Coal	Targeted **only**	Extended pre-mine degasification (CH_4).
	Oil and gas	Targeted **only**	Reduce gas flaring and venting (CH_4).
	Fossil fuel exploration	Targeted **only**	No further exploration or expansion of oil and gas or coal infrastructure (CH_4; NO_x).

Sector	Subsector	Measure categories included	Illustrative examples of measures (and the pollutants they abate)
Industry	Energy-efficient production	Additional beneficial measures **only**	New or enhanced minimum energy efficiency standards (CO; NMVOCs; NO_x; $PM_{2.5}$; BC).
	Standards and controls (inc. off-road machinery)	Targeted **only**	High-efficiency PM (particulate matter) controls in industrial biomass and waste combustion (CO; NMVOCs; NO_x; $PM_{2.5}$; BC).
	Materials production	Targeted **only**	Deploy new modernized brick kilns ($PM_{2.5}$; BC).
	Product uses	Targeted **only**	Implement Kigali Amendment to phase down HFCs (HFCs).
LULUCF	Forestry policy and administrative management	Targeted **and** additional beneficial measures	**Targeted:** Fire prevention and forest management programs (CO; NMVOCs; NO_x; $PM_{2.5}$; BC). **Additional:** Reforestation/afforestation (CO; NMVOCs; NO_x; $PM_{2.5}$).
Residential	Cooking and heating	Targeted **only**	Deployment of advanced cookstoves that use clean fuels (CO; NMVOCs; NO_x; $PM_{2.5}$; BC).
	Lighting	Targeted **and** additional beneficial measures	**Targeted:** Reduce kerosene for lighting (CO; NMVOCs; NO_x; $PM_{2.5}$; BC). **Additional:** Minimum energy performance standards for lighting (CO; NMVOCs; NO_x; $PM_{2.5}$; BC).
	Other energy efficiency	Additional beneficial measures **only**	Efficient air conditioning (CO; NMVOCs; NO_x; $PM_{2.5}$; BC).
Transport	Maritime transport	Targeted **and** additional beneficial measures	**Targeted:** Alternative fuel production for shipping – e-ammonia, green hydrogen, and e-methanol (CO; NMVOCs; NO_x; $PM_{2.5}$; BC). **Additional:** Speed optimization and route planning (CO; NMVOCs; NO_x; $PM_{2.5}$; BC).
	Road transport	Targeted **and** additional beneficial measures	**Targeted:** Elimination of high-emitting vehicles (CO; NMVOCs; NO_x; $PM_{2.5}$; BC). **Additional:** Increase the number of battery electric vehicles (BEVs) (CO; NMVOCs; NO_x; $PM_{2.5}$; BC).
	Railways	Additional beneficial measures **only**	Rail electrification (CO; NMVOCs; NO_x; $PM_{2.5}$).
	Public transport and active mobility	Additional beneficial measures **only**	Implementation of bus rapid transport systems (CO; NMVOCs; NO_x; $PM_{2.5}$; BC).
Waste	Solid waste management	Targeted **and** additional beneficial measures	**Targeted:** Landfill gas collection with combustion/utilization (CH_4). **Additional:** Reduce food waste at a point of consumption (CH_4).
	Wastewater management	Targeted **only**	Improving access to and management of sanitation services (CH_4).

Note: Table 2 shows a condensed version of the super pollutant measures taxonomy. To see the full, extended taxonomy, complete with pollutant tagging, see the Super Pollutants Taxonomy.

The taxonomy distinguishes between targeted measures, which directly reduce super pollutant emissions, and additional beneficial measures, which may indirectly contribute to emission reductions.[9] Feed additives that reduce methane emissions from livestock are an example of a targeted measure, while dietary shifts that limit meat consumption are an additional beneficial measure. **Throughout the report, unless otherwise stated, the phrase "super pollutant abatement finance" refers to investments in targeted measures only.**

1.2.2 Data scope and limitations

While the super pollutant abatement finance dataset provides a detailed view of project-level investments possible, several methodological and data-related limitations should be noted:

- **Scope of tracked finance:** The tracking focuses on identifiable financial flows associated with investments in super pollutant abatement activities, including capital expenditure together with spending on policy frameworks and capacity building. **Certain types of finance are outside the scope of the analysis, including carbon credit transactions and revenues and operational expenditure.** Carbon markets are discussed separately where relevant, but credit issuance, purchases, and associated revenues are not counted as tracked finance.[10] Similarly, operational expenditure is excluded from tracked finance. Even though it can form part of estimated investment needs for some sectors, a clear distinction is always made between finance type. These scope boundaries are important to consider when comparing tracked finance with estimated investment needs and help avoid conflating different types of financial flows.
- **Data availability, transparency and standardization:** Insufficient and inconsistent financial disclosure across data sources presents a cross-cutting challenge for tracking super pollutant abatement finance. At the project level, limited transparency, particularly on line-item expenditures, makes it difficult to isolate incremental finance, often requiring the use of full project values as proxies.[11] At the same time, project-level reporting of super pollutant abatement descriptive information is inconsistent, which reduces the effectiveness of keyword-based identification.
- **Measurement and impact assessment:** The dataset does not quantify actual emission reductions achieved, as many projects are at an early implementation stage. The focus is on capturing trends in financial commitments rather than realized abatement. The current methodology cannot fully assess the intentionality of finance and instead relies on projects with established mitigation goals or potential.
- **General limitations in climate finance tracking:** The findings presented in this report are subject to several data limitations common across climate finance tracking methodologies. Financial flows reflect committed amounts rather than disbursements,

[9] This report takes a conservative approach to tracking super pollutant abatement finance. Inclusion criteria and project tagging isolate those projects that directly target super pollutants. For example, activities with a primary objective of CO_2 mitigation are considered "additional beneficial measures" even if they indirectly abate super pollutant emissions.

[10] Carbon credit-generating projects can be included where an identifiable investment in the underlying abatement activity is tracked; however, the value of carbon credits or revenues from their sale is not counted as a separate financial flow.

[11] Where possible, CPI applies proportional shares to mitigate this limitation. See "Proportionality" under the Keyword Screening Process section in the Annex.

owing to the limited availability of consistent disbursement-level data.[12] Government budgets are often neither standardized nor tagged to climate-relevant expenditure categories in a manner compatible with climate finance tracking frameworks. Tracking of private finance for adaptation activities and for mitigation activities in agriculture, forestry and other land use (AFOLU), waste, and water remains constrained by data gaps. For more information on climate finance tracking limitations, see the GLCF Tracking Methodology (CPI 2025b).

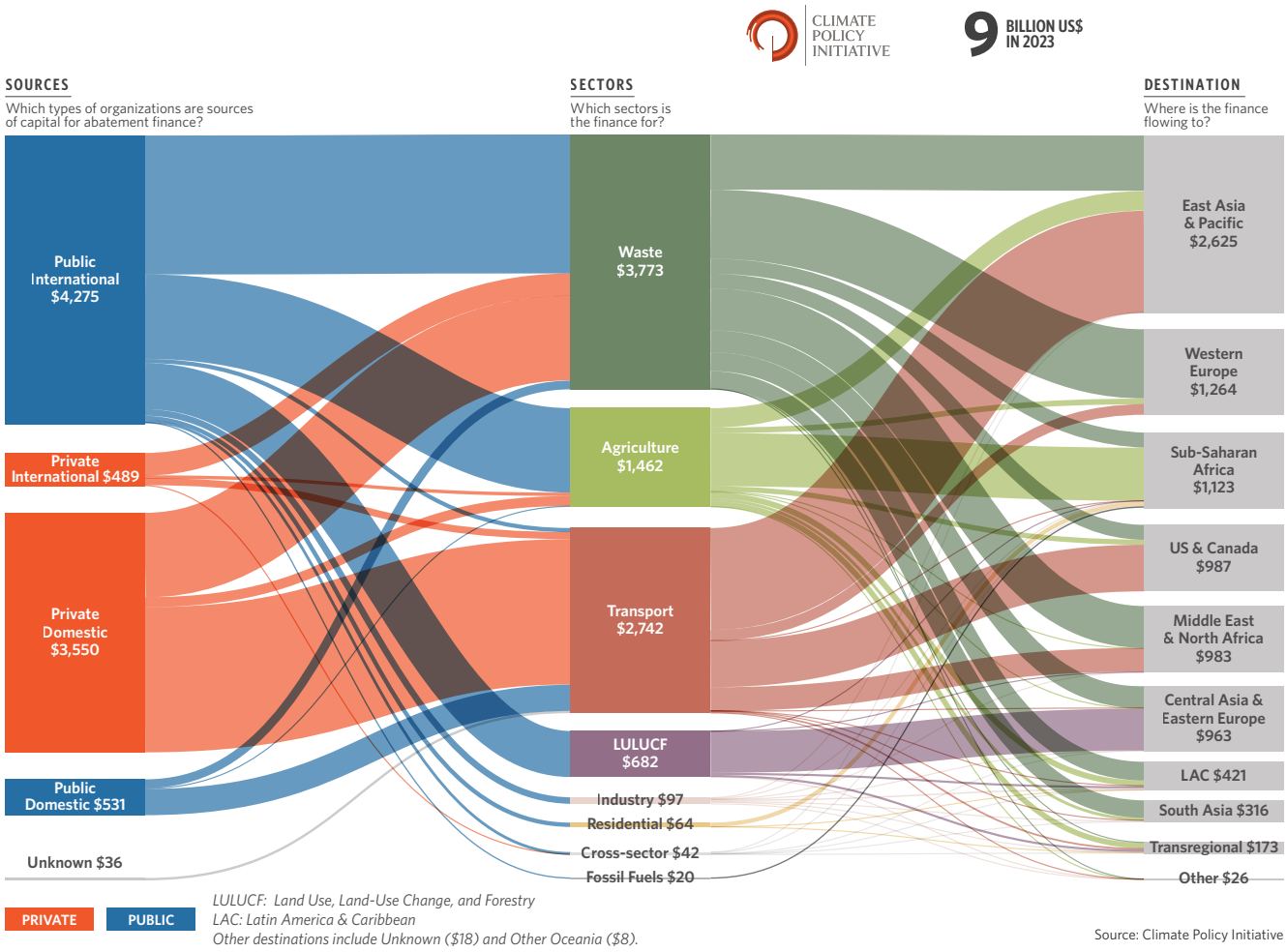
- **Data limitations are especially acute in fossil fuel-related sectors:** Restricted project-level financial reporting, the omission of incremental abatement costs, and the high overall cost of infrastructure projects contribute to significant underrepresentation. Although we supplement GLCF datasets with additional project-level descriptive information and integrate complementary datasets to capture missing flows, fossil fuel-related abatement finance remains a major gap.

Annex Table A.3 presents dataset coverage across sectors and financing sources, along with the number of projects captured in each sector.

[12] The focus on commitments rather than disbursement may affect the sequencing of flows over time.

2. Landscape of super pollutant abatement finance

Figure 1. Landscape of super pollutant abatement finance in 2023



Total tracked targeted super pollutant abatement finance amounted to US$ 9 billion in 2023. Although super pollutant emissions are responsible for almost half of global warming to date, finance for their abatement represents just 0.5 percent of global climate mitigation finance (CPI 2026b).[13] Even with data gaps factored in (see Section 1.2.2), this initial stocktake indicates that finance to abate super pollutants is not sufficient to support the actions needed to meet climate goals. Although many abatement measures address multiple pollutants, Box 1 provides an indicative distribution of flows across pollutants.[14]

[13] Of total targeted super pollutant finance, approximately 43 percent originated from data sources included in the Global Landscape of Climate Finance (GLCF) dataset which received no modification. A further 39 percent was derived from core GLCF data sources that were expanded to capture non-climate-related flows not typically included in the dataset. The remaining 18 percent came from supplementary datasets incorporated specifically to address super pollutant financing.

[14] This distribution is strongly influenced by how pollutants are tagged to each measure within the Taxonomy.

Box 1. How much is going to each pollutant?

Finance targeting the abatement of super pollutants is distributed across projects that address individual pollutants as well as those that simultaneously reduce multiple pollutants. Annex Table A.7 illustrates the distribution of these financial flows.

Methane abatement finance represented US$ 5.2 billion, or 59 percent of the total super pollutant abatement finance. See Box 2 for further insights.

Globally, 42 percent of tracked finance went to the waste sector, with an almost equal split between solid waste management and wastewater treatment. The transport sector received 31 percent of finance, for alternative fuels and vessels for maritime transport, particularly green ammonia production. The agriculture and LULUCF sectors jointly attracted 24 percent of flows, driven by investments in livestock resilience and productivity, as well as controlling forest and peatland fires. The remaining sectors (industry, residential, fossil fuels and energy) each received 1 percent or less of global flows.

East Asia and the Pacific accounted for 30 percent of global super pollutant finance, largely driven by China (86 percent), with most funding for the transport sector. Western Europe accounted for 14 percent of global flows, led by the United Kingdom of Great Britain and Northern Ireland. Sub-Saharan Africa accounted for 13 percent of global finance, primarily for the livestock subsector and wastewater.

Super pollutant abatement finance was almost equally split between public (54 percent) and private (45 percent) sources.[15] Commercial financial institutions (FIs) dominated private finance (62 percent) mainly through market-rate debt instruments, followed by corporations (31 percent) through their own equity. Public finance flowed through multilateral development finance institutions (DFIs) (41 percent), followed by governments (26 percent), bilateral DFIs (20 percent), multilateral funds (5 percent), and state-owned enterprises (SOEs) (6 percent).

Box 2. Investment needs for super pollutant abatement: methane assessed, others pending

Comparable global investment need estimates are not yet available for abating the broader set of super pollutants covered in this report, reflecting the more limited modeling and cost assessments currently available beyond methane.

The *Global Methane Status Report* (UNEP 2025a) provides two estimates for annual methane financing needs through 2030, depending on the level of ambition:

1) Achieving the measures reflected in countries' nationally determined contributions (NDCs) and methane action plans (MAPs)—hereafter referred to as the NDCs & MAPs scenario—would have estimated annual net costs of US$ 29 billion. The outlined actions would reduce anthropogenic methane emissions by approximately 8 percent from 2020 levels by 2030.

[15] Less than 1 percent classified as "Unknown"

Box 2 ***(cont.)***

2) In contrast, achieving the level of methane reductions consistent with the maximum technically feasible reduction (MTFR) scenario would have an annual net cost of approximately US$ 127 billion through 2030 in line with the Global Methane Pledge (GMP) target of reducing global anthropogenic methane emissions by at least 30 percent from 2020 levels by 2030.[16]

Other sources estimate between US$ 60 billion and US$ 110 billion annually up to 2030 to limit warming to within 1.5 °C (McKinsey & Company 2021).

Methane abatement finance totaled US$ 5.2 billion in 2023 (see Box 1). This represents only around 18 percent of the annual net investment needed to implement the NDCs & MAPs scenario, and 4 percent of the annual net investment by 2030 under the MTFR scenario. The financing gap widens over time as investment needs continue to grow: under the MTFR scenario, annual net investment requirements increase to US$ 142 billion by 2040 and US$ 213 billion by 2050. The comparison should be interpreted with caution, given limitations in data.[17]

Subsequent sections provide further insights into methane abatement investment needs for the waste (Section 2.2.1), agriculture (Section 2.2.3), and fossil fuels (Section 2.2.8) sectors.

2.1 Sources of finance

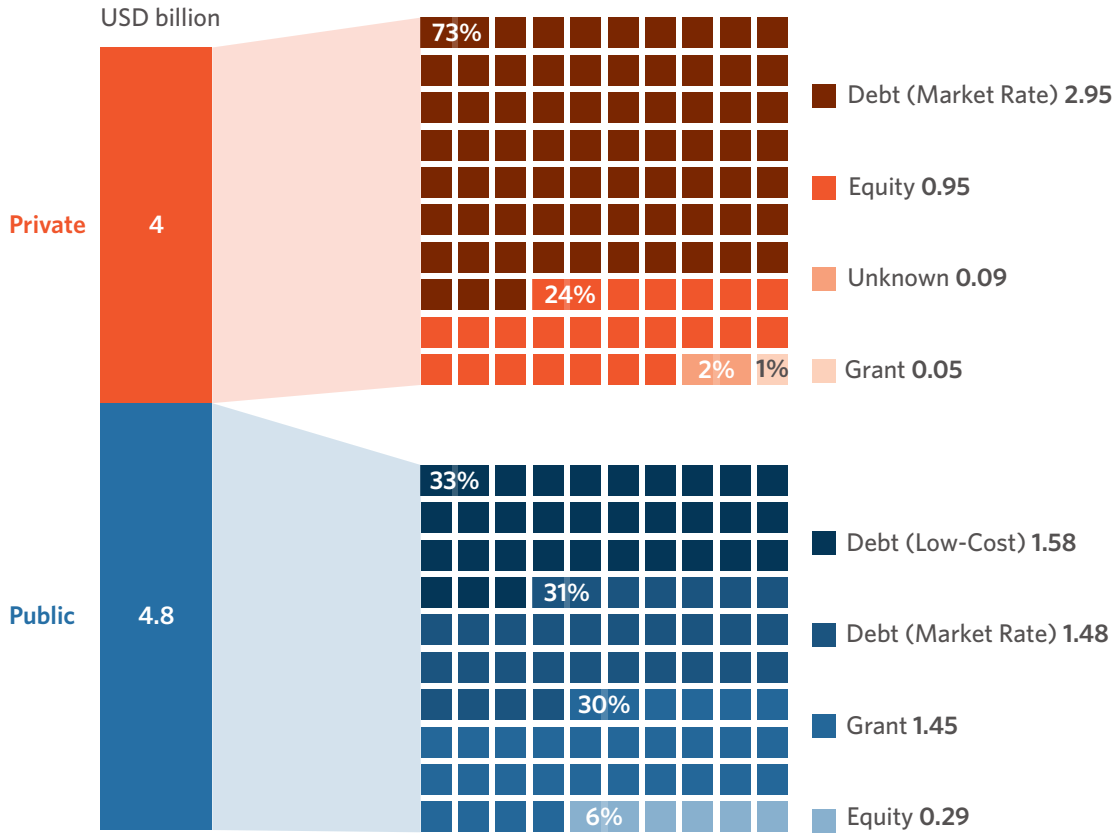
While tracked global super pollutant abatement finance was split relatively evenly between public and private sources in 2023, actors differ significantly across sectors and regions.

