



Leading the path towards methane abatement

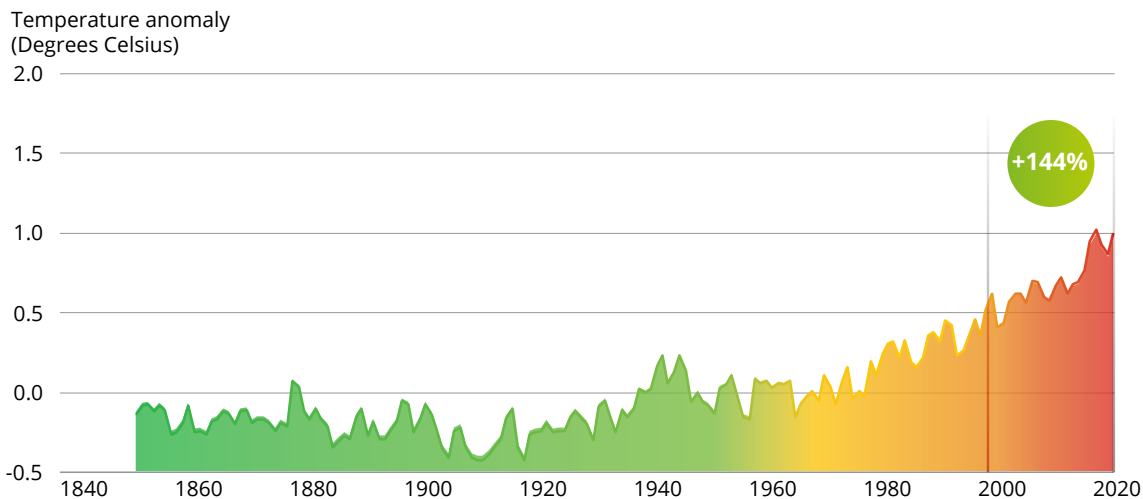
The GCC's big-ticket of decarbonization

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Section 1 - Introduction to the global case for Methane abatement

In July 2023, the United Nations (UN) unveiled the term 'Global Boiling' instead of 'Global Warming', highlighting the urgency of the situation for our planet. Just over the past two decades, we have recorded a 144% increase in global temperature anomalies¹ as shown in Figure 1.

Figure 1: The annual land and ocean temperature anomalies in degrees Celsius from 1850 to 2020²



Source: National Oceanic and Atmospheric Administration

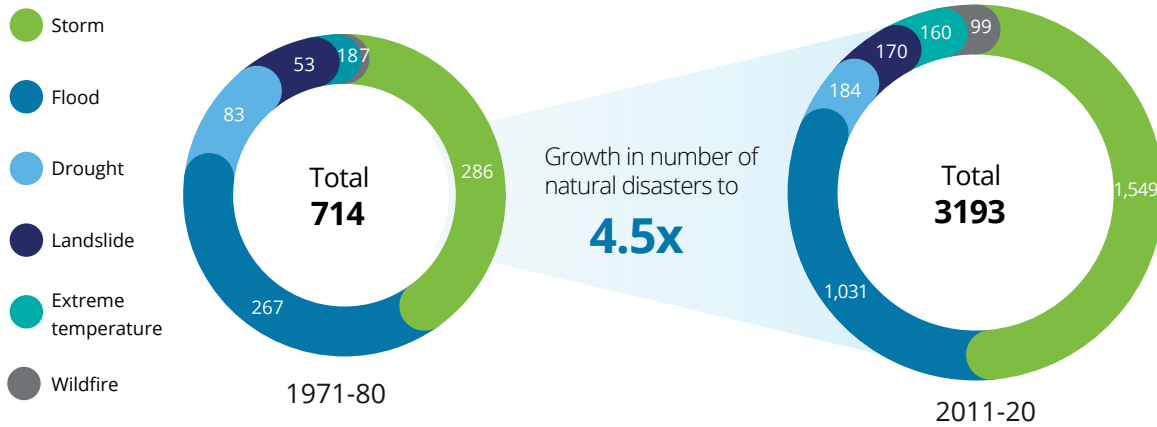
Natural disasters, previously deemed as 'once-in-a-century' events, have become 4.5 times more frequent over the past 40 years³ as shown in Figure 2, thereby painting a picture that calls for immediate action.