Public finance is essential for supporting abatement in developing countries and activities with limited revenue potential. International public institutions are crucial enablers of climate investment in developing regions, where domestic fiscal capacity is often limited and pipelines of commercially viable projects remain underdeveloped, particularly in sectors such as waste management and agricultural resilience. Public finance helps to overcome high upfront investment costs, reduce risks, and unlock investment opportunities that would otherwise struggle to attract commercial capital. Grants and low-cost debt represent 63 percent of total public investment flows (see Figure 2).

Private investment, by contrast, is concentrated in commercially viable activities, such as waste-to-energy and green hydrogen projects. These investments are primarily in the form of market-rate debt and equity, totaling 97 percent of private flows (see Figure 2).

[16] See Annex A.3 for details on the annual methane investment cost estimates methodology.
[17] Data gaps limit the comprehensiveness of methane abatement finance tracking; hence, it is not directly comparable to needs estimates. Tracked finance primarily captures capital expenditure investments, together with spending on policy frameworks and capacity building, whereas the estimated investment needs include both capital and operating expenditures, as well as cost savings from valorization of recovered natural gas and biogas. Nevertheless, the comparison provides a useful indication of the scale of the investment gap, underscoring the need for improved investment tracking and increased financing across key methane-emitting sectors.

Figure 2. Sources of finance and financial instrument breakdown, 2023

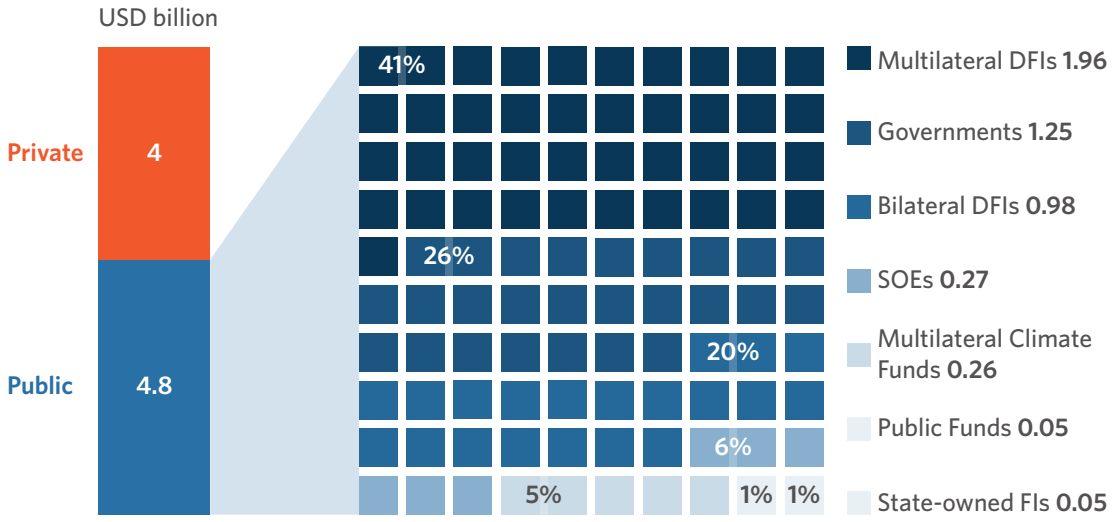


2.1.1 Public finance

International actors, primarily bilateral and multilateral development finance institutions (DFIs), provided 61 percent of public flows, while governments[18] provided 26 percent (see Figure 3). These institutions support investments across key sectors such as waste, agriculture, and transport in developing countries. They are also the only source of tracked super pollutant abatement finance for sectors including LULUCF, industry, residential, fossil fuels, and energy generation.

[18] Approximately 80 percent of government flows are international, representing cross-border finance provided by national and supranational governments.

Figure 3. Public finance by source, 2023



In several regions, including Sub-Saharan Africa and Latin America and the Caribbean, international public flows financed super pollutant abatement almost entirely (see Section 2.3). This reflects the strong alignment between mitigation interventions and development priorities, such as improving sanitation access and strengthening livestock productivity and resilience. It also highlights structural constraints, including limited domestic fiscal capacity and weaker resource mobilization systems. These limitations reduce governments' ability to finance abatement investments independently and increase reliance on external public finance.

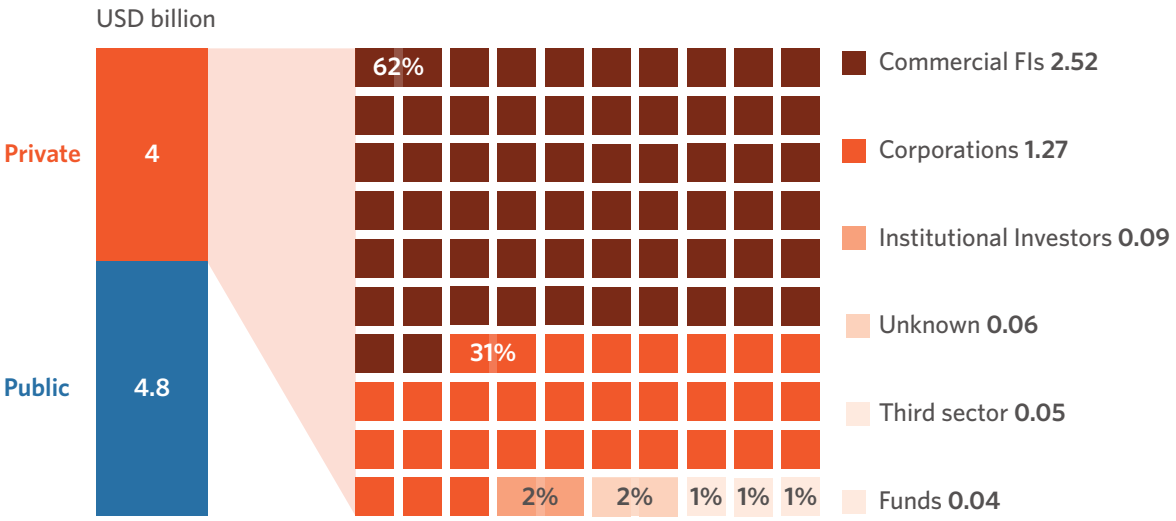
Public finance is predominantly in the form of low-cost debt (33 percent), market-rate debt (31 percent), and grants (30 percent) (see Figure 2). Debt instruments are particularly important in the waste sector, where they support large wastewater and sanitation infrastructure projects. In these cases, concessional or blended debt often enables or de-risks private capital investments. Debt also supports resilience measures in the LULUCF sector, particularly for forest fire prevention and management. Grants remain critical for activities with limited direct revenue potential, such as interventions targeting smallholder farmers in agriculture. They are also often the only form of financing available for sectors such as industry, residential buildings, and energy.

2.1.2 Private finance

Private finance is concentrated in China, Western Europe, and the United States of America and Canada (70 percent). Domestic sources account for 88 percent of total private flows. Private actors tend to participate in sectors where projects implemented through public–private partnerships generate clear revenue, such as waste-to-energy, wastewater and sanitation. They also participate in emerging green hydrogen and ammonia

value chains for maritime transport. Corporations and commercial financial institutions have provided significant investment (see Figure 4), particularly in large-scale energy and fuel infrastructure projects. However, private participation remains limited across other sectors.

Figure 4. Private finance by source, 2023



Note: Third Sector includes Philanthropies, Charities and aid delivery, Civil society and advocacy, Social enterprises and cooperatives.

Data limitations partly explain the concentration of flows in specific sectors and measures, including the underreporting of company-level investments. As a result, private finance, particularly corporate expenditure and smaller-scale projects, may be systematically underestimated, skewing the observed distribution of flows toward sectors and activities with more comprehensive reporting.

Where private actors are involved, they primarily invest through market-rate debt (73 percent) and equity (23 percent), provided mainly by commercial FIs and corporations. These investments are typically directed toward projects with identifiable revenue streams, including waste/manure-to-energy systems, and emerging hydrogen and ammonia production facilities. The concentration of private finance in domestic markets and commercially viable sectors suggests that blended finance and carbon markets (see Box 3) are likely to be most effective where commercial viability is weak, helping to crowd in private investment through risk-sharing and concessional support.

Box 3. Carbon markets as catalyst for scaling super pollutant abatement

Carbon markets have the potential to become an increasingly important source of finance for super pollutant mitigation. While public finance remains essential for supporting early-stage investments and projects with limited commercial returns, carbon credit revenues can strengthen bankability and attract private investment to activities that might otherwise remain financially unviable (World Bank 2026c).

Market activity has accelerated in recent years. Across the main super-pollutant project categories, voluntary buyers retired nearly 27 million tCO_2e in 2025, a 41 percent increase from 2024. Landfill gas and refrigerant destruction projects account for the majority of retirements and issuances, while agricultural methane projects are a growing source of supply as methodologies mature and buyer confidence increases (Patch 2026; Carbon Direct 2026b).

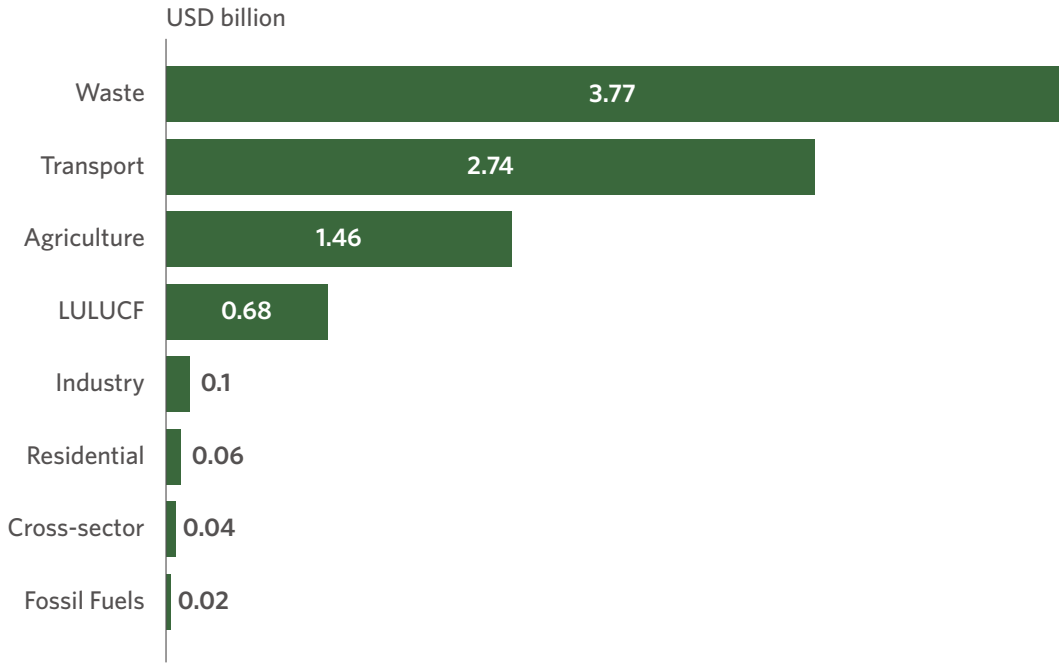
Methane mitigation is the most mature segment of the super pollutant carbon market. Crediting methodologies exist for activities including landfill gas capture, manure management through anaerobic digestion, coal mine methane recovery, plugging abandoned oil and gas wells, and reducing venting, flaring, and fugitive methane emissions. Other project types, including refrigerant destruction and industrial nitrous oxide abatement, also generate credits by permanently eliminating high-global-warming-potential gases before they are released (Patch 2026; O'Rourke and Goren 2025).

Realizing this potential will depend on maintaining high environmental integrity. Early super pollutant credits, particularly under the Clean Development Mechanism, raised concerns over additionality and environmental credibility. Recent market developments suggest that buyers are increasingly rewarding projects that demonstrate robust monitoring, reporting, and verification (MRV), additionality, and independent quality assessments (Patch 2026; World Bank 2026c).

Continued improvements in MRV technologies, together with the implementation of Article 6 of the Paris Agreement and new methodologies for SLCPs like black carbon, could broaden the range of eligible projects. Combined with public finance and blended finance, high-integrity carbon markets offer an opportunity to mobilize additional private capital while also delivering climate, air quality, health, and agricultural benefits (Patch 2026; World Bank 2026c; O'Rourke and Goren 2025; Carbon Direct 2026b).

2.2 Sectoral breakdown

Figure 5. Super pollutant abatement flows per sector, 2023



2.2.1 Waste

The waste sector is the leading recipient of tracked super pollutant abatement finance globally and presents one of the most compelling near-term abatement opportunities. The sector contributes approximately 20 percent of total global anthropogenic methane emissions, and its emissions are set to rise by 13 percent by 2030 and 56 percent by 2050 relative to 2020 levels (UNEP 2025a). Beyond methane, open waste burning is a significant source of black carbon and ozone-forming pollutants, with direct implications for urban air quality and respiratory health in urbanizing areas across Sub-Saharan Africa and Southeast Asia, such as Accra (Ghana) and Manila (Philippines) (IQAir 2025a; WHO 2022). The NDCs of 169 countries reference general waste commitments, signaling widespread recognition of the sector's mitigation potential (UNEP 2025a).

Table 3. Flows to the waste sector split by subsector and targeted measures, 2023

Subsectors and targeted measures	US$ billion
Solid waste management	**1.82**
• Solid waste-to-energy	1.35
• Increase waste separation and recycling rate	0.35
• Minimizing emissions from solid waste at landfill sites	0.11
• Cross-measure-group	0.00
• Other organic waste management	0.00
Wastewater treatment	**1.95**
• Improved management practices	1.94
• Cross-measure-group	0.01

US$ 3.8 billion (42 percent) of tracked super pollutant finance was in the waste sector. Market-rate debt was the main financing instrument, representing 62 percent (US$ 2.4 billion) of flows.

Private investment dominated solid waste activities (68 percent), while public finance led wastewater investments (82 percent). This likely reflects private investors' sensitivity to the less predictable revenue streams of tariff-dependent wastewater projects (Jha et al. 2023). Commercial FIs provided 46 percent (US$ 832 million) of solid waste finance and bilateral DFIs accounted for 45 percent (US$ 877 million) of wastewater flows.

Geographically, waste abatement finance was concentrated in Western Europe (27 percent) and East Asia and the Pacific (22 percent). Sub-Saharan Africa received just 6 percent (US$ 222 million) and South Asia 7 percent (US$ 258 million), despite facing the fastest projected growth in municipal solid waste generation between 2022 and 2050, at 124 percent and 99 percent respectively (Cook et al. 2026) and having the lowest waste collection rates (UNEP 2025a). In both regions, finance was mostly directed to wastewater management, with solid waste receiving less than 12 percent of flows.

Wastewater received 52 percent (US$ 2 billion) of total waste sector flows. Almost all was for centralized treatment upgrades, sewage rehabilitation programs, water, sanitation, and hygiene interventions, with climate mitigation embedded in broader water security and public health objectives. Although included in the tracking scope, no finance for advanced two-stage anaerobic digestion upgrades was identified in 2023, suggesting that methane reduction benefits are rarely the primary driver of investment decisions in the subsector.

The solid waste subsector received US$ 1.8 billion of tracked finance in 2023, with solid waste-to-energy measures receiving 75 percent (US$ 1.4 billion) of these flows. Most investments were downstream, in combustion-based technologies, signaling the need to scale and shift investment toward a broader set of waste-hierarchy-aligned upstream interventions (CCAC 2025d). Two structural constraints perpetuate this allocation: historically, around 70 percent of waste services rely on local public authorities (Kaza et al. 2018), whose fiscal capacity is insufficient for capital-intensive landfill gas systems, and the absence of waste

methane reduction reporting regulation removes the policy signal necessary to redirect the US$ 1.2 billion in private finance already active in the sector toward higher-impact measures.[19]

The cost structure of the waste sector and its fragmented base of municipalities and local implementers create challenges for tracking investment. Projects are often small-scale and distributed across numerous municipalities and local operators, with financing frequently drawn from local public budgets. Moreover, existing finance tracking tends to capture capital investments, despite the fact that ongoing operating expenditures can account for a substantial share of total project costs (UNEP 2025a). Together, these factors can limit investment visibility, particularly where projects have small financing requirements, limited access to international capital, and uncertain or insufficient revenue streams to support commercial financing. More comprehensive tracking could draw on municipal and local operator information where available.

Box 4. Snapshot of the waste sector methane abatement financing gap

The waste sector offers some of the most cost-effective opportunities for methane mitigation (UNEP 2025a). Under the MTFR scenario, annual net costs are negative after accounting for the value of recovered gas, while upfront investment requirements are estimated at US$ 13 billion per year and annual operation and maintenance (O&M) costs at US$ 5 billion. Under the NDCs & MAPs scenario, annual net costs are estimated to be below US$ 0.1 billion, with upfront investment and O&M requirements of approximately US$ 7 billion per year each.[20]

In 2023, the waste sector attracted US$ 3.8 billion in tracked methane abatement investment. This represents approximately 29–52 percent of the estimated annual upfront investment required under the MTFR and NDCs & MAPs scenarios, respectively. This gap is compounded by significant annual O&M costs associated with key landfill management measures.

Methane abatement in the waste sector can create significant economic opportunities. Under the MTFR scenario, 2-stage anaerobic wastewater treatment with biogas recovery could generate net annual savings of US$ 3 billion by 2030. Meanwhile, valorizing methane captured from solid waste could create about US$ 6 billion in net annual savings by 2030 (see Annex Section A.4).

Waste sector abatement can also generate revenue through voluntary carbon markets. Most promisingly, credit retirements related to landfill gas have consistently ranged between 5 and 9 million tCO_2e per year since 2021 and were one of the project types that dominated overall issuances in 2025. Sector-specific methodologies and certification standards can further strengthen investor confidence and mobilize private finance (Patch 2026; Climate Bonds 2026c, 2026d; Carbon Direct 2026b).

[19] The IFC's Circularity Plus supports private waste management companies and municipalities through advisory services, project preparation, and access to financing for recycling, resource recovery, and waste-to-energy investments (IFC 2026).