¹ Global temperature anomaly is the year-on-year change in the average global temperatures

² [National Oceanic and Atmospheric Administration](#)

³ [The International Disaster Database](#)

Figure 2: Frequency of key natural disasters in the seventies vis-a-vis the past decade³ (Non-exhaustive)

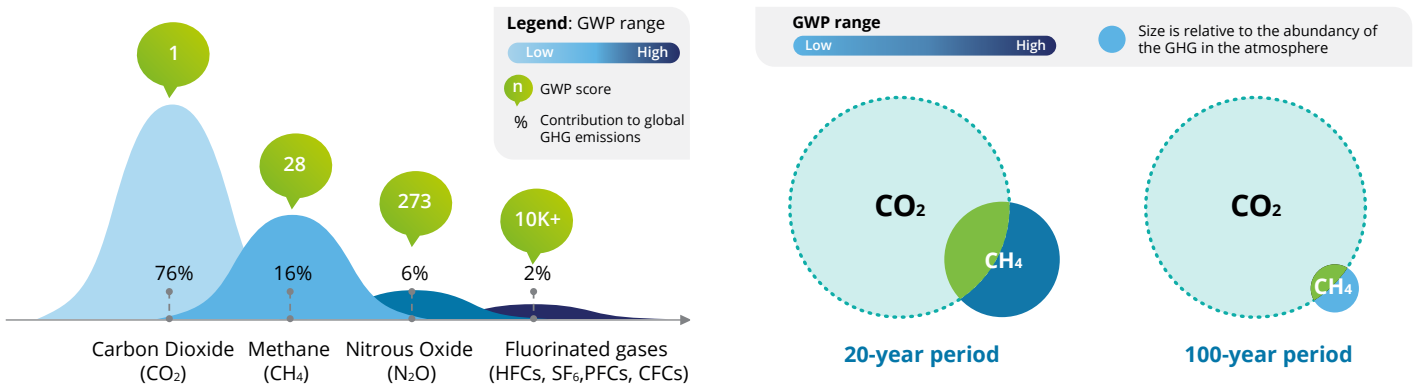


Source: The International Disaster Database

It is no surprise that the major cause of these natural phenomena is greenhouse gas (GHG) emissions. Within this broad category of GHG emissions, Methane (CH₄) is a gas of significant concern. Its numbers are eye-opening, seeing as in the last 100 years, its global warming potential (GWP) towers at 27-30 times⁴ that of carbon dioxide (CO₂). Narrowing the window to a 20-year timeframe, this number jumps to 81-83 times⁴ more impactful relative to CO₂ as shown in Figure 3. Despite this, global mitigation efforts predominantly focus on CO₂, largely because its volume in the atmosphere is nearly 128 - 143 times⁵ that of Methane depending on the timeframe under study.

Methane's global warming potential towers at 27-30 times that of carbon dioxide

Figure 3: Contribution to global GHG emissions & GWP per GHG (left)⁶, GWP for methane over 20 years vs. over 100 years (right)⁴



Source: EPA, IEA, Climatewatch, Monitor Deloitte Analysis

⁴ EPA ; Note: In this paper, for all Monitor Deloitte Analysis calculations, GWP of 28 will be used for Methane

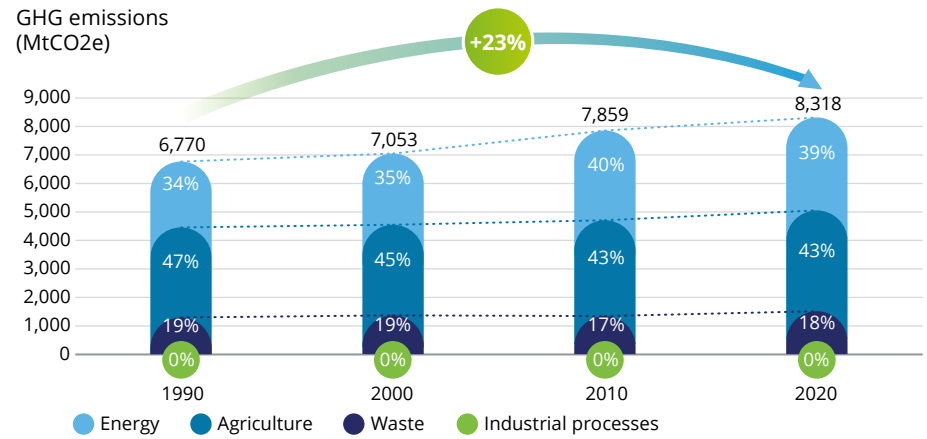
⁵ Monitor Deloitte Analysis, based on emissions raw data from [Climatewatch](#) and [EPA](#)

⁶ Monitor Deloitte Analysis, based on raw data from [Climatewatch](#) and [IEA](#)

Though present in smaller quantities, methane has sources from mature industries, with principal contributors such as energy, agriculture, waste, and industrial processes.