[20] Estimates from the World Bank translate into US$ 96–117 billion annually in global investment costs to achieve universal, sustainable waste management from 2022 through 2050. While these estimates extend beyond methane abatement to encompass the broader objective of achieving universal, sustainable waste management, they provide a useful upper-bound benchmark for the scale of investment required to transform the sector and deliver substantial methane mitigation alongside wider environmental and public health benefits (Cook et al. 2026).

2.2.2 Transport

The transport sector contributes heavily to black carbon and ozone-forming pollutants. This is particularly acute in rapidly urbanizing regions such as South Asia and West Africa, where older diesel fleets and poor fuel quality intensify pollution. For example, cities like Delhi (India) and Lagos (Nigeria) struggle with high levels of black carbon from road traffic (Kumar et al. 2025; Clean Air Fund 2023). However, targeted projects, such as the Zero Emission Bus Rapid-deployment Accelerator (ZEBRA) in Latin America (Thorpe 2025), the rollout of soot-free standards supported by CCAC (CCAC 2017), and the rapid electrification of transport in China and Norway (WRI 2025c) are helping to reduce black carbon emissions.

Table 4. Flows to the transport sector split by targeted and additional beneficial measures, 2023

Subsectors	US$ billion
Targeted measures	**2.74**
• Maritime transport	2.74
Additional beneficial measures	**2.24**
• Maritime transport	>0.01
• Public transport and active mobility	2.04
• Railways	0.20
• Road transport	0.01

Note: Aviation is outside the scope of this exercise. While aviation generates important non-CO_2 climate effects, including NOx emissions and effects associated with contrails and particulate emissions, many aviation interventions—such as sustainable aviation fuels, hydrogen, and broader aircraft efficiency measures—primarily target CO_2. Including these measures would therefore require a clear framework to distinguish direct super-pollutant abatement from broader decarbonization measures, as well as to account for potential trade-offs across pollutants. Establishing this boundary is important and could provide a useful basis for expanding the methodology in future editions.

Super pollutant abatement finance in the transport sector reached US$ 2.7 billion in 2023. This represented 31 percent of global finance for targeted super pollutant mitigation measures. Flows were entirely in maritime transport, [21] primarily supporting the transition toward cleaner fuels for shipping, particularly green ammonia and hydrogen production (See Box 5 for flows on additional beneficial measures). Alternative low- and zero-carbon fuels can deliver important super pollutant benefits, but investment can be difficult to attribute exclusively to the maritime sector.[22] Because fuels such as green hydrogen, ammonia, and methanol can serve multiple sectors, CPI applies a fuel split methodology to production facility projects (See Annex Box A.2).

[21] Data limitations skew this distribution, particularly because there is no dedicated reporting or tagging framework for super pollutants. As a result, relevant investments, especially in road transport, are often not explicitly identified or are embedded within broader climate or energy finance categories, contributing to an apparent overconcentration of flows in maritime activities. In addition, the use of a conservative methodology, where only 'direct' solutions are considered in the report, excludes solutions such as BEVs, public transport, and railways, where the primary objective is assumed not to be super pollutant abatement, despite generating co-benefits.

[22] The 2023 IMO GHG Strategy calls for zero- or near-zero-GHG emission technologies, fuels and/or energy sources to represent at least 5 percent, striving for 10 percent, of energy used by international shipping by 2030 (IMO 2023).

Box 5. Additional beneficial measures for transport

Beyond the targeted measures, US$ 2.2 billion was tracked for additional beneficial measures included in our taxonomy, 99 percent of which supported public transport measures such as enhancing access to public transport, implementing bus rapid transit systems, and reducing private car ownership.

See the Super Pollutants Taxonomy for details on what counts as additional beneficial measures.

A small number of large projects dominate the sector's tracked investment, with significant capital mobilized to support emerging low-emission fuel supply chains for international shipping (US$ 2.6 billion). As a result, flows are strongly concentrated geographically, with China accounting for most investments through large-scale green ammonia production facilities. Additional investments are observed in the United States of America and Canada, as well as the Middle East and North Africa, where projects focus on developing green hydrogen and ammonia value chains (see Section 2.3 for regional insights). Domestic private investment accounts for 78 percent of transport flows. The resulting finance picture shows emerging investment in alternative fuels in 2023, but considerably larger capital flows toward liquefied natural gas (LNG) according to other sources (see Box 6).

Box 6. Maritime abatement finance: alternative fuels, LNG, and lock-in methane risks

Broader external estimates indicate substantially higher financing for maritime LNG: analysis identified US$ 335 billion across 175 maritime-LNG transactions from June 2019 to June 2024, with US$ 127 billion of that linked to just ten major banks (Stand.earth 2024).

LNG can reduce black carbon and other local air pollutants relative to heavy fuel oil, supporting near-term air-quality improvements. Due to these reductions, LNG is included in the super pollutant abatement finance taxonomy, though no finance was tracked for the period analyzed

Yet, LNG is predominantly methane, which can leak along the supply chain or escape unburned from ship engines as methane slip (CCAC 2019a). In 2023, the combined methane emissions of the global fossil LNG-fueled fleet, estimated at 247,000 tons, translated to nearly US$ 950 million in annual climate damages (MARBEM 2025).

Methane leakage can substantially reduce or offset LNG's GHG advantage, while long-lived vessels and infrastructure create lock-in and stranded-asset risks. As a result, LNG is unlikely to play a significant role in long-term maritime decarbonization (Englert et al. 2021).

Scaling investment in alternative fuel production, compatible vessels, bunkering, and port infrastructure under robust lifecycle criteria, including for nitrous oxide emissions associated with ammonia fuels, is critical to avoid locking in methane emissions and enable long-term maritime decarbonization and super pollutant abatement.

Abatement measures in the transport sector should focus on reducing emissions from both maritime[23] and road[24] transport. This can be done through a combination of technology upgrades, operational improvements, fuel switching, and strengthened regulatory standards.[25] This report did not track investments in passenger electric vehicles as targeted measures to avoid potential overestimation of super pollutant abatement finance, because these investments do not necessarily represent the direct replacement of conventional vehicles, as explained in Box 7.

Box 7. Battery electric vehicles: a significant abatement opportunity

Battery electric vehicles (BEVs) can indirectly reduce super pollutant emissions across the transport sector by displacing diesel- and petrol-powered vehicles, which are among the most concentrated sources of BC, $PM_{2.5}$, NO_x, CO, and NMVOCs. Transport accounts for over 23 percent of global BC emissions, with concentrations typically highest in urban areas (CCAC 2026e). A significant abatement opportunity also lies in electric two and three wheelers, which can replace high-emitting engines in urban environments. In India and Southeast Asia, around 1.3 million electric two-wheelers were sold in 2023, and one in five three wheelers sold globally was electric (IEA 2024a).

Climate finance to BEVs is highly concentrated in East Asia and the Pacific, Western Europe, and the United States of America and Canada (Figure 6). However, growth in four-wheelers between 2022 and 2023 was significant, more than doubling in Latin America and the Caribbean, Central Asia and Eastern Europe, and Other Oceania, and nearly doubling in the Middle East and North Africa, albeit from low bases. In South Asia, investment in electric two and three wheelers rose from US$ 2.4 billion in 2022 to US$ 3.4 billion in 2023 (CPI 2026b).

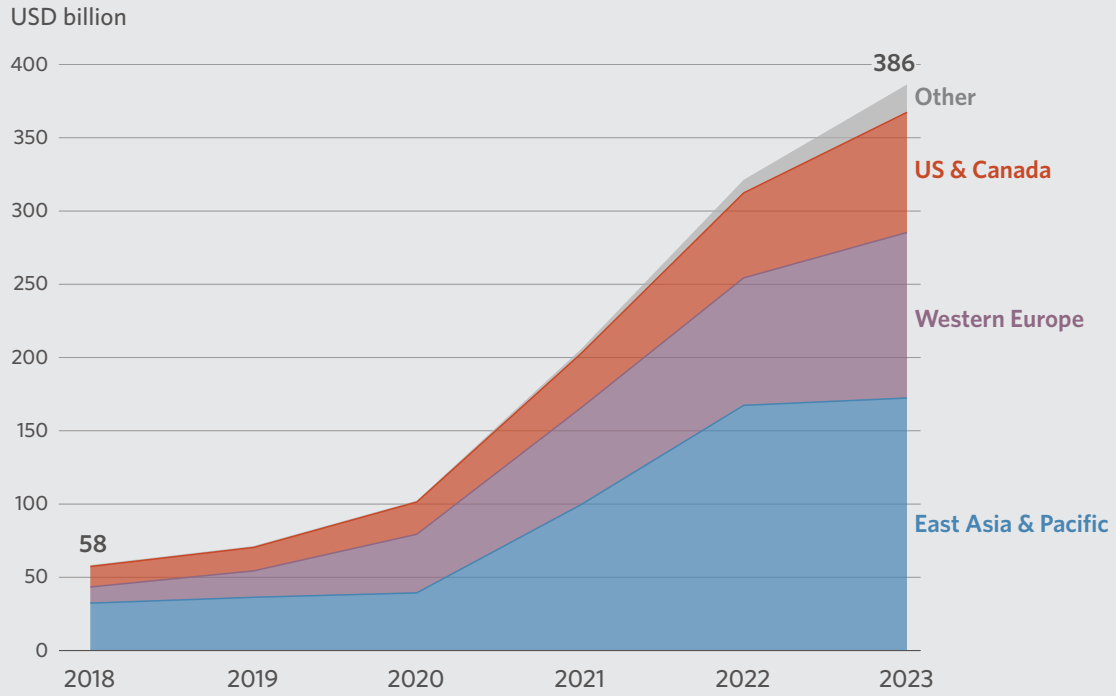
[23] Measures range from operational improvements such as speed optimization and route planning, the deployment of emissions control technologies including diesel particle filters and exhaust gas cleaning systems, and the transition toward zero-emission fuels such as ammonia and hydrogen. Regulatory measures such as restrictions on heavy fuel oil use in sensitive regions also contribute to reducing pollutant emissions from shipping.

[24] Measures should focus on strengthening vehicle emission standards and improving fleet performance. These include the introduction and enforcement of stricter emissions regulations, the deployment of advanced emissions control technologies such as Euro VI standards and diesel particulate filters, and the gradual phase-out of highly polluting vehicle types, including two-stroke engine motorcycles. Complementary measures also address traffic management and urban air quality, such as clean air zones and congestion management policies. These interventions aim to reduce black carbon, and other short-lived climate pollutants.

[25] Off-road vehicles, equipment, and machinery (covered under "Industry" in this study) remain much less electrified than on-road transport. As emissions from on-road vehicles decline, off-road vehicles are expected to account for an increasing share of transport emissions (Cleantech Group 2022).

Box 7 *(cont.)*

Figure 6: Climate finance to BEVs by region



Source: *GLCF 2026 (CPI 2026b)*

The super pollutant abatement tracking framework currently does not integrate BEVs finance data from CPI's GLCF. The primary abatement objective of BEVs is considered to be CO_2, with co-benefits for super pollutant abatement (UNEP 2026a). This follows the conservative approach to avoid overestimating flows to super pollutant abatement. Additionally, the dataset does not include project descriptions, so it is not possible to assess whether super pollutants are explicitly targeted.

2.2.3 Agriculture

Agrifood systems are essential to food security and nutrition, yet they also contribute significantly to climate change. In 2020, agriculture was the largest source of global biogenic methane emissions, accounting for 146 Mt (around 42 percent of the total), with livestock and rice cultivation contributing 76 percent and 21 percent, respectively, while agricultural waste burning accounted for the remaining 3 percent (UNEP 2025a). Globally, it is estimated that agriculture is responsible for approximately 70 percent of anthropogenic nitrous oxide emissions, as well as 5 percent of black carbon emissions (CCAC 2026a; Carbon Brief 2024).

Agriculture received 16 percent (US$ 1.5 billion) of super pollutant abatement finance in 2023, the third-highest amount. At the subsector level, livestock received 67 percent of flows, followed by crops at 21 percent (see Table 5).

Table 5. Flows to the agriculture sector split by subsector and targeted measures, 2023

Subsectors and Targeted Measures	US$ billion
Livestock	**0.98**
▪ Smallholder and pastoralist systems	**0.87**
▪ Manure management	**0.09**
▪ Cross-measure-group	**0.01**
▪ Reduce enteric fermentation	**0.01**
Crops	**0.31**
▪ Rice paddy management	0.26
▪ Fertilizer-related emission reduction	0.06
Other and cross-subsector	**0.17**
▪ Smallholder and pastoralist systems	0.07
▪ Others	0.11

Agriculture flows were dominated by public actors, which provided US$ 1.3 billion compared to just US$ 0.2 billion from private sources. Governments contributed the most, providing US$ 626 million (or 43 percent of agriculture flows), mostly supporting measures for smallholders (US$ 526 million). Grants accounted for 50 percent (US$ 730 million) of agriculture flows, followed by low-cost debt at US$ 431 million (29 percent).

Smallholder and pastoralist systems resilience measures[26] accounted for 64 percent (US$ 939 million) of the sector's finance. This was followed by finance for projects across rice paddy management (18 percent, or US$ 256 million) and manure management (6 percent, or US$ 86 million). Grants and low-cost debt (often, but not always, in the form of loans extended at terms preferable to those prevailing on the market, that strictly meet OECD's criteria of concessionality) accounted for 84 percent of the total finance for smallholder and pastoralist systems, which face structural challenges in mobilizing private capital due to the small scale, higher risk, and limited returns associated with projects, as well as other systemic challenges such as fractured value chains and limited emissions data at the farm level.

Sub-Saharan Africa accounted for 54 percent of tracked flows for agriculture, followed by East Asia and the Pacific (20 percent). A further three regions each accounted for between 5-6 percent of total flows (see Section 2.3).[27] Within Sub-Saharan Africa, over 95 percent of finance is directed toward smallholder and pastoralist system projects, targeting improved livestock productivity and resilience in emissions-intensive farming systems. When compared to other regions, the concentration of finance within smallholder

[26] Smallholder and pastoralist climate resilience measures include vaccination against zoonotic diseases and emergency feed storage. These measures improve survival rates and reduce unproductive animal replacement, thereby suppressing methane emissions across the herd.

[27] The three regions were: Latin America & Caribbean; US & Canada; Western Europe.

and pastoralist systems in Sub-Saharan Africa is consistent with the region's lower agricultural productivity (Bjornlund et al. 2020) and higher emissions per unit of livestock (Bennetzen et al. 2016).

Various policies and initiatives have been introduced in recent years to target methane emissions from agriculture, which may lead to an increase in investment (UNEP 2025a)**.** Denmark, for instance, has agreed to introduce a world-first tax on livestock methane emissions, from 2030 (WRI 2024). Despite recent policy action on agricultural methane (Luke and Tonsor 2025; U.S. Department of State 2022), available data do not yet indicate a corresponding increase in targeted investments in the United States of America, the world's fourth-largest emitter of agricultural methane after India, China, and Brazil (European Commission Joint Research Centre and IEA 2024). Data gaps and limited tracking of super pollutant-specific investment may partly explain the low reported volumes.[28]

Over 96 percent of finance tracked for the agriculture sector was for measures abating methane—alone or in combination with other super pollutants. However, less than 1 percent of this went toward feeding strategies to reduce enteric fermentation. Globally, enteric fermentation[29] accounts for approximately 30 percent of anthropogenic methane emissions (GMH 2024), yet despite the development of methane-inhibiting feed additives such as 3-NOP[30] and red seaweed, tracked data suggests that these high-potential solutions have not yet been deployed at scale, and they are not typically suited to small-scale and pastoralist farming systems. While regulatory approval for these solutions has been granted in many key beef and dairy markets (WRI 2025b, 2025a), deployment could be increased if research and development (R&D) resources were shifted toward making them more cost-effective and better suited to small-scale farming systems.

Almost all flows to agriculture were for methane and nitrous oxide abatement, with limited finance for addressing black carbon. Agricultural black carbon emissions mainly stem from open burning of agricultural waste and residue, with efforts to address these practices growing across Southeast Asia. While not tracked in this analysis, investments in Happy Seeder[31] technologies have increased across the region in recent years, with deployments in countries including India helping to improve management of post-harvest crop residues (CCAFS 2019; ACIAR 2018).

[28] This finding likely reflects the greater availability of public finance data (e.g., from official development assistance), which is more comprehensive and detailed for developing regions. By contrast, tracking private and domestically financed activities in higher-income countries has known gaps. Tracked data for the United States comes from government initiatives, particularly grant funding for biodigester projects such as the California Department of Agriculture's Dairy Digester Research & Development Program.

[29] Enteric fermentation refers to the breakdown of organic matter in ruminant livestock during the digestive process, producing methane gas as a by-product. Carbon Neutral Brazilian Beef is an initiative pioneered by Embrapa (the Brazilian Agricultural Research Corporation) that integrates livestock with forestry. It balances the CH_4 emitted via enteric fermentation with the CO_2 sequestered by trees planted in the same pastures (Alves et al. 2017).

[30] 3-NOP, or 3-nitrooxypropanol, is a synthetic feed additive that suppresses the enzyme responsible for methane production in the digestive tract of ruminants.

[31] Happy Seeders are a type of no-till sowing technology that can reduce the need to burn agricultural residues in preparation for the sowing of new crops following a harvest.

Box 8. Snapshot of the methane abatement financing gap in the agriculture sector

In 2023, the agriculture sector attracted US$ 1.4 billion in tracked methane abatement investment—only around 11–12 percent of the estimated annual upfront investment needs under both the MTFR (US$ 13 billion) and NDCs & MAPs (US$ 12 billion) scenarios presented in the Global Methane Status Report (UNEP 2025a). These scenarios also entail substantial annual operational[32] costs of US$ 21 billion and US$ 54 billion,[33] respectively, resulting in net annual costs of US$ 17 billion (NDC) and US$ 38 billion (MTFR) when also accounting for the electricity savings made from utilizing anaerobic digesters with biogas recovery, as well as gas savings from more efficient energy systems operations.

Methane abatement in agriculture represents a significant investment opportunity for infrastructure such as anaerobic digesters, whereby biogas (methane) can be sold as a by-product of the anaerobic digestion of manure. Under the MTFR scenario, these activities could generate approximately US$ 29 billion in annual savings by 2030, compared to US$ 17 billion under the NDCs & MAPs scenario.