Though present in smaller quantities, methane has sources from mature industries, with principal contributors such as energy, agriculture, waste, and industrial processes. Over the past three decades, the cumulative Methane emissions from the aforementioned industries grew by around 23% as shown in Figure 4.

Figure 4: Global methane emissions over the past 3 decades⁷

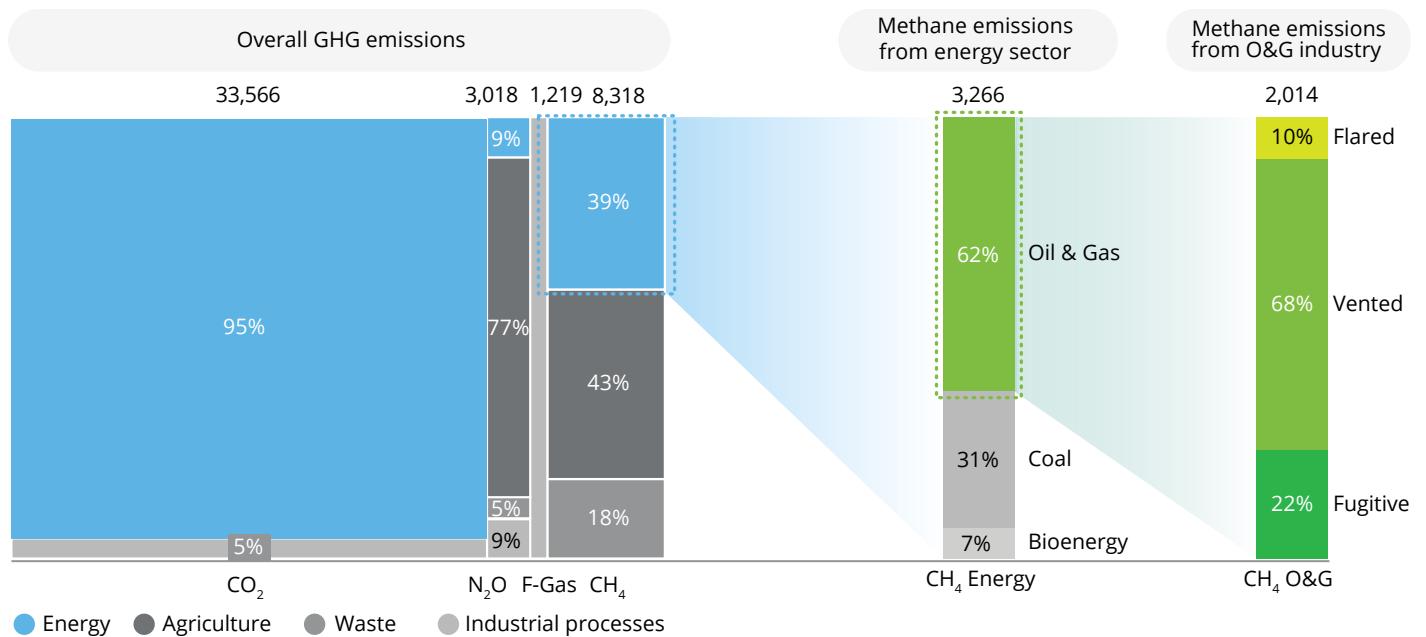


Source: Climatewatch, Monitor Deloitte Analysis

Section 2 - Within the global Methane emissions picture, the O&G Industry plays a critical role

The energy sector, which is the primary driver in terms of contribution and growth across the past three decades, is responsible for approximately 39% of the annual global Methane emissions as shown in Figure 5. To put these numbers into perspective, on a global scale, the Methane emissions originating from the energy sector alone account for an estimated 7% of the total GHG emissions as shown in Figure 5.

Figure 5: Proportion of global GHG emissions by gas type and sector, industry, and source (in % and MtCO2e)⁸



Source: Climatewatch, IEA, Monitor Deloitte Analysis

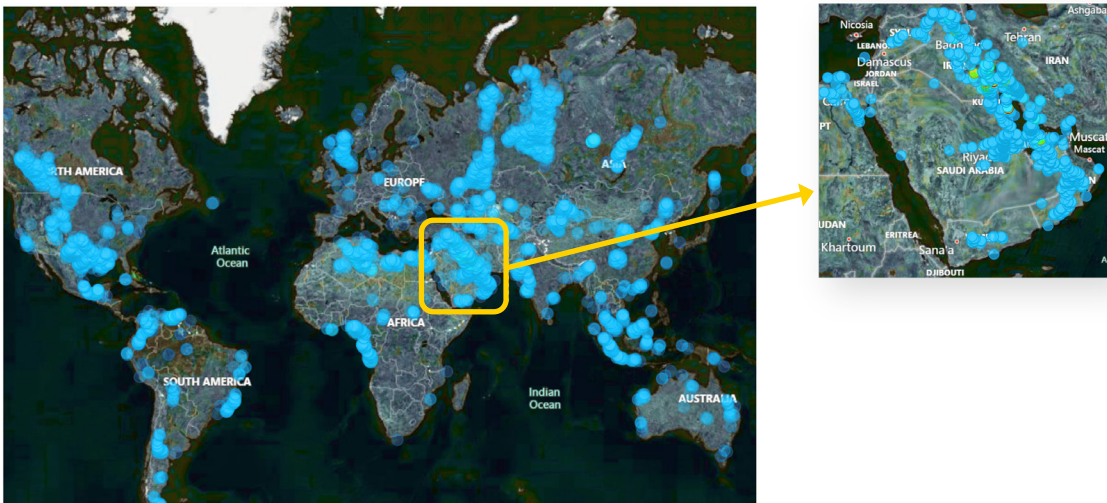
⁷ Monitor Deloitte analysis, based on raw data from [Climatewatch](#).

⁸ Monitor Deloitte analysis, based on raw data from [Climatewatch](#) (Link) and [IEA](#).

Within the energy sector, the Oil & Gas (O&G) industry accounts for 62% of Methane emissions as shown in Figure 5. These emissions are linked to the practices of gas venting, gas flaring, and fugitive emissions. The ramifications are considerable, resulting in around 2,014 MtCO₂e⁷ Methane emissions which is ~24%⁷ of the overall Methane emissions or ~4%⁷ of global GHG emissions.

Furthermore, it is noteworthy that the geographical distribution of Methane emissions due to venting and flaring is confined to the areas surrounding O&G facilities as shown in Figure 6. This geographical concentration significantly magnifies the impact of any endeavors aimed at Methane abatement. The effective management of Methane venting and flaring holds promising potential.

Figure 6: Localization of methane emissions showing the concentration of methane emissions in the GCC+ region⁹



Source: The World Bank

In terms of scale, the quantity of flared, vented, and fugitive Methane emissions globally could potentially power the entirety of sub-Saharan Africa¹⁰. This emphasizes the compelling rationale for addressing

gas flaring, venting, and fugitive emissions not only from an environmental standpoint but also in terms of the immense untapped energy resource that could be reclaimed to harness lost economic value.

Section 3 - Methane abatement in the GCC+ is equivalent to decarbonizing an entire industry

The O&G sector in the GCC+¹¹ region plays a pivotal role as a driver of the region's economic engine but also as a driver of 'global boiling'. Specifically, this powerhouse sector contributes to more than 50%¹² of local fiscal revenues of the GCC+ region while being responsible for ~19%¹³ of the world's flared, vented, and fugitive Methane emissions.

different estimations from different data sources. Putting together all the data sources, we identified a significant variance in GCC+ Methane emissions from the O&G sector, with a wide range from 0.7% to 1.8% of Global GHG emissions. To put this in perspective, abating Methane from the O&G industry in the GCC+ region is equivalent to abating the GHG emissions of an entire industry as demonstrated in the scenarios in Figure 7.