Methane abatement in agriculture can also generate revenue through voluntary carbon markets, particularly from low-emission rice farming and livestock. While these methods are less mature than those for landfill gas, continued methodological development and stronger market confidence could unlock additional private finance for agricultural methane abatement (Patch 2026). Practices such as alternate wetting and drying and enteric methane feed additives have strong scaling potential (Carbon Direct 2026a), while sector-specific eligibility criteria under the Climate Bonds Standard can help private investors identify credible methane abatement investment opportunities (Climate Bonds 2025, 2024a, 2024b).

2.2.4 Land use, land use change, and forestry (LULUCF)

Super pollutant abatement in the land use, land use change, and forestry (LULUCF) sector covers the management and monitoring of wildfires across both forests and peatlands.[34] Uncontrolled wildfires are particularly concerning because they are major sources of black carbon and can release NMVOCs, carbon monoxide, and nitrogen oxides, all precursors to tropospheric ozone formation.[35]

LULUCF represented 8 percent of super pollutant abatement flows in 2023. US$ 658 million was directed toward forest and peatland fire prevention and control. Public finance dominated the sector, with multilateral DFIs providing 90 percent of total flows.

[32] While these operating costs are not directly comparable to tracked financial flows, they illustrate the broader scale of investment required under the MTFR scenario.
[33] Including reducing enteric fermentation measures (US$ 34 bn), and anaerobic digestors for manure emissions (US$ 18 bn).
[34] As well as measures relating to the reduction of deforestation and the remediation of degraded lands. The taxonomy classifies wildfire management and monitoring as Targeted Measures, while reducing deforestation and remediating degraded lands are Additional Beneficial Measures.
[35] Estimating the amount of tropospheric ozone from wildfires is complicated, especially considering its regional and global impacts. However, recent research indicates that ozone concentrations attributable to biomass burning may be comparable to, or even exceed, those from urban sources (Bourgeois et al. 2021). Globally, it has been estimated that wildfires result in the formation of approximately 3.5 percent of all tropospheric ozone per year (Jaffe and Wigder 2012).

Table 6. Flows to the LULUCF sector split by targeted and additional beneficial measures, 2023

Measures	US$ billion
Targeted measures	**0.68**
▪ Control forest and peatland fires	0.66
▪ Cross-measure	0.03
Additional beneficial measures	**0.62**
▪ Avoid deforestation	0.42
▪ Reduce land degradation	0.05
▪ Reforestation/afforestation	0.12
▪ Cross-measure	0.03

Central Asia and Eastern Europe received 90 percent (US$ 616 million) of tracked finance for LULUCF. US$ 400 million was concentrated in a single project in Türkiye. Latin America and the Caribbean accounted for the next-largest amount, at just 5 percent (US$ 31 million). See Section 2.3 for regional insights.

Box 9. Additional beneficial measures for LULUCF

Additional beneficial measures that remain central to improving overall air quality, such as reducing deforestation and the remediation of degraded landscapes, saw US$ 623 million of tracked finance in 2023. Examples include USAID-funded programs in Sub-Saharan Africa linked to national REDD+ strategies and directly supporting biodiversity conservation through land use planning. The disbandment of USAID in 2025 has threatened such programs (The Guardian 2026).

While encouraging, finance for afforestation and land remediation can be difficult to track, particularly if embedded within broader conservation or nature-based programs, making it difficult to isolate incremental finance that specifically addresses super pollutant emissions.

2.2.5 Industry

Super pollutant abatement in the industry sector targets emissions generated during both the production and use of industrial products. Interventions span materials production, chemical and solvent industries, product use, and broader manufacturing processes.[36] Industrial processes and product use generate significant super pollutant emissions, especially HFCs from cooling systems, which are rapidly growing in warmer countries like China, India, and Indonesia due to rising demand for air conditioning (Jiang et al. 2025; Sachar et al. 2018). Many lower-income regions also rely on inefficient industrial combustion, increasing black carbon emissions.

Despite industry's role as a super pollutant emitter, it attracted only 1 percent (US$ 97 million) of tracked abatement finance globally. Data limitations, especially from private sector companies, partly explain the low numbers tracked. Most financing (89 percent) targeted eliminating HFCs, and the remaining 11 percent supported replacing traditional brick kilns in Bangladesh (see Section 2.3 for regional insights). The flows were entirely international, coming from governments (28 percent) and multilateral climate funds (72 percent) and targeting developing countries.

HFC abatement investments were distributed across several regions, primarily from the Multilateral Fund (MLF) for the Implementation of the Montreal Protocol. The MLF provides financial and technical assistance to developing countries to support the phase-down of HFCs under the Kigali Amendment. According to the MLF, 24 Kigali HFC Implementation Plans (KIPs) were approved in 2023, mobilizing US$ 53.6 million to accelerate the transition toward climate-friendly cooling technologies (MLF 2024). Financing supported the transition to low-emission cooling technologies through regulatory strengthening, technical capacity building, and refrigerant management, alongside investments to improve cooling system efficiency.

Carbon markets can complement public finance for industrial cooling transitions by rewarding the recovery and permanent destruction of HFCs and other high-global-warming-potential refrigerants. The Kigali Amendment to the Montreal Protocol is expected to avoid up to 105 billion tCO_2e of emissions and prevent as much as 0.5 °C of warming by 2100. At the same time, legacy banks of ozone-depleting substances and HFCs are estimated to contain 13.4 $GtCO_2e$ of emissions that will eventually leak if not recovered and destroyed. Reflecting the scale of this opportunity and growing market demand, refrigerant destruction is the largest and fastest-growing super pollutant category in voluntary carbon markets, with buyers retiring 15.3 million tCO_2e of credits in 2025—nearly three times the volume retired in 2021 (Patch 2026).

[36] Abatement measures include technology upgrades and process improvements in energy- and emissions-intensive industries such as brick, cement, and coke production; the adoption of cleaner production practices and end-of-pipe emissions controls in chemical and solvent industries; and the phase-down of high-global-warming-potential refrigerants in line with the Kigali Amendment. Additional interventions focus on improving manufacturing efficiency and emissions standards, including cleaner charcoal production, post-combustion pollution controls in industrial boilers, and deployment of particulate filters in off-road machinery.

2.2.6 Residential

The residential sector matters for both climate change and public health outcomes, particularly through household energy use for cooking, heating, and lighting. Household energy use is a major source of household air pollution, which is linked to a range of health risks.[37] Despite significant global progress in expanding clean cooking technologies, around 2 billion people still rely on open fires or rudimentary stoves, exposing households to harmful smoke while contributing to climate pollution. Progress has been uneven across regions. While large government programs have expanded access to modern cooking fuels in Asia and Latin America, Sub-Saharan Africa faces the largest access gap, with roughly 1 billion people (around four in five households) lacking access to clean cooking solutions in 2023 (IEA 2025c).

However, tracked finance targeting super pollutant abatement in the residential sector remains limited.[38] In 2023, US$ 64 million in tracked flows was directed to residential measures, primarily supporting access to cleaner cooking fuels, improved and more efficient cookstoves, and solar-powered cooking solutions. Sub-Saharan Africa received 97 percent of these flows, reflecting both the concentration of clean cooking access gaps in the region and the strong role of international public finance in supporting climate transition and development. The relatively small scale of tracked finance is supported by other studies[39] and highlights the need to scale investments in clean cooking and household energy transitions. Improving reporting frameworks is also important to better capture these activities, which are likely underrepresented in current datasets.

Recent developments suggest growing momentum beyond the scope of this analysis. In 2024, public and private actors committed US$ 2.2 billion to clean cooking in Africa, alongside policy pledges from twelve African governments; US$ 470 million of these commitments has been disbursed to date (IEA 2025c). In 2026, the *Clean Cooking Accelerator Initiative* was launched, seeking to get cleaner cooking methods to more people by coordinating technical expertise (The Rockefeller Foundation 2026). Box 10 explores the deployment of small-scale solar panels and their role in reducing super pollutants in the short and long term.

[37] About one-third of the world's population (almost 2.6 billion people) is exposed to pollution from burning solid fuels for cooking at home (Health Effects Institute 2025). Biomass, charcoal, coal, and kerosene generate significant short-lived climate pollutants (SLCPs), including black carbon and nitrogen oxides, alongside carbon dioxide. It has been estimated that nearly 20 percent of the global ambient $PM_{2.5}$ is attributed to household-generated air pollution (McDuffie et al. 2021; Chowdhury et al. 2023). According to the *State of Global Air 2024*, air pollution was linked to 709,000 deaths among children under five in 2021, with household air pollution responsible for nearly two-thirds of these deaths (Health Effects Institute 2024).

[38] The low volume partly results from data limitations, such as availability of granular project-level data, challenges in tracking national governments' programs, and gaps in tracking household-level investments, as discussed in Section 1.2.2.

[39] The *2024 Energizing Finance* report shows that clean cooking finance commitments have been highly volatile. After an exceptional peak of US$ 309 million in 2020, annual commitments fell sharply to US$ 27 million in 2022, raising concerns about the sustainability and continuity of funding. Across the 20 countries tracked, total commitments between 2014 and 2022 amounted to US$ 544 million (SEforALL 2024).

Box 10. Small-scale solar panels and solar water heaters

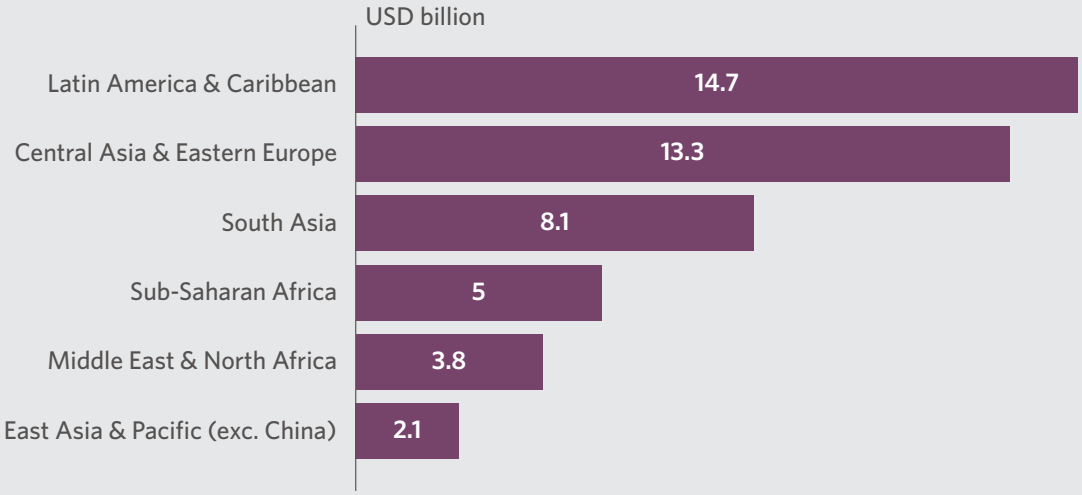
Small-scale solar panels and solar water heaters can reduce super pollutants in the residential sector by replacing systems that rely on LPG, kerosene, coal, or biomass for electricity or heating. This reduces multiple major pollutants, including CO, NMVOCs, NOx, BC and $PM_{2.5}$, with significant health benefits from reduced household air pollution (CCAC 2026b).

The super pollutant abatement tracking framework does not capture small-scale solar or solar water heater finance data from CPI's GLCF because the dataset lacks project descriptions, which are required to assess super pollutant reductions through the replacement of fossil technologies.

a. Small-scale solar

Falling solar costs and supportive policies have driven rapid expansion across emerging markets and developing economies (EMDEs), such as Brazil, Pakistan, South Africa, and Nigeria (CPI 2025a). The scale of this shift is becoming visible in finance flows, with US$ 189 billion dedicated to small-scale solar in 2023, including US$ 112 billion invested in EMDEs. US$ 65 billion mobilized in China, a large outlier, these flows are omitted from Figure 7 (CPI 2026b).

Figure 7: Small-scale solar investment in EMDEs (excluding China) by region in 2023



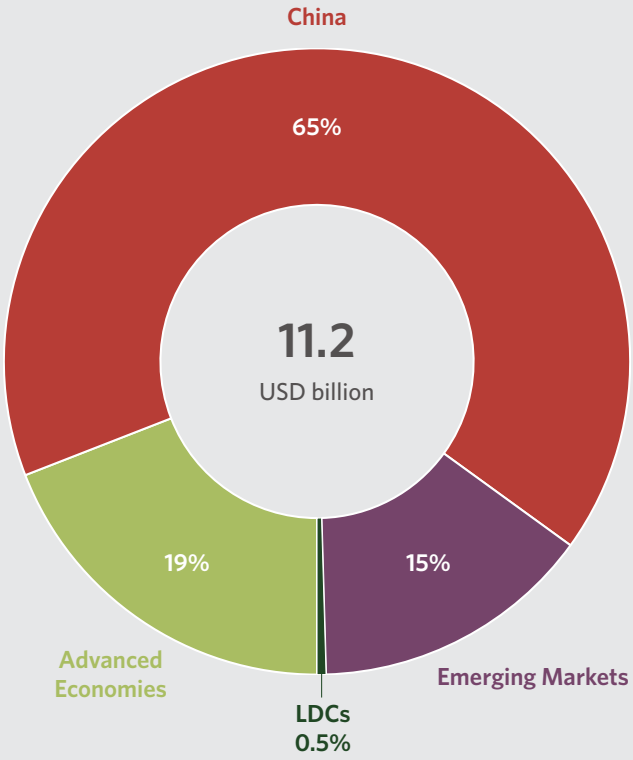
Source: *GLCF 2026 (CPI 2026b)*

b. Solar water heaters

In 2023, the GLCF (CPI 2026b) tracked US$ 11.2 billion in financing to solar water heaters. Most of this investment was in China, with limited flows to other emerging markets and least-developed countries (LDCs). As a mature, proven technology with strong potential to reduce household air pollution, investment in solar water heaters offers significant mitigation potential.

Box 10 *(cont.)*

Figure 8: Climate finance split to solar water heaters by development status, 2023



Source: *GLCF 2026 (CPI 2026b)*

2.2.7 Energy generation

The combustion of fossil fuels for energy releases nitrogen oxides, fine particulate matter, and black carbon. Reducing fossil fuel combustion in the energy sector by replacing it with renewable energy, or switching from the least efficient sources (e.g., replacing coal with biomass), is key to cutting super pollutants.[40] The UK's successful coal phase-out in 2024 demonstrates the importance of combining long-term policy certainty with carbon pricing, renewable energy deployment, electricity market reforms, and investment in grid infrastructure (Ember 2024a).

A negligible number of projects was tracked as explicitly targeting the direct replacement of fossil fuel capacity in the energy sector in 2023. This report's conservative approach to super pollutant abatement finance requires evidence of the direct replacement of fossil-producing technologies, which is limited at the project level. Renewable energy projects either a) reduce super pollutants when constructed to replace fossil fuel plants, or b) avoid future air pollution when built in response to a country's growing energy demand.

[40] Activities include upgrading existing fossil fuel-based generation through technologies such as electrostatic precipitators and efficiency enhancements, as well as phasing out the least efficient plants by switching from coal or fuel oil to lower-emission alternatives such as gas or biomass. A central component of mitigation efforts is the replacement of fossil fuel-based generation with renewable energy sources, including onshore and offshore wind, solar PV, and other renewables. In parallel, transmission and distribution interventions aim to reduce system losses and improve overall grid efficiency. Together, these measures support the decarbonization of electricity systems while maintaining energy supply reliability.

There is an important relationship between total renewable energy investment and super pollutant abatement. Global mitigation finance for renewable energy generation totaled US$ 763 billion in 2023, more than doubling from US$ 335 billion in 2018 (CPI 2026b). Expanding renewables to service additional demand is crucial for avoiding future super pollutant exposure and fossil fuel lock-in. Some 85 percent of the additional electricity demand through 2027 is expected to be driven by EMDEs (IEA 2025a). Meeting rising demand while avoiding super pollutant emissions requires a larger scale-up of clean energy, efficiency, and grid investment, alongside a phase-down of fossil production and management of stranded assets (World Bank 2023b). Just transition considerations are central, as clean energy must support affordability and job creation.

2.2.8 Fossil fuel extraction, processing, and distribution

The fossil fuel sector offers substantial opportunities for super pollutant reduction, owing to its high abatement potential and near-term benefits. The sector is the second-largest contributor to anthropogenic methane emissions, representing almost one-third of the global total. With sufficient financing, the sector could abate 94 Mt of CH_4 emissions annually by 2030, largely by leveraging readily available technologies and practices, often at low cost (UNEP 2025a). Policies and initiatives have evolved since the launch of the GMP, yet further action is needed (see Box 11).

Box 11. Fossil fuel methane policies and commitments

Commitments in the oil and gas sector have become more widespread since the launch of the GMP. Voluntary initiatives have grown rapidly, and the Oil and Gas Methane Partnership 2.0 (OGMP 2.0) and the Oil and Gas Decarbonization Charter now cover 40–45 percent of global oil and gas output (UNEP 2025a). Momentum has grown in every producing region since 2021. The EU introduced the world's first import standard in the energy sector, Nigeria became the first African producer with full scope leak detection and repair (LDAR) and equipment standards, and Canada drafted Oil and Gas GHG Emissions Cap Regulations (UNEP 2025a). However, evidence of substantive progress on emissions lags, and stronger policies and country participation in the GMP are needed to meet its targets (UNEP 2025a). The Methane Regulator-to-Regulator (MR2R) Network, launched in 2026, will support sustained collaboration among participating regulators by facilitating peer exchange and the development and dissemination of best practices (CCAC 2026c).

Establishing clear, quantified methane mitigation goals and measures in NDCs is a powerful tool for increasing ambition and delivering domestic public health and economic co-benefits (CCAC 2024c). However, only a small share of NDCs include methane reductions in the fossil fuel sector, compared to those in agriculture and waste (UNEP 2025a). Côte d'Ivoire's NDC provides a positive example, targeting a 50 percent reduction in fugitive methane emissions from oil and gas by 2030 (Côte d'Ivoire 2022). Current pledges in NDCs and MAPs are estimated to lead to a 19 percent reduction in fossil fuel methane emissions by 2030 (UNEP 2025a). However, the delay in actioning commitments means that, under current legislation, methane emissions will marginally rise over this period.

Box 11 *(cont.)*

The coal subsector lags significantly on policy (UNEP 2025a). While there are no industry-led pledges, some individual actors are pursuing methane progress in the coal industry. China, Australia, and California have all attempted to regulate methane emissions in the subsector as part of wider climate policies (UNEP 2025a). Additionally, increased abatement investment is expected in future years due to recent regulations, such as the EU Methane Regulation in the energy sector (Ember 2024b), and China's Emission Standard for Coalbed Methane (IGSD 2024), supported by China Certified Emission Reduction voluntary market via new methodologies, allowing low-concentration gas projects to sell carbon credits.

Despite expanding tracking to incorporate available and appropriate sources, no current dataset reliably tracks methane abatement finance in the fossil fuel sector. Growth in methane emission monitoring and reporting has not been paired with improvements in investment reporting, constraining the tracking of methane abatement finance in the fossil fuels sector (see Box 12 and Section 1.2.2).

Tracked super pollutant abatement finance targeting the fossil fuel sector was limited to US$ 20 million in 2023. All of this finance was in two projects in the oil and gas subsector. One initiative accounted for the majority of the funding, led by Mauritania's Ministry of Petroleum, Mines and Energy, targeting the reduction of GHG emissions, particularly methane, from oil and gas operations (IMF 2026), with support from the World Bank's *Zero Routine Flaring by 2030 Initiative* through technical assistance to strengthen regulatory and enforcement frameworks. No investment in methane mitigation in the coal subsector could be tracked.

Box 12. Methane finance reporting in the fossil fuel sector: How can coverage be improved?

Methane finance tracking is limited by uneven disclosure across public, private, and state-owned actors. While ODA and development finance are more transparent, methane and super pollutant tagging is not yet standard practice. Self-financed corporate and national oil company (NOC)-led investment is harder to identify, especially where firms face weaker investor or regulatory disclosure pressure.

Pledges from fossil fuel producers to reduce emissions and reporting on progress have grown. The OGMP 2.0 now covers 45 percent of global oil and gas production (OGMP 2.0 2026). However, financial reporting through such mechanisms is limited: submissions cover emissions levels and targets but not investments or technology deployment; methane abatement is rarely reported.[41] A few investment details appear in company sustainability reports, but these are scarce.[42]

[41] In the *OGMP 2.0 company factsheet 2024* (OGMP 2.0 2024) TotalEnergies detailed a US$ 25 million contribution to the Global Flaring and Methane Reduction Trust. In the 2025 edition, Equinor detailed a 2024 investment of US$ 30 million in a Volatile Organic Compound (VOC) recovery unit at Peregrino, Brazil (OGMP 2.0 2025).

[42] Five company reports were sampled (TotalEnergies 2025; Chevron 2025; Aramco 2025; ExxonMobil 2025, 2024). TotalEnergies details an investment of US$ 50 million in LDAR by the end of 2025, Aramco lists an investment of US$ 42.8 million for 'gas treatment' in 2023, and ExxonMobil reports a US$ 20 million expenditure on monitoring and analyzing methane emissions data for a project launched in 2022. While advanced web scraping techniques and large language models can help extract and synthesize information from corporate reports, these approaches are best suited to supplement, rather than replace, primary data sources. Additionally, issuing surveys to major oil and gas producers to provide investment information of sufficient quality is a potential avenue to enhance the landscape.

Box 12 *(cont.)*

A further challenge is distinguishing genuine methane abatement investments from routine expenditure. Many activities reported by fossil fuel companies, such as equipment maintenance, pipeline integrity management, or mine safety improvements, may reduce methane emissions but are also undertaken for operational, regulatory, or safety reasons.[43]

Ultimately, more systematic, transparent, and clearly attributed reporting by fossil fuel companies on methane abatement investments is essential to improve finance tracking. Such disclosures would also enable companies to demonstrate the scale and credibility of their investments to investors, regulators, and other stakeholders, helping to differentiate genuine abatement efforts from business-as-usual operations.

Achieving the high abatement potential of the oil and gas sector is often cost-effective[44] – yet barriers to investment must be overcome. Many methane abatement options in the oil and gas sector can deliver high rates of return, above typical thresholds for capital investment in the sector (IEA 2025b), providing a strong incentive for financing from oil and gas operators themselves – often private sector actors. This makes abatement in the subsector the most readily achievable and provides a significant opportunity to reduce the current warming rate (CCAC 2025a). However, limited awareness of the scale of the problem and available solutions, competition for capital from higher-profile investments, split incentives between equipment owners, and other barriers persist (IEA 2025b). Methane abatement investment requirements in the fossil fuel sector are larger than in agriculture and waste; however, potential savings through recovered gas are also the most significant (see Box 13), and investment needs only represent 2-4 percent of the sector's income in 2023 (UNEP 2025a).

Box 13. Snapshot of the methane abatement financing gap for fossil fuels

Under the NDCs & MAPs scenario, annual fossil fuel methane abatement requires US$ 9 billion in annual upfront capital investment and US$ 18 billion in annual O&M costs by 2030. Achieving the more ambitious MTFR scenario increases these requirements to US$ 96 billion and US$ 42 billion, respectively (UNEP 2025a).[45] Estimates from other sources translate into US$ 28–33 billion in annual capital deployment for methane abatement in the sector (McKinsey & Company 2024; IEA 2026).[46]

[43] Establishing clear attribution criteria is essential to avoid overstating abatement finance through the inclusion of expenditures that would have occurred irrespective of methane mitigation objectives. In the oil and gas sector, only investments that go beyond business-as-usual maintenance to prevent, detect, or eliminate methane emissions—such as LDAR, replacing high-emitting equipment, or eliminating routine venting and flaring—should be considered targeted methane abatement. Similarly, in coal mining, investments to improve worker safety, such as methane drainage for explosion prevention, should count only when captured methane is permanently destroyed or utilized, resulting in measurable emissions reductions.

[44] Methane abatement technologies in the oil and gas sector are well established and include LDAR, emissions control devices, equipment replacement, and gas recovery. Many of these measures are cost-effective because the value of recovered methane exceeds implementation costs, although cost-effectiveness varies across countries depending on emissions profiles, capital and labor costs, and natural gas prices (IEA 2023; McKinsey & Company 2024).

[45] The wide gap between the NDCs & MAPs and MTFR scenarios illustrates the relatively low level of ambition currently reflected in national methane commitments for the sector (see Box 8).

[46] The IEA estimated that achieving a 75 percent reduction in methane emissions from fossil fuels would require around US$ 28 billion in spending per year, on average, through 2035. McKinsey & Company estimated that the spending required to eliminate methane emissions is even higher, at around US$ 200 billion cumulatively by 2030, including the cost of building the infrastructure to bring the recovered methane to existing pipelines.

Box 13 *(cont.)*

The oil and gas subsector accounts for 97 percent of upfront investment requirements under the MTFR scenario, while coal mining requires only US$ 2.8 billion in annual capital investment. This contrast is less pronounced for annual O&M costs, which reach US$ 19 billion annually in oil and gas and US$ 23 billion in coal mining (UNEP 2025a).[47] However, much of these costs can be offset through the valorization of natural gas recovered through reduced leaks and venting in the oil and gas subsector and pre-mining degasification of coal extraction, generating annual savings of US$ 15 billion under the NDCs & MAPs scenario and US$ 40 billion under the MTFR scenario (UNEP 2025a).

Closing the financing gap will require mobilizing additional sources of revenue, including results-based financing mechanisms (see Section 3 for further discussion). At the same time, fossil fuel companies have a clear responsibility to finance methane abatement within their own operations, particularly where measures are cost-effective and generate financial returns through recovered natural gas.

Development funders should prioritize phasing out support activities that prolong fossil fuel capacity,[48] recognizing its damaging impacts on both climate and public health, while strategically deploying public finance to accelerate methane abatement. This should include clear roadmaps and just transition principles to protect vulnerable communities and ensure full transparency and justification for continued investments. When national oil companies or other operators face capital constraints, concessional or blended finance mechanisms can help cover the upfront costs of measures such as eliminating routine venting and flaring, replacing high-emitting equipment, or implementing LDAR programs. Where methane can be recovered and sold, these investments can generate revenues that repay initial financing, while delivering sustained emissions reductions. Alongside financial support, strengthening institutional capacity to implement, monitor, and enforce methane regulations will be essential to ensure that technical mitigation potential translates into real-world emissions reductions. Public finance should therefore focus on addressing market and institutional barriers that limit private investment, while progressively redirecting support toward sectors with greater unmet financing needs, such as agriculture.

The Permian Basin provides a case study of how methane regulation can enable private investment abatement and generate value through captured gas. The basin straddles New Mexico and Texas (United States of America), where varying levels of methane regulation across the states allow for a direct assessment of policy performance. In New Mexico, a more stringent policy is in place. The Methane Waste Rule requires oil and gas operators to capture 98 percent of their natural gas by the end of 2026 and prohibits routine venting and flaring (State of New Mexico 2022). The basin was closely monitored for methane emissions through MethaneSAT, which reported that methane intensity in New Mexico was less than half that of production in Texas (MethaneSAT 2025). This

[47] Under the NDCs & MAPs scenario, annual operating costs are US$ 7 billion and US$ 10 billion, respectively.

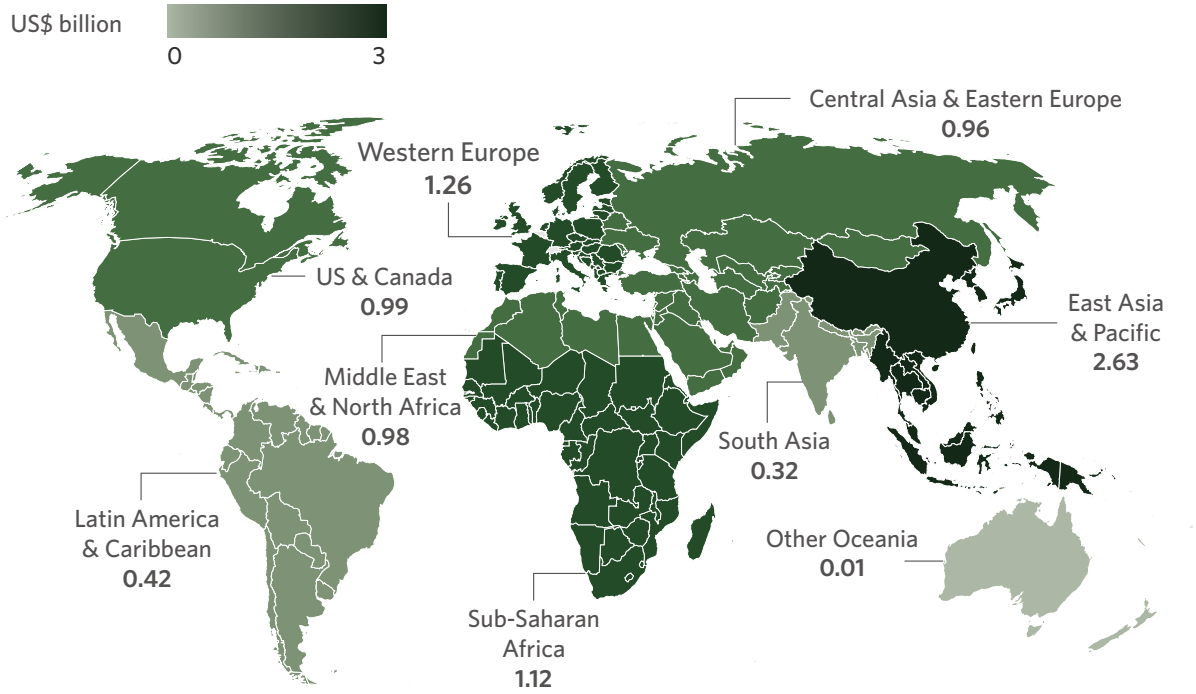
[48] For example, according to international development funding data, there was an alarming 80 percent year-on-year increase in fossil fuel-prolonging funding, from US$ 5.3 billion in 2022 to US$ 9.5 billion in 2023, more than two and a half times the amount directed toward tackling outdoor air pollution (Clean Air Fund 2025b).

comparative reduction generated US$ 152 million in New Mexico—the captured methane is valued at US$ 125 million, with US$ 27 million in tax and royalty revenue (State of New Mexico 2025).

While government regulation can drive methane reductions in the oil and gas subsector, private companies should also accelerate action. International oil companies can adopt voluntary methane reduction targets and strengthen the measurement and reporting of emissions (scopes 1, 2, and 3) and investments, while financial institutions should aim to use transition plans to detail how their product and service offerings could increase investment in abatement activities (CPI 2026a, 2023c, 2023a)**.** Integrating methane abatement into oil and gas debt structuring offers a potential solution for scaling finance. The Methane Finance Working Group has developed guidance on how to structure existing bond and loan instruments to finance methane abatement and flaring reduction projects. Specifically, the guidance adapts established use-of-proceeds and key performance indicator-linked financing structures, while providing eligibility criteria, reporting requirements, and operating principles that align with existing Green, Social, Sustainability, and Sustainability-Linked debt market standard (Methane Finance Working Group 2025).[49]

2.3 Regional insights

Figure 9. Super pollutant abatement finance by region, 2023



[49] While the Guidance is relevant to many types of oil and gas producers, it may be especially useful for National Oil Companies (NOCs), a segment of the industry that produces more than half the world's oil and gas. Most NOCs play a key role in their national economies, and reducing unnecessary product loss through methane abatement can provide a direct way for them to strengthen global competitiveness, improve operational safety, and enhance the stewardship of national resources.

Super pollutant abatement finance is unevenly distributed across and within regions and sectors. East Asia and the Pacific dominates global flows, accounting for 30 percent of total finance, largely driven by large-scale investments in green ammonia production for maritime transport. Western Europe follows with 14 percent of flows, characterized by strong private participation and investments in commercially viable infrastructure such as waste-to-energy facilities and green hydrogen and ammonia production.

Developing regions (including Sub-Saharan Africa, Central Asia and Eastern Europe, South Asia, and Latin America and the Caribbean) remain highly dependent on international public finance. These flows primarily support investments in waste and sanitation infrastructure, livestock resilience, and basic service provision. Across these regions, financing often tackles methane mitigation through improved waste management, wastewater treatment, and agricultural practices.

Box 14. Tracking commitments on super pollutants within countries' NDCs

An increasing number of countries are including provisions for super pollutants in their overall GHG mitigation targets, as well as setting separate targets covering individual non-CO_2 pollutants (CCAC 2025c). Guidance on Including Black Carbon and Other Pollutants in NDCs (CCAC 2024b) aims to help countries assess the risks posed by these pollutants and identify sector-specific mitigation measures. The guidance also highlights the significant co-benefits of these actions, including improved air quality, public health and broader sustainable development outcomes.

Several initiatives aim to assess the quality of published NDCs. While not all do so explicitly, these initiatives have begun to integrate super pollutant considerations into the framework of their assessments:

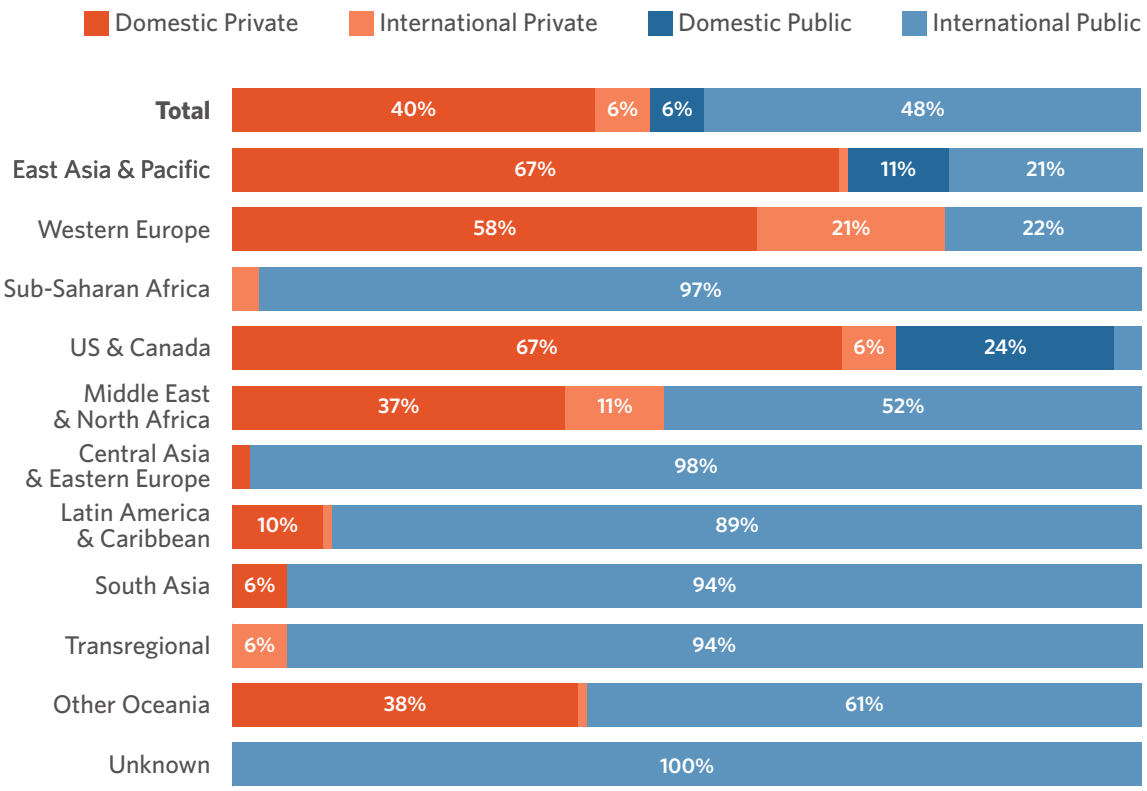
1. **Global Climate & Health Alliance, *Healthy NDC Scorecards*** – Assesses the extent to which NDCs embed human health and air quality considerations into broader climate commitments.
2. **Climate Watch, *NDC Tracker*** – Tracks improvements to countries' NDCs as new iterations are published. Assesses whether non-CO_2 targets have been set.
3. **CCAC, *NDC Database*** – Provides a summary of super pollutant and air pollution-related content within published NDCs.
4. **Climate Action Tracker, *Country Ratings*** – Evaluated the quality of government mitigation targets, including whether non-CO_2 pollutants are accounted for.