There is no single source of truth for Methane tracking and reporting in the GCC+ region, but there are

⁹ [The World Bank](#)

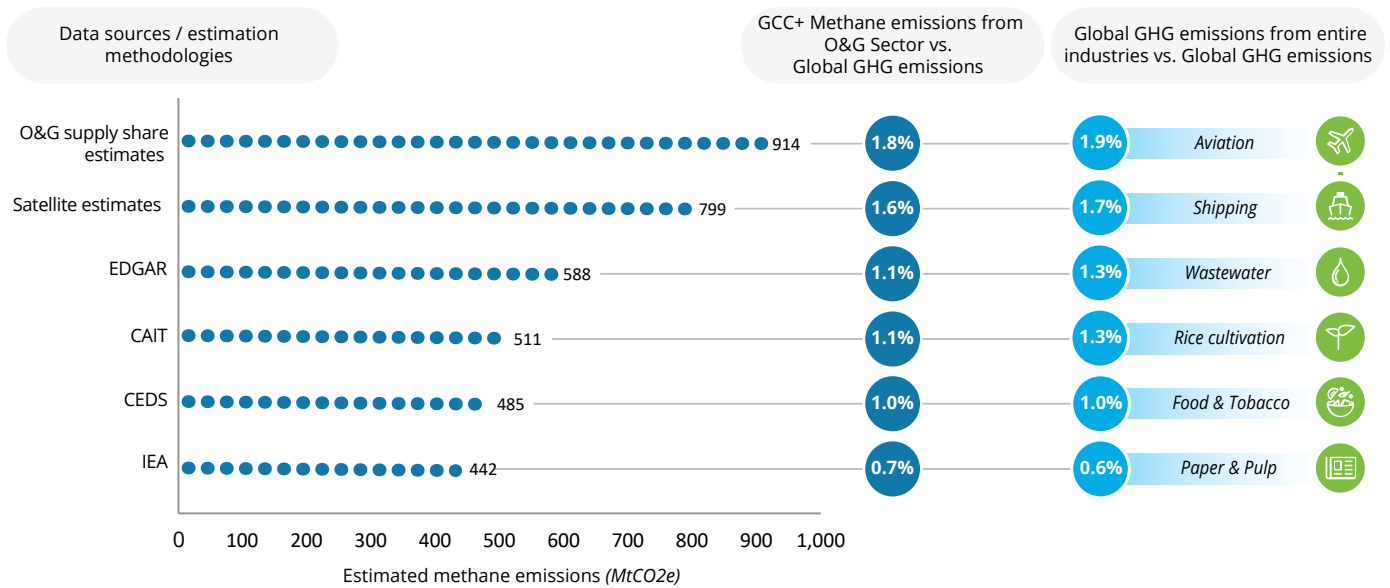
¹⁰ [The World Bank](#)

¹¹ The GCC+ region include Iran and Iraq in addition to GCC countries

¹² [Impact of the Oil Industry Crisis on the GCC and potential responses, Monitor Deloitte Thought Leadership, 2020.](#)

¹³ [Monitor Deloitte Analysis, based on raw data from IEA](#)

Figure 7: Estimated methane emissions from O&G sector in the GCC+ countries vs. Global GHG emissions calculated from different sources, in comparison with global GHG emissions from selected key industries¹⁴



Source: O&G Supply Share, MethaneSAT Satellite Estimates, EDGAR, Climatewatch, CAIT, CEDS, IEA, Ourworldindata, Monitor Deloitte Analysis

Abating methane from the O&G industry in the GCC+ is similar to completely decarbonizing an entire global industry.

For the GCC+ to achieve its climate goals, there must be a collaborative focus on countering regional Methane emissions.

This insight paints a vivid picture: Focusing on abating methane from the O&G industry in the GCC+ is similar to completely decarbonizing an entire global industry like Aviation, Shipping, Wastewater, Rice cultivation, Food & Tobacco or Paper & Pulp as shown in Figure 7. Such an undertaking not only holds great potential but also, in many ways, might be more achievable based on the available and tested technologies in a mature industry. This argument gains momentum when seen in the context of the ambitious climate goals to abate Methane made by participants of the Global Methane Pledge (GMP), which also includes key GCC+ countries¹⁵.

The GCC+, which stands at a critical juncture, has embarked on several proactive steps, framing national policies, carving out strategic pathways in the energy domain, and forging ties through global collaborations. However, it's unmistakably clear that for the GCC+ to achieve its climate goals, there must be a collaborative focus on countering regional Methane emissions. As we approach COP28, the key question that the GCC+ countries face is how to approach the Methane abatement conundrum to effectively, economically, and sustainably address this big ticket while capturing lost economic value.

¹⁴ Monitor Deloitte Analysis, based on Raw data from O&G Supply Share, MethaneSAT Satellite Estimates, EDGAR, Climatewatch, CAIT, CEDS, IEA, Ourworldindata

¹⁵ [Global Methane Pledge](#)

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