Box 14 *(cont.)*

Colombia's NDC is considered a global example for integrating action on super pollutants within national climate strategy. Developed in partnership with CCAC, Colombia's NDC 3.0, published in 2025, builds upon its 2020 submission by including a quantified black carbon reduction target, outlining a national methane reduction roadmap, and including HFCs in the coverage of key sectoral mitigation targets.[50]

Investments are also highly concentrated within regions, with a small number of countries and individual projects driving regional totals. Examples include large hydrogen and ammonia projects in China, waste-to-energy infrastructure in the United Kingdom of Great Britain and Northern Ireland and Malaysia, and forest fire management investments in Türkiye.

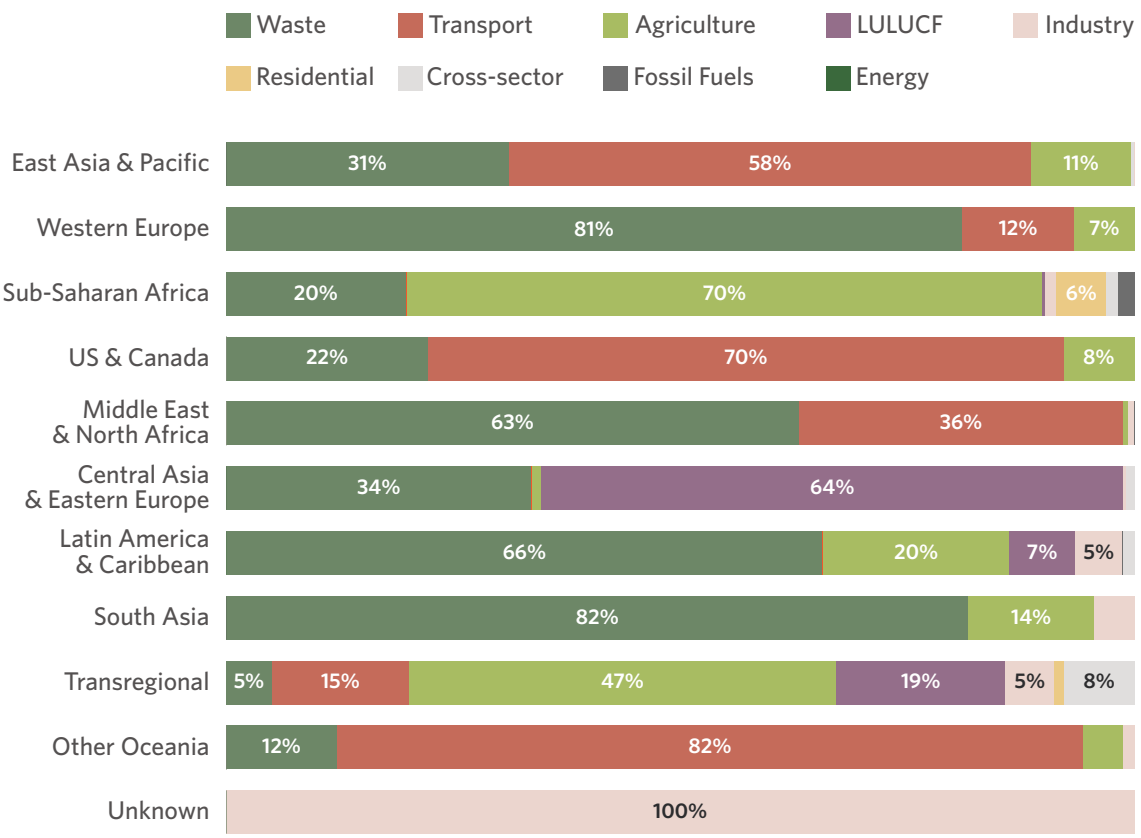
Figure 10. Total super pollutant abatement finance sector split by source, 2023



[50] These actions and commitments have been developed as a direct result of Colombia's National SLCP Strategy (Colombia 2018). Supported by CCAC's SNAP initiative since 2013 (CCAC 2012), the Ministry of Environment for Colombia developed this strategy with the aim of increasing action on super pollutants at the subnational level, while also developing a mechanism to evaluate their impact on broader air quality and public health.

The findings highlight two distinct financing patterns. Mature markets in developed regions attract greater domestic and private investment into large-scale industrial and infrastructure projects. Meanwhile, developing regions rely more heavily on international public finance to support waste management systems, agricultural resilience, and basic environmental services (Figures 10 and 11). These differences underscore the need to strengthen domestic financial ecosystems and policy frameworks to mobilize private capital and scale super pollutant mitigation efforts globally.

Figure 11. Total super pollutant abatement finance sector split by region, 2023



Highlights per region:

- **In East Asia and the Pacific,** super pollutant finance (accounting for 30 percent of global flows) was highly concentrated in maritime transport (58 percent). This was followed by the waste sector (31 percent), supporting increased waste separation and recycling, waste-to-energy projects, and improved access to water and sanitation services. China dominated regional financing, attracting US$ 2.3 billion (86 percent of flows), followed by Malaysia (8 percent), both driven by domestic sources. International public finance dominated in other countries, primarily supporting livestock resilience and productivity measures for smallholders and the elimination of HFCs in the industry sector. Around 64 percent of Chinese investments targeted green ammonia and

hydrogen production for the maritime sector. Nearly one-third of these fuel investments were in a single project: the Songyuan Hydrogen Energy Industrial Park in Jilin Province, described as the world's largest integrated green hydrogen, ammonia, and methanol project. The project is expected to save around 600,000 metric tons of standard coal equivalent annually and reduce carbon dioxide emissions by approximately 740,000 tons per year (China Daily 2025).

- **In Western Europe,** super pollutant abatement finance saw strong private sector participation (76 percent). Domestic private finance represented 56 percent of total regional flows, primarily for large revenue-generating projects, including for waste-to-energy and green ammonia and hydrogen production. International private finance (20 percent) also supported waste-to-energy, while international public finance (21 percent) was mainly directed toward wastewater treatment. The UK represented 60 percent of the region's financing, with almost all funding committed to the Walsall Waste-to-Energy Plant, which will be able to process up to 436,000 tonnes of non-recyclable household and commercial waste per year and generate up to 49 MW of electricity (EUWID 2024).
- **In Sub-Saharan Africa**, finance highlighted the strong role of development assistance in supporting livestock resilience and productivity of smallholder and pastoralist systems.[51] Flows for over 190 projects were concentrated in a small number of countries. Half of the region's finance was directed to just five countries: South Africa, Tanzania, Angola, Ethiopia, and Sudan. The largest project was the Agricultural Sector Reform Program for smallholder resilience in Angola, for which the African Development Bank provided a US$ 100 million loan (African Development Bank 2023). While not explicitly designed to address super pollutants (and with only a portion of finance likely contributing to abatement), the project illustrates how development-focused interventions can generate indirect mitigation co-benefits, for example, through improved agricultural practices and efficiency gains.
- **The United States and Canada** saw a strong focus on methane mitigation through waste-to-energy and manure-to-energy systems. Canada heavily influenced the distribution of finance, where a single e-methanol facility accounted for 68 percent of total tracked flows. In the US, investments were concentrated in the waste sector, followed by agriculture (22 percent and 8 percent of regional investment, respectively), with both sectors supporting anaerobic digestion to capture and utilize methane emissions. Agriculture data primarily covers the United States of America, owing to efforts by the California Department of Food and Agriculture (CDFA) to track and financially support such projects. Substantial grant funding from the state of California has led to a sharp increase in the number of manure biodigesters in recent years.
- **In the Middle East and North Africa,** focus was on international public finance for measures such as improved wastewater management practices and solid waste-to-energy projects. Private investment is concentrated in a limited number of green ammonia and hydrogen production projects and public-private partnerships (PPPs) for wastewater management infrastructure. Egypt represented 19 percent of regional financing, including support for the maritime transport subsector through

[51] Smallholder and pastoralist climate resilience measures include vaccination against zoonotic diseases and emergency feed storage. Such measures improve the survival rate and reduce the unproductive replacement of animals, thereby suppressing methane emissions across the entire herd.

the "Egypt Green Hydrogen" project, which aims to produce 70 000 tonnes of green ammonia per year and export it to European end-users.[52] The Egyptian government has established a regulatory and institutional framework to support green hydrogen deployment (OECD 2024).[53]

- **Central Asia and Eastern Europe** mostly received public international finance (98 percent), primarily for fire prevention and forest management, as well as to improve access to water and sanitation services. The concentration of flows in Türkiye (72 percent) biased the distribution toward measures to control forest and peatland fires. The Türkiye Climate Resilient Forests Project was launched as a partnership between the national government and the World Bank in response to the 2021 wildfires in the country,[54] with the restoration of fire-affected landscapes and the development of improved monitoring and warning systems. By focusing on landscape restoration and improved fire monitoring and early warning systems, the project helps to reduce emissions of super pollutants such as black carbon. Financing across the rest of the region was primarily directed toward the waste sector.
- **Latin America and the Caribbean** had a dual focus on waste (66 percent) and agriculture (20 percent), with international public finance playing a dominant role (89 percent of funding). Colombia, Bolivia, Brazil, and Ecuador received 74 percent of regional flows. Within the waste sector, financing primarily targeted measures to improve access to and management of wastewater and sanitation services (72 percent), with waste and sanitation infrastructure key entry points for reducing super pollutant emissions in the region.[55] In the agriculture sector, Bolivia and Brazil were the main recipients, accounting for 79 percent of sectoral investments. Funding largely supported strengthening of livestock resilience among smallholder farmers and pastoralists.
- **South Asia** saw waste and sanitation infrastructure become key mitigation entry points. Targeted industrial interventions, such as cleaner brick production, also help address major sources of air pollution. Financing is geographically concentrated, with India accounting for 86 percent of regional investments. Within the country, 83 percent of flows went to improve access to and management of water and sanitation services, and all wastewater-related finance came from international public sources. Investments in brick kiln replacement were entirely concentrated in Bangladesh and focused on scaling up greener construction practices by modernizing the country's largely artisanal and informal brick sector.[56]

[52] The project is expected to generate significant employment, supporting economic development. Around 1,250 jobs are anticipated during construction, and up to 80 jobs during operation and maintenance.

[53] Including Cabinet Decrees No. 981 and No. 104 of 2022 and Law No. 2 of 2024, alongside various incentives. For instance, the Green Hydrogen Incentives Law provides tax credits of 33–55 percent and tax exemptions for new green hydrogen and derivative projects. Egypt's National Low Carbon Hydrogen Strategy sets a target to produce 9.2 Mt of green hydrogen annually by 2040.

[54] In 2021, Türkiye's wildfires were estimated to be approximately eight times the size of average annual fires (World Bank 2024).

[55] Brazilian municipalities have been using the Solid Waste Emissions Estimation Tool to estimate waste emissions, as well as potential emission reductions from proposed interventions, and consequently access climate finance (CCAC 2020).

[56] Despite producing an estimated 35 billion bricks per year, traditional brick manufacturing is a major source of GHG emissions, generating approximately 8.75 million tonnes annually, while also consuming around 2.2 million tonnes of coal and 1.9 million tonnes of firewood. Investments have prioritized the deployment of more energy-efficient kilns, improved compliance with national standards for greener brick and block manufacturing, and the development of market and investment conditions for climate-friendly, non-fired, and energy-efficient alternative bricks, such as the Green Brick Programme (CCAC 2019b). This focus reflects the sector's significant contribution to air pollution and public health challenges in Bangladesh, which has experienced some of the largest global increases in both $PM_{2.5}$ exposure and pollution-related deaths (Apte et al. 2018; IHME 2024). Highly polluting brick kilns are a major driver of emissions. Although regulations exist, enforcement has historically been weak (Lee et al. 2021). While the promotion of technologically advanced kilns is a key mitigation strategy, their significantly higher construction and operating costs compared to traditional kilns limit widespread adoption (Khaliquzzaman et al. 2020; Brooks et al. 2023).

3. Roadmap to scale super pollutant abatement finance

Breaking down barriers to, and accelerating investment, in super pollutant abatement finance is not only a climate and health imperative; it could also prevent trillions of economic losses. Each year of delayed implementation forfeits global economic benefits amounting to more than 0.5 percent of global GDP, equivalent to over US$ 1.5 trillion in combined market and non-market value (UNEP 2026a). Strengthening the economic, social, technical and institutional enabling conditions needed to accelerate implementation could generate cumulative benefits equivalent to US$ 10 trillion by 2040 (UNEP 2026a).

Closing the investment gap will require stronger project pipelines, greater institutional and technical capacity, standardized investment disclosures, and broadened investment across all sectors critical to super pollutant abatement. Two overarching barriers currently limit the scale and effectiveness of finance for super pollutant abatement:

- **First, institutional barriers weaken the enabling conditions needed to identify, measure, and prioritize abatement opportunities.** Super pollutants remain unevenly integrated into national climate plans, clean air strategies, sustainable finance taxonomies, project pipelines and monitoring systems. This limits visibility of abatement opportunities and their potential benefits among governments, development partners and investors.
- **Second, the demand, supply, and architecture of financial flows remain underdeveloped.** Many viable solutions are not yet translated into finance-ready projects with clear costs, returns, implementation pathways, and measurable outcomes. At the same time, available capital is often poorly matched to project realities, especially in sectors with weak revenue models, high transaction costs, or where benefits are primarily public, such as health, air quality, and reduced warming.

Scaling up finance for super pollutant abatement requires more than increasing the availability of capital. It requires coordinated progress across three mutually reinforcing action areas: strengthening the enabling architecture, including policy, institutional and data frameworks, that makes super pollutant action visible and credible; converting technical opportunities into investable sector pipelines; and third, deploying fit-for-purpose capital and instruments at scale. These action areas are outlined below with additional priority actions by sector shown in Annex 4.

3.1 Action area 1: Building the enabling framework

First, super pollutant action must be visible, measurable, and institutionally owned. This requires its integration into national policy, sustainable finance frameworks, governance systems, disclosure practices, and MRV architecture. Enabling policies can help translate technical opportunities into credible pipelines or attract sustained finance. Equally important is strengthening coordination between climate and clean air agendas. Black carbon, in particular, provides an entry point for integrating emissions inventories, fostering collaboration between climate and air quality institutions, broadening the metrics to assess progress, and recognizing the economic, health, and climate benefits of mitigation measures (Clean Air Fund 2024).

Table 7. Action area 1 recommendations and examples by actor group

Recommendations	Examples
Governments	
Embed super pollutants in international and national climate, economic and financial policies. Integrate super pollutants into NDCs, sector roadmaps, clean air plans, and sustainable finance taxonomies. Establish clear institutional ownership through inter-ministerial task forces, country platforms, or similar coordination mechanisms. Strengthen inventories, baselines, MRV systems, regulation, enforcement, and valuation of climate, air quality, health, and economic benefits.	▪ **As of 2023, seventeen countries had integrated black carbon into their NDCs**, with Mexico and Chile being the pioneers (Clean Air Fund 2024). At COP30, nine governments made a first announcement on black carbon, setting out national policies and sectoral actions to reduce emissions from sources such as transport, electricity, and oil and gas (Clean Air Fund 2025a). Colombia's NDC 3.0 includes quantified black carbon reduction targets, outlines a national methane reduction roadmap, and includes HFCs in coverage of key sector mitigation targets (Colombia 2025). ▪ **China's Ecological and Environmental Code, Mongolia's Green Taxonomy, and Brazil's Sustainable Taxonomy** illustrate how pollution prevention objectives can provide entry points for super pollutant measures in sustainable finance frameworks (IGSD 2026; Mongolian Sustainable Finance Association 2023; Brazil 2023). ▪ **CPI and Climate Bonds' Methane Abatement in Sustainable Taxonomies** (CPI and Climate Bonds 2025) presents a comparative analysis of how taxonomies from Colombia, the EU, Indonesia, South Africa, and Thailand incorporate methane abatement. It reports sector-specific best practices and measures, as well as thresholds and performance metrics, that can serve as a useful starting point for sustainable finance taxonomies and policymakers. That said, adopting these measures will require additional time, phased implementation, or alternative approaches that allow for flexibility and context-specific adaptation, particularly in EMDEs, where technologies accepted under taxonomies designed for high-income contexts may be unavailable or unaffordable and data requirements may exceed institutional capacity.
MDBs, DFIs, international organizations, and development partners	
Support policy design, taxonomy development, institutional coordination, regulatory capacity, economic assessments, and integrated MRV systems. Provide technical assistance to ministries, regulators, subnational governments, utilities, and public agencies so that super pollutant action can move from broad recognition to accountable delivery.	▪ **The CCAC–CATF Fossil Fuel Regulatory Program** will support up to 20 ODA-eligible governments from 2024–27 with tailored capacity building, regulatory framework development, and guidance on implementation and MRV/compliance (Clean Air Taskforce and CCAC 2024). While this program is methane-focused, the model is relevant to broader super pollutant governance. ▪ **CCAC-ICAT guidance** provides a practical model for integrating super pollutants and air pollutants into national transparency and MRV frameworks (ICAT and CCAC 2024). ▪ **UNEP's Methane Alert and Response System** (MARS) enhances methane transparency through satellite monitoring and rapid emissions alerts, enabling governments and companies to identify and address major methane releases more quickly (UNEP 2026b). ▪ **The MDB–IDFC Common Principles for Climate Mitigation Finance Tracking** lay a foundation for improving consistency and transparency of super pollutant finance reporting (MDBs 2023). While they recognize activities that reduce super pollutants, such as methane abatement and low-GWP refrigerants, they do not systematically or comprehensively identify or report finance by pollutants, pointing to where future tracking frameworks can be strengthened. ▪ **The Climate Bonds Taxonomy** (Climate Bonds 2026b) is a guide to what is climate-aligned. It is a tool for governments, issuers, investors and corporates to understand what can support a low-carbon, climate-resilient economy globally, and to help align lending, policy and investment portfolios with credible mitigation outcomes. It reflects the latest credible measures for methane abatement and provides a global benchmark of best practices.
Private actors	
Strengthen disclosure of super pollutant-related investment, emissions, and operational data. Participate in sector platforms and provide project-level information that helps identify abatement opportunities, investment needs, implementation barriers, and best practices. Use common eligibility criteria and sector standards to identify credible investment opportunities.	▪ **Sector-specific eligibility criteria** can help private actors identify eligible methane abatement assets (Climate Bonds 2025, 2024a, 2024b, 2026c, 2026d, 2026a). These Criteria define climate benchmarks to ensure only assets and projects that support climate mitigation and/or adaptation and resilience can be Certified. If a bond includes assets from multiple sectors, each asset is assessed against the relevant sector criteria. ▪ **The IEA** highlights how satellite and related analytics are improving methane detection and quantification (IEA 2024b); **OGMP 2.0** illustrates how standardized MRV systems can strengthen accountability and comparability across interventions (OGMP 2.0 2026); and the **BNP Paribas–Kayrros partnership** shows how private actors can use satellite imaging, AI, and portfolio-level methane metrics to strengthen engagement on methane abatement (BNP Paribas 2024). ▪ **The Dairy Methane Action Alliance** promotes value-chain transparency and supports private sector actors in developing and implementing methane reduction plans across dairy supply chains. Member companies have also begun operationalizing this guidance through the Alliance (EDF 2025).

3.2 Action area 2: Convert technical opportunities into investable sector pipelines

Technical mitigation opportunities need to be translated into finance-ready pipelines. This means moving from a narrative of broad mitigation potential to sector-specific investment plans with defined capital needs, implementation responsibilities, delivery milestones, and expected outcomes. This is particularly important where finance remains low relative to mitigation potential, or where opportunities are fragmented across different areas such as farms, municipalities, waste systems, buildings, and industrial sites. This involves packaging interventions more clearly, aggregating smaller projects, and linking measures to pollutant outcomes and co-benefits in ways financiers can understand. For many super pollutant abatement measures, the issue is not technology readiness, but weak translation into recognizable investment opportunities.

Table 8. Action area 2 recommendations and examples by actor group

Recommendations	Examples
Governments	
Translate super pollutant targets into sector-specific investment plans, capital needs, delivery milestones, and implementation responsibilities. Promote pipelines in underfunded but high-impact sectors and use public procurement, regulation, incentives, and public finance such as seed capital to create demand. Support project aggregation across farms, subnational governments, waste systems, buildings, and industrial sites to reduce transaction costs and reach investor-relevant scale.	▪ **CDFA's Dairy Digester Research and Development Program** provides financial assistance for the installation of dairy digesters on California dairy farms. Public support shows how dispersed opportunities can be grouped into clearer program pipelines (CDFA 2026).
MDBs, DFIs, international organizations, and development partners	
Provide technical and financial support for project preparation, feasibility studies, cost-benefit analysis, early-stage structuring, and aggregation models. Use technical assistance and concessional resources to help lower-capacity countries, subnational governments, and implementing entities move from technical potential to finance-ready projects.	▪ **IDB's Too Good to Waste** initiative supports the development of bankable waste methane projects through pre-investment studies, project structuring, and the promotion of enabling conditions for methane mitigation and circular economy solutions (IDB 2026). ▪ **The World Bank Global Methane Reduction Platform for Development (CH4D)** supports countries in developing and scaling methane reduction programs by strengthening policies, institutional capacity, project preparation, and investment across the agriculture and waste sectors (World Bank and CSF 2025).
Private actors	
Develop bankable projects, PPPs, supply chain investments, and carbon-credit-generating activities. Provide data on capital needs, expected returns, operational risks, offtake requirements, and implementation barriers so that project pipelines are credible to financiers. Project developers and aggregators can use standardized project documentation, common eligibility criteria, and verified outcome metrics to package smaller opportunities into investable programs.	▪ **Brazil's Bom Futuro restoration-focused concession** monetizes degraded public land by granting forest restoration rights to a private developer, who finances restoration through the sale of carbon credits while paying a concession fee and assuming responsibility for addressing environmental damage caused by third parties, such as illegal invasions and wildfires (Lopes et al. 2024).

3.3 Action area 3: Mobilize fit-for-purpose finance and scale delivery

Scaling delivery requires matching the appropriate form and types of capital and instruments to each pollutant, sector, and market context. The focus is on adjusting risk–return profiles, improving revenue certainty, and lowering transaction costs to increase investment in super pollutant abatement. Blended finance, guarantees, results-based payments, carbon monetization, and more standardized contractual approaches can help when matched to project realities. A stronger supply side will require clearer differentiation in the roles of public, private, and philanthropic capital. This can help direct the right type of capital to the right type of intervention.

Table 9. Action area 3 recommendations and examples by actor group

Recommendations	Examples
Governments	
Use public finance to address affordability, upfront capital cost, and equity barriers. Strengthen safeguards to ensure finance supports genuine abatement and does not create fossil lock-in or expansion risks. Enable results-based finance where MRV is credible, and benefits are appropriately shared. Leverage carbon markets to mobilize private capital for super pollutant abatement where additionality, MRV, and safeguards are robust.	• **Brazil's National Zero Methane Program** aims to stimulate economic sectors in the production and use of biomethane and biogas. Financial support comes from public banks, through specific financing and a line of credit (Brazil 2022). • **UNEP's High-Integrity Carbon Markets Initiative** helps countries unlock climate finance by strengthening governance for high-integrity carbon markets, building institutional capacity, and preparing investment-ready projects for Article 6 and voluntary carbon markets (UNDP 2023).
MDBs, DFIs, international organizations, and development partners	
Provide grants, concessional debt, first-loss capital, guarantees, and blended finance to crowd in private capital. Create portfolio targets for super pollutant abatement finance. Support sectors and regions with weak commercial bankability but high climate, air quality, and health outcomes.	• **The World Bank Global Flaring and Methane Reduction** Trust Fund provides catalytic grants, technical assistance, policy and regulatory reform advisory services, and institutional strengthening to support flaring and methane reduction in oil and gas (World Bank 2026a). • **The Multilateral Fund for the Implementation of the Montreal Protocol** provides developing countries with financial and technical assistance to phase out hazardous ozone-depleting substances (UNEP 2023) • **The Beyond Alliance** US$ 100 million initiative directs corporate philanthropic capital to high-impact projects and financing super pollutant action (Beyond Alliance 2026). • **The World Bank Pilot Auction Facility** promotes carbon monetization to stabilize revenues through a guaranteed floor price for methane-related carbon credits (World Bank 2023a). • **AIM for Scale's Innovation Package for Integrated Solutions for Livestock Productivity** focuses on investments to accelerate the adoption and scaling of cost-effective innovations that improve the livelihoods, resilience, and food security of farmers—particularly small-scale livestock producers—across five interconnected and complementary areas: strengthening farmer advisory services; leveraging existing livestock advisory systems to deliver bundled innovations; investing in digital services and AI; improving access to reliable and affordable inputs; and strengthening behavioral learning and adaptive scaling to identify what works, for whom, and under what conditions (AIM for Scale 2026).

Recommendations	Examples
Private actors	
Invest in own operations, supply chains, HFC phase-down in cooling systems, cleaner waste systems and transport fleets. Use corporate capital expenditure or secure funds to abate emissions in own operations or supply chains, including through sustainability-linked instruments or sales of carbon credits where outcomes can be measured, and safeguards are clear.	**Therm Solutions,** a US-based carbon project developer, is a private sector example of mobilizing capital around super pollutant carbon credit issuance. It develops carbon-finance programs that incentivize food-sector businesses and farmers to reduce refrigerant emissions and divert food waste (Therm 2025). Private financial institutions can also use methane, HFC, and black carbon metrics to inform portfolio engagement, due diligence, and sustainability-linked finance.

3.4 Toward better tracking of super pollutant finance

This report provides the first global assessment of finance explicitly targeting super pollutant abatement. While it establishes a valuable baseline, it also highlights several priorities for strengthening future tracking. These areas include improving reporting standards, expanding sectoral coverage, leveraging new data sources, and developing more comprehensive investment assessments.

Strengthen reporting frameworks and disclosures: The absence of dedicated reporting and tagging frameworks with common reporting approaches and definitions remains the largest constraint to tracking super pollutant finance. Many investments that reduce super pollutants are embedded in broader climate and development projects and cannot be readily identified. Integrating super pollutant classifications into climate finance reporting systems, sustainable finance taxonomies, and corporate disclosures would substantially improve coverage and consistency. Meanwhile, greater disclosure of company-level investments—particularly in sectors such as fossil fuels—would improve transparency and accountability. Corporate reporting represents a particularly important opportunity. Initiatives such as the Oil and Gas Methane Partnership (OGMP 2.0) have substantially improved emissions reporting, yet investment reporting remains fragmented.

Expand sectoral coverage and leverage new data sources: Future tracking should progressively incorporate sectors and technologies where significant super pollutant benefits are expected but are difficult to attribute using available data and methodology. Advances in artificial intelligence, natural language processing, satellite observations, and corporate sustainability reporting offer opportunities to identify relevant investments and improve project-level coverage. Future work should also explore integrating complementary datasets from sector-specific initiatives, corporate reporting platforms, voluntary carbon markets, and sustainable finance databases to improve project coverage while minimizing double counting.

Develop investment needs and effectiveness assessments: Future assessments should move beyond measuring financial flows alone to evaluate whether investment levels match mitigation needs and deliver meaningful environmental and social outcomes. While estimates of methane investment needs are increasingly robust, comparable assessments for other super pollutants covered in this report remain limited. Developing investment need estimates for black carbon, HFCs, ozone precursor emissions, and integrated air quality interventions would enable more comprehensive finance gap assessments and identify priority sectors requiring additional investment.

Beyond tracking financial flows, future research should also seek to assess the effectiveness of investments. Linking finance to emissions reductions, health outcomes, agricultural productivity, and broader economic benefits would provide valuable evidence on which interventions deliver the greatest climate and development impacts per dollar invested. Such analysis would enable policymakers and investors to move beyond measuring the quantity of finance mobilized toward understanding its effectiveness in achieving super pollutant mitigation objectives.

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Annex

A.1 Description of sources for different super pollutants

Table A.1. Description of anthropogenic sources for different super pollutants

Super pollutants	Anthropogenic sources
Methane (CH_4)	The biggest driver of methane emissions is agriculture, making up about 42 percent of human-caused methane, dominated by enteric fermentation in ruminants, manure management, and rice cultivation. In many regions, waste management and rice paddies also push up the numbers. Fossil fuels contribute roughly 38 percent of methane emissions, with two-thirds from oil and gas and one-third from coal; leaks and venting in the supply chain mean a lot of methane escapes before burning, inflating the climate impact. The waste sector accounts for about 20 percent of methane, mainly from landfills and wastewater, so better waste management and capture can cut a meaningful chunk of warming early on in many countries (UNEP 2025a).
Nitrous Oxide (N_2O)	Agriculture is the biggest source of human-caused nitrous oxide: about 75 percent of anthropogenic emissions come from farming, and are driven primarily by using synthetic fertilizers and manure on soils. Industrial processes contribute about 5 percent of anthropogenic nitrous oxide, with key emissions from adipic acid production and nitric acid manufacture used for fertilizers, munitions, and industrial fibers. These are concentrated in chemical industries and energy-intensive sectors. The remaining roughly 20 percent of anthropogenic N_2O comes from fossil fuel combustion, wastewater treatment, aquaculture, biomass burning, and other activities, and tends to rise with higher energy use, waste management, and intensive farming (UNEP and FAO 2024).
Non-methane volatile organic compounds (NMVOCs)	Oil production, distribution and transport dominate human-made NMVOC emissions, a share that has stayed large for decades despite cleaner cars in developed regions; meanwhile chemical industries and solvents are driving growth in total emissions. In North America, oil and gas extraction has pushed NMVOC emissions up since 2008, even as urban vehicle emissions slipped by big margins; the exact totals remain uncertain, complicating efforts to see the full picture. In China and Eastern Asia, total anthropogenic NMVOC emissions have risen because solvents and industry outpace declines in some transport and heating; meanwhile, residential heating emissions have fallen as coal and biofuel use declines since the mid-2000s. In Europe, winter NMVOC emissions are increasingly dominated by wood burning, with Paris-area measurements suggesting wood burning accounts for up to half of winter NMVOC emissions; switching to modern stoves could cut these emissions substantially. Behind the scenes, product-use emissions from solvents in paints, cosmetics and cleaning products are a major NMVOC source; in some cities consumer products dominate, sometimes exceeding traditional petrochemical VOC emissions (IPCC 2021a; UNEP 2019).

Super pollutants	Anthropogenic sources
Carbon Monoxide (CO)	About half of the global atmospheric CO burden comes directly from human emissions, while the rest forms from the oxidation of methane and other VOCs in the atmosphere. CO mainly comes from incomplete burning of fuels, especially in vehicles and home heating; when engines or stoves do not burn fuel cleanly, CO is released in higher amounts that can harm health. Road transport is typically the largest outdoor source of CO, with cars, trucks and buses burning fossil fuels and producing higher CO during cold starts or heavy traffic. Residential heating is a major CO source, and uncontrolled waste burning adds to urban levels; a Bishkek assessment identified domestic heating as the main contributor to CO emissions alongside road traffic. Indoor sources also contribute, such as cooking and heating with coal, wood or kerosene; poor ventilation can keep indoor CO high even when outdoor levels are lower (IPCC 2021a, 858; UNDP and UNEP 2022, 19; WHO 2021).
Fine particulate matter ($PM_{2.5}$)	$PM_{2.5}$ comes from both natural sources like dust storms and wildfires and human-made sources such as vehicle exhaust, power plants, industrial processes, agricultural burning, and wood or coal burning. The relative contribution of these sources varies significantly by region, season, and level of development (IQAir 2025b; Health Effects Institute 2025). In urban areas, common sources include fossil fuel energy generation, industrial activities, and transportation; in lower-income regions, household use of coal or biomass for cooking and heating, waste burning, and dust from construction also contribute significantly (Health Effects Institute 2022a, 2025). In Africa, major $PM_{2.5}$ sources include vehicles and diesel generators, waste burning, residential solid fuels use, and windblown dust, with fossil fuel use more prominent in Southern Africa and solid fuels important in Eastern Africa. Residential and biomass fuel use dominates in South Asia, while natural dust dominates elsewhere, such as the Middle East, with dust contributing 40–70 percent of ambient $PM_{2.5}$ in some areas (IQAir 2022; Health Effects Institute 2022b; IQAir 2025b; Health Effects Institute 2025).
Black carbon (BC)	Black carbon is a fine particle that absorbs sunlight, boosting regional warming; this preventable human activity ranks among the top short-term climate forcers. The main human sources of black carbon come from incomplete combustion: diesel engines in vehicles, residential burning of wood and coal, power plants using oil or coal, shipping, and agricultural waste burning; emissions vary by sector and region (WHO 2021).
Hydrofluorocarbons (HFCs)	HFCs are entirely human-made. They are primarily produced for use in refrigeration, air conditioning, insulating foams and aerosol propellants, with minor uses as solvents and for fire protection. Most HFCs are contained within equipment, so emissions are the result of wear, faulty maintenance, or leakage at the end of a product's lifetime (CCAC 2024a).
Nitrogen oxides (NO_x)	Globally, transport (including ships and aviation) makes up about half of NO_x emissions; Asia alone accounts for around 50 percent of NOx, while North America and Europe together make up about 20 percent. Not all NOx comes from burning; soils release NO_x through natural nitrification and denitrification, driven by temperature and moisture, with global soil NOx estimated around 4.7 to 16.8 Tg N per year (IPCC 2021a).
Tropospheric ozone (O_3)	Tropospheric ozone is a secondary pollutant because, unlike many other pollutants, it is not directly emitted in the atmosphere. It is instead formed in the atmosphere when nitrogen oxides (NO_x) indirectly react with volatile organic compounds (VOCs) or carbon monoxide (CO) in the presence of sunlight. These VOCs include methane (CH_4) and non-methane volatile organic compounds (NMVOCs).

A.2 Methodology

A.2.1 Data sources

The Global Landscape of Climate Finance (GLCF) dataset is the primary data source for this analysis. It consolidates and standardizes more than 30 underlying datasets, alongside extensive development finance institute survey data, to provide a comprehensive overview of global project-level climate finance flows (CPI 2025b).

While the GLCF dataset provides a robust and comprehensive foundation for tracking climate finance, certain features limit its direct applicability to super pollutant abatement analysis. In particular, the GLCF focuses exclusively on climate-related financial flows, which constrains the identification of investments within fossil fuel systems and other hard-to-abate sectors that may incorporate measures to reduce super pollutant emissions. In addition, some underlying data sources report finance at an aggregated level or lack sufficient descriptive detail, thereby reducing the effectiveness of keyword-based approaches to identify specific abatement measures at the project level.

To enhance the GLCF dataset, CPI supplemented descriptive project-level information in cases where individual datasets provided limited detail. CPI then evaluated a range of external data sources to broaden coverage of super pollutant abatement activities. This includes datasets on:

- International public support for hydrofluorocarbon reductions under the Montreal Protocol (UNEP 2023)
- USA-based dairy digester installations (CDFA 2026)
- Non-climate-specific infrastructure projects (World Bank 2025b; IJGlobal 2025)
- International development aid data (IATI 2026; World Bank 2026b)

Table A.2 provides a full breakdown of super pollutant coverage by data source and sector. Several additional datasets were assessed but not included in the final analysis (see Box A.1)

Table A.2. Super pollutant coverage (targeted only) by data source and sector

Dataset	Agriculture	Energy	Fossil Fuels	Industry	LULUCF	Residential	Transport	Waste	Cross-sector
GLCF Datasets									
Actor Coverage: Private and Public Institutions									
BNEF									
IJ Global									
LGX									
World Bank PPI									
OECD									
Actor Coverage: Development Finance Institutions									
Surveys									
Actor Coverage: Climate Funds									
CFU									
Supplementary Datasets									
IATI									
IJ Global (Supplement)									
Montreal Protocol									
World Bank Group Project Data									
CDFA									

Key

CH_4	N_2O	NMVOCs	CO	$PM_{2.5}$	BC	HFCs	NO_x

Box A.1: Supplementary datasets considered for integration

External datasets were evaluated to enhance the coverage of super pollutant abatement activities. While several were integrated, others were not included as they tracked outcomes without associated capital expenditures or lacked the granularity needed to isolate super pollutant abatement finance. The following are examples of datasets that were considered but not integrated:

AgSTAR Livestock Anaerobic Digester Database: Documents anaerobic digester projects on livestock farms in the US. Capital expenditures for individual projects are not reported (AgStar 2026).

Berkeley Voluntary Registry Offsets Database: Identifies projects eligible for carbon credits that may include super pollutant abatement. No project-level financial values were disclosed for super pollutant-relevant projects (Quartson et al. 2026).

Clean Cooking Alliance: Monitors cookstove projects with data on emissions, efficiency, and fuel consumption. Financial information on abatement activities is not provided (Clean Cooking Alliance 2026).

Clean Development Mechanism: UN carbon offset scheme established under the Kyoto Protocol. It has not been updated with projects past 2020 (UNFCCC 2026).

GEM 'Global Coal Project Finance' and 'Global Oil and Gas Plant' Trackers: Project-level transaction data for coal, oil, and gas infrastructure. However, there is negligible publicly available data to separate abatement-specific investments from total project costs. Given the high capital intensity of these projects and the inability to attribute a share of expenditure to super pollutant mitigation, these datasets were not integrated to maintain a conservative tracking approach (Global Energy Monitor 2026a, 2026b).

Coal Mine Methane Project List: Information on around 500 coal mine methane recovery and utilization projects worldwide, without financial information (GMI 2024).

Oil and Gas Methane Partnership 2.0 Company Factsheets: A range of tools to track measurement and reporting of methane emissions and abatement in the oil and gas sector. The factsheets do not report associated financial investments (OGMP 2.0 2025, 2024).

A.2.2 Data coverage

Despite the adoption of best practices, there remain key reporting barriers CPI was unable to overcome without improvements to reporting. Such gaps mean comprehensive tracking remains elusive in certain areas, as displayed in Table A.3.

Table A.3. Data coverage in the State of Super Pollutant Abatement Finance, 2023

Sectors	Targeted Measures (US$ billion)				Number of projects
	Private domestic	Public domestic	Private international	Public international	
Waste	1.25	0.13	0.33	2.06	115
Transport	2.15	0.39	0.10	0.06	73
Agriculture	0.15	0.01	0.05	1.25	258
LULUCF	-	-	-	0.68	14
Industry	-	-	-	0.10	34
Residential	-	-	-	0.06	13
Cross-sector	-	-	0.00	0.04	14
Fossil fuels	-	-	-	0.02	2
Energy	-	-	-	0.00	2

A.2.3 Keyword screening process

The keyword screening process enabled the construction of a harmonized and consistent dataset, in which individual projects were accurately mapped to a measure defined in CPI's Super Pollutants Taxonomy (see Section 1.2.1). This improves upon the process which was developed for the previous Landscape of Methane Abatement Finance and State of Air Quality Funding reports (CPI 2022, 2023b; Clean Air Fund and CPI 2024; Clean Air Fund 2025b).

Building on the methodology established in these studies, both the sensitivity (capture of relevant activities) and specificity (reduction of false positives) of keywords were strengthened. This resulted in the capture of a wider range of relevant projects, while excluding those without an explicit link to super pollutant abatement.

Key aspects of the keyword screening process:

1. Uniqueness and use of operators – For each solution defined in the Super Pollutants Taxonomy, a unique set of keywords was developed using details from each entry in the taxonomy. These keywords took different forms, with individual words, phrases, or combinations of both words and phrases all assigned to the solutions in the taxonomy. The use of operators to construct these keywords—specifically '+'s and '/'s—enabled us to search project names and descriptions for multiple combinations of individual words and/or phrases, as well as their synonyms.

2. Broadness of keywords – The keywords were tested on project datasets, and the number of occurrences of each keyword was recorded. For keywords which saw a high number of occurrences, the team would work to establish whether these reflected keywords which were too broad and likely returned false positives in project data. In this case, the individual keyword would be tightened to limit the risk of returning false positives in the final dataset. Similarly, keywords which returned a low number of occurrences were reviewed and loosened if necessary.

3. Iteration and manual checks – The developed keywords went through several rounds of iteration before being used to produce the final dataset. While our increased sensitivity and the uniqueness of each keyword helped to mitigate against the risk of false positives, it was not possible to completely prevent such results from being returned. To address this, the final data for each sector was rigorously reviewed and manually re-categorized or excluded if the screening process returned an incorrect result.

4. Proportionality – Tracking finance for super pollutant abatement solutions is not always straightforward, as it is often embedded within financial packages for broader climate- and nature-based programs. This can make it particularly difficult to accurately track financial flows, as project descriptions rarely provide granular detail on the amount of finance allocated to super pollutant-relevant project components. To address this (for a very small number of projects), CPI made the decision to record a portion of the total project value, rather than take its full value. See Box A.2 for how this approach was applied to ammonia production for the maritime sector.

Box A.2: Attributing super pollutant finance from production of alternative fuels

Using alternative low-carbon fuels significantly reduces super pollutant emissions in the maritime sector by reducing the combustion of heavy fuel oil. The abatement taxonomy includes alternative fuels, with benefits for CO, NMVOCs, NOx, $PM_{2.5}$, and BC.[57]

Core datasets provide comprehensive coverage of alternative low-carbon fuel production, gathered through keyword screening for included fuels. However, fuel production assets often serve multiple end uses, and only the maritime-relevant portion is classified as super pollutant abatement finance in the shipping sector. CPI has developed a pilot methodology to estimate the share of low-carbon fuel production investment relevant to the maritime sector by combining rigorous manual checks with external fuel demand scenarios.

[57] For example, see CCAC (2019a) for information on black carbon abatement.

Box A.2 *(cont.)*

Projects are first assessed in three steps:

1. **Projects dedicated to non-maritime uses** are excluded, e.g., projects dedicated to sustainable aviation fuel or fertilizer.
2. **Projects with clear evidence of dedicated maritime** fuel supply are included in full.
3. **Projects with unclear end-use allocation are split** using the maritime sector's projected share of total demand for the relevant fuel, according to reputable scenarios.

The methodology would ideally draw demand scenarios from a single source, so external scenario assumptions are consistent. However, no such single resource was found to provide consistent 2030 demand shares across all relevant fuels—the methodology therefore uses the most appropriate available external scenario for each fuel type, prioritizing 2030 net-zero or 1.5 °C-aligned scenarios for hydrogen and ammonia:

a) **For green ammonia,** the methodology applies an **11 percent maritime share** to projects, based on the IRENA 2030 1.5 °C ammonia demand scenario (IRENA 2022).

b) **For green hydrogen-only projects,** direct onboard use is assumed to be negligible, based on the Lloyd's Register (Raucci et al. 2023) scenarios, unless project evidence shows otherwise. Hydrogen investment is therefore allocated to the maritime sector through the ammonia production pathway. The share of hydrogen used for ammonia production in Lloyd's Register (Raucci et al. 2023) is multiplied by the maritime share of ammonia demand (IRENA 2022), resulting in a **0.8 percent maritime allocation**. Green hydrogen can also serve as a feedstock for shipping-relevant synthetic fuels, particularly e-methanol. However, because the full value of e-methanol production facilities is treated as maritime-relevant (see d), hydrogen supplied to e-methanol production is excluded from the split calculation to avoid double counting and maintain a conservative estimate.

c) **For joint green hydrogen and ammonia projects,** hydrogen is assumed to be an ammonia feedstock, and an 11 percent ammonia split is applied to the whole project.

d) **For e-methanol,** the shipping sector is assumed to be the main demand sector for the fuel, and therefore a 100 percent split is taken.

A.2.4 Boundaries of activity inclusion

Table A.4. Boundaries of activity inclusion

Type of project	Description	Type
Renewable energy	Renewable power-generation projects are seen as having the primary objective of abating CO_2 emissions. However, if projects directly reference 'replacing' fossil fuel projects, direct benefits are present – and projects are included as a 'targeted' measure.	Inclusion criteria
Electric vehicles	Projects are seen to have the primary objective of abating CO_2 emissions.	Additional beneficial measure
Energy efficiency measures		
Public transport and metro		
Behavior changes		
Policy and capacity building	CPI considers policy support and capacity building for climate finance. Relevant projects are assigned to taxonomy activities and tagged for policy and capacity building.	Included and tagged

A.3 Methane investment cost estimates

This report provides insights into the status of progress on methane mitigation and the remaining gap to the 2030 GMP target, following the figures highlighted in the *Global Methane Status Report* (UNEP 2025a), which draws on estimates of the International Institute for Applied Systems Analysis' (IIASA) Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS) model (IIASA 2025; Höglund-Isaksson et al. 2023).[58]

According to GAINS estimates, annual net costs by 2030 to implement NDCs & MAPs measures are around US$ 29 billion per year. However, implementation of these measures alone is not sufficient to achieve the GMP goals, and in reality, much more investment is needed (UNEP 2025a).

Annual costs up to 2030 to implement the maximum technically feasible reduction (MTFR) scenario are estimated at US$ 127 billion per year (Table A.5). The MTFR scenario assesses the impact of maximum technically feasible reduction, through implementation of more than 40 existing methane control technologies. It excludes high-cost measures above an average abatement cost of US$ 15,000 per tonne of methane (i.e., above US$ 500 per tCO_2e). The scenario assumes a full technical potential implemented from 2030 and beyond, although for some measures the full impact on emissions appears with a delay, for example, targeted breeding of livestock and upgrades of landfills.

[58] The GAINS model is an integrated assessment model that analyses cost-effective methane reduction strategies across sectors and regions. The model offers unit abatement cost data, annualized over the equipment lifetime, broken down by upfront investment and operations and maintenance (O&M) costs, and accounting for estimated electricity and gas savings.

Table A.5. Annual cost and energy savings estimates by 2030, 2040, and 2050 (US$ billion per year)

Sectors	NDCs & MAPs scenario	MTFR scenario			
	Annual net cost	Annual net cost	Annual investment cost	Annual O&M cost	Annual electricity or gas savings
2030					
Total	**29**	**127**	**122**	**101**	**-96**
Fossil fuels	12	98	96	42	-40
Agriculture	17	38	13	54	-29
Waste	0	-9	13	5	-27
2040					
Total	**48**	**142**	**139**	**125**	**-122**
Fossil fuels	12	109	110	45	-47
Agriculture	40	61	12	70	-21
Waste	-4	-28	16	10	-54
2050					
Total	**51**	**213**	**213**	**214**	**-213**
Fossil fuels	11	126	132	44	-49
Agriculture	44	67	13	77	-23
Waste	-4	20	93	5	-141

Notes: Adapted from *Global Methane Status Report* Table 5.1 (UNEP 2025a)

CPI's tracked finance flows are broadly comparable to the annual investment cost component of these estimates. Therefore, total tracked methane abatement flows are benchmarked against approximately US$ 29 billion in annual investment costs by 2030 associated with the NDCs & MAPs scenario and US$ 122 billion in annual investment costs by 2030 associated with implementing the MTFR scenario.

A.4 Sector-specific priorities and examples of implementation

Table A.6. Priority actions by sector and additional sector examples

Main abatement measures	Examples of implementation
Waste	
Scale organic waste diversion, landfill gas capture, waste separation, recycling, wastewater treatment, sludge management, and biogas recovery. Reduce open burning and shift investment beyond downstream waste-to-energy toward waste-hierarchy-aligned solutions. Distinguish between solid waste, for which private finance may be more viable, and wastewater, for which public finance remains central. Leverage modeling and MRV tools to identify priority interventions, quantify expected emissions reductions, and build credible investment cases that can attract public and private finance.	The Solid Waste Emissions Estimation Tool (SWEET) can support emissions estimation and comparison of waste interventions at project, source, and city scale (GMI 2025). SWEET's measurements are helping cities access climate finance, equipping them with solid data that offers proof of what they can achieve with funding (CCAC 2020). IFC Circularity Plus supports private waste management companies and municipalities with advisory and pre-investment services to assess markets, regulation, technologies and business models, alongside access to IFC financing for recycling, resource recovery and energy-from-waste solutions (IFC 2026).
Transport	
Strengthen soot-free standards, fuel quality standards, emissions controls, inspection and maintenance systems, clean air zones, public transport, BRT, fleet renewal, and phase-out of high-emitting vehicles. For maritime transport, support cleaner fuels, operational efficiency, and port-linked fuel supply chains where they deliver clear abatement benefits.	CCAC's soot-free bus initiative assessed financing needs, lifecycle costs, bus acquisition options and available financing sources for fleet transitions in 20 cities (CCAC 2017). ZEBRA supports cities to develop deployment strategies, procurement pipelines and context-specific financing mechanisms, and secured commitments from investors to make more than US$ 1 billion available for well-prepared zero-emission bus projects in Latin America (Thorpe 2025).
Agriculture	
Develop finance-ready pipelines for manure management, biodigesters, rice methane reduction, enteric methane solutions, fertilizer-related emission reduction, and alternatives to open burning. Strengthen extension services and link climate, productivity, resilience, and health benefits.	Embrapa's Carbon Neutral Brazilian Beef protocol links integrated livestock–forestry systems to a certification label and access to credit under Brazil's ABC low-carbon agriculture plan. It also highlights higher implementation costs and periods of negative cash flow as barriers to farm-level adoption (Alves et al. 2017). Happy Seeder illustrates how machinery subsidies and custom-hiring centers can lower upfront costs and expand farmers' access to alternatives to crop-residue burning. India committed INR 11.52 billion to machinery banks, with financial assistance covering up to 80 percent of project costs for eligible farmer groups and 50 percent of machinery costs for individual farmers (CCAFS 2019; ACIAR 2018).

Main abatement measures	Examples of implementation
LULUCF	
Scale fire prevention, forest and peatland fire monitoring, early warning systems, community-based fire management, and restoration of fire-affected landscapes. Improve the ability to identify and track super pollutant benefits within broader forestry, resilience, and conservation programs.	The US$ 400 million Türkiye Climate Resilient Forests Project illustrates how development finance can support integrated wildfire prevention, early detection, response capacity and restoration at scale. Investments include digital fire-prediction and resource-allocation systems, unmanned detection towers, fuel management, firefighter training and the restoration of burned landscapes. Although the project does not explicitly track black carbon, reducing the frequency and severity of wildfires can deliver black carbon and wider air-quality co-benefits alongside its stated resilience and CO_2 objectives (World Bank 2024).
Industry	
Support Kigali-aligned HFC phase-down, refrigerant management, low-GWP alternatives, servicing capacity, cooling efficiency, cleaner brick production, emissions standards, and industrial pollution controls. Pay particular attention to SMEs and informal or artisanal production systems where upfront costs and compliance barriers are high.	The Multilateral Fund under the Kigali Amendment illustrates how dedicated funding channels can support HFC phase-down planning and investment (MLF 2024). Cleaner brick production in Bangladesh led by the Infrastructure Development Company Limited, a government-owned, non-bank financial institution, has a development mandate to stimulate the use of new kilns in Bangladesh with the goal of replacing current polluting technologies with low-emission, energy-efficient ones under its Green Brick Programme (CCAC 2019b).
Energy generation	
Prioritize direct replacement of high-emitting fossil generation, targeted fuel switching, emissions controls, renewable energy deployment where fossil displacement is clear, and reduced transmission and distribution losses. Improve methodologies for identifying when renewable energy, energy efficiency, or grid investments directly reduce super pollutant emissions.	Direct replacement of fossil generation with renewable energy can provide super pollutant benefits where displacement is evidenced. The UK's last coal-fired power plant, Ratcliffe-on-Soar in Nottinghamshire, was closed in 2024, ending a 142-year era of burning coal to generate electricity due to the introduction of a rising minimum carbon price, policy support for wind power, market reforms and investments and innovations in the grid (Ember 2024a).
Residential	
Scale clean cooking, cleaner heating, kerosene replacement, improved stoves, cleaner fuels, household solar, and solar water heaters where these directly displace polluting fuels. Pair technology deployment with affordability support, consumer finance, distribution networks, and gender-responsive delivery models.	The Clean Cooking Accelerator Initiative illustrates how grant-funded capacity building, technical assistance and catalytic capital can help develop investment-ready clean cooking pipelines in Africa. The initiative will deploy fast-track priority projects toward bankability, strengthen fuel, appliance and distribution supply chains, and develop enabling infrastructure and investment vehicles intended to crowd in private capital (The Rockefeller Foundation 2026).
Fossil fuel extraction, processing, and distribution	
Scale leak detection and repair, measurement-based reporting, flaring and venting reduction, gas capture and utilization, coal mine methane recovery, and stronger regulation and enforcement. Ensure support is limited to genuine abatement in existing systems and avoids fossil fuel expansion or lock-in, especially through regulatory incentives for corporates to invest their own resources in reducing super pollutants in their own supply chains.	The Permian Basin in New Mexico methane case can be used as an operational example linking regulation, monitoring, reduced emissions, and recovered gas value (MethaneSAT 2025; Environmental Defense Fund 2025). Methane debt-structuring guidance can also be referenced as a practical route for integrating methane abatement into oil and gas finance (Methane Finance Working Group 2025).

A.5 Distribution of abatement flows across super pollutants

Table A.7. Distribution of abatement flows across super pollutants

Super pollutants	Percentage of flows
CH_4 (methane)	59 percent
N_2O (nitrous oxide)	14 percent
NMVOCs (non-methane volatile organic compounds)	41 percent
CO (carbon monoxide)	39 percent
$PM_{2.5}$	40 percent
BC (black carbon)	40 percent
HFCs (hydrofluorocarbons)	1 percent
NO_x (nitrogen oxides)	39 percent

Note: Because individual projects may target more than one super pollutant, the categories are not mutually exclusive, and the percentages therefore sum to more than 100 percent.

About Climate and Clean Air Coalition

The Climate and Clean Air Coalition (CCAC) is a partnership of over 200 governments, intergovernmental organizations, and non-governmental organizations committed to protecting the climate and improving air quality through actions to reduce the super pollutants which are short-lived in the atmosphere: methane, black carbon, tropospheric ozone and hydrofluorocarbons (HFCs), through a practical, measures-based approach. The Coalition's work is grounded in robust science and analysis and supported by a dedicated Trust Fund, which together have fostered high-level political commitment, in-country implementation, and tools that strengthen the case for action and accelerate action and results. The CCAC Secretariat and Trust Fund are hosted by the UN Environment Programme (UNEP).

About Climate Policy Initiative

CPI is an analysis and advisory organization with deep expertise in finance and policy. Our mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change. CPI has offices in Austria, Brazil, India, Indonesia, South Africa, the United Kingdom of Great Britain and Northern Ireland, and the United States of America.

CLIMATE & CLEAN AIR COALITION
TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS
a UNEP convened initiative

CLIMATE POLICY INITIATIVE