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Effects of Methane Gas Leaks on Environmental Sustainability and Climate Change Control

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***Abstract-** methane (ch 4) is a potent greenhouse gas that is very critical in global warming and climate change. although its concentration in the atmosphere is lower than that of carbon dioxide (co 2), methane has a global warming potential that is 25 times that of co 2 when considering its 100-year concentration. methane sources through oil and gas mining, agriculture, and waste management are the major contributors to environmental degradation, aggravation of air quality, and climate change acceleration. this essay discusses the environmental and climatic effects of leakage of methane gases, and why effective detection and mitigation measures are necessary. the paper is an overview of the available technology in methane monitoring, the current mitigation strategies, and the policy frameworks that are in place to mitigate the emission of methane. the difficulty of identifying and addressing the leak, and the different success of the policy interventions applied to different regions is also addressed. the article concludes that the problem of methane emissions is important in realizing global climate goals and environmental sustainability in the long run.*

***Keywords:** Methane (CH 4), Greenhouse Gas(s), Climate Change, Global Warming Potential, Environmental Sustainability, Methane Detection Technologies, Leak Mitigation Technologies, Climate Policy, Air Quality.*

I. INTRODUCTION

Methane (CH_4) is a strong green house gas that is one of the main contributors of global warming and climate change. It is mostly emitted in natural ways like wetlands and man-made ways like fossil fuel mining, agriculture, and garbage disposal. Despite the fact that methane is not as prevalent in the atmosphere as carbon dioxide (CO_2), it has a greater global warming capacity because it is 25 times more effective in surrounding atmospheric heat over a 100-year interval (Anenberg et al., 2012). Consequently, the warming of the climate on the planet due to the leakage of methane, even minor ones can affect it unevenly, worsening the greenhouse effect and increasing the process of global warming (Nisbet et al., 2020).

Methane and her role in the acceleration of climate change has been critical especially in view of the global attempts at reducing the emission of greenhouse gases. Leakage of methane through oil and gas facilities, natural gas plants and agricultural operations is a major source of emission so it is one of the main areas of focus in climate change mitigation efforts. These leaks of methane not only increase global temperatures but also damage ecosystems, contributing to more effort to attain environmental and climate sustainability but also deteriorating air quality (Nwakile et al., 2024). The oil and gas sector contributes a significant percentage of the worldwide methane gases, with the pipeline leakages, drilling processes, and storage areas being among the key sources of the harmful gas (Lu et al., 2025).

It is necessary to reduce the emission of methane to control the global warming and save the environment. Mitigation of some of these emissions e.g. through better detection technologies, the application of methane capture systems and through regulatory policies is becoming more manifest. Nevertheless, there are still quite serious concerns in terms of monitoring and controlling the leaks of methane globally. Addressing these leaks is both essential towards meeting the climate objectives and for improving the quality of the air, sustainable energy systems, and the biodiversity.

In this paper, it will discuss how the leakage of methane gas impacts the sustainability of the environment and the climate change. Through assessment of the causes, effects and existing measures to control this, we will give a holistic idea of the contribution of the methane emissions to global warming and how they can be controlled

II. LITERATURE REVIEW

Emission of methane has been researched in many sectors and this has greatly contributed to the degradation of the environment. Historically, the natural gas extraction, agriculture, and industrial processes were listed as the areas where the leakage of methane is recorded (Molnár, 2018; Anifowose and Odubela, 2015). Oil and gas industry especially has been a great source of methane emission and the leaks in pipeline and facilities are one of the most notable causes. Also, agricultural practices, which include livestock production and rice cultivation, emit large quantities of methane to the atmosphere.

The role of methane in the global emissions is significant, and its impact on the atmosphere is deep. Research has revealed that methane is the second most common greenhouse gas after carbon dioxide and it has contributed a considerable percentage of global warming (Howarth, 2021; Reay et al., 2018). The fact that it has a high global warming potential, which is severally higher than that of CO 2, in the short term, increases its contribution to climate change and its reduction is therefore critical in the realization of global climate objectives.

Long-term and short-term impacts of methane on climatic change have been very well documented. Methane plays a major role in increasing global temperatures in the short term but in the long term, its ability to endure in the atmosphere is associated with its impact (Aksyutin et al., 2019; Shindell et al., 2021). The effects have highlighted the need to integrate effective mitigation measures.

Although there have been thorough studies on the emission of methane, there are a number of gaps that are yet to be filled on its overall environmental and climatic effects. The sources and mechanisms of detection and the long-term mitigation strategies of the sources of methane emissions require more research (Brandt et al., 2016; Alvarez et al., 2012). To come up with effective solutions to mitigate the effects of methane on the climate change, it is important to address these gaps.

III. METHANE GAS LEAKS AS AN AFFECTED ENVIRONMENTAL SUSTAINABILITY.

The issue of methane gas leakage has both direct and indirect environmental impact, which are considered to be dangerous to the ecological balance and cause global climate change. The direct influence of methane on the environment is best realized in its contribution as one of the strong green house gases. Once it gets into the air, the methane takes infrared rays which increase the greenhouse effect and global warming. This increases the world temperatures, thereby increasing the speed of melting glaciers, sea levels, and extreme weather conditions (Lu et al., 2025). Methane leaks indirectly reduce the quality of the air, in that it interacts with other atmospheric gases, including nitrogen oxides, to produce ground-level ozone, a damaging air pollutant. This not only worsens the quality of the air, but it also contributes to respiratory challenges and other health complications in human beings and other animal species (Fasasi et al., 2023).

The fact that methane is a greenhouse gas is especially worrying because its capacity to cause global warming is 25 times higher than carbon dioxide in a 100-year time span (Reay et al., 2018). The trapping potential of methane is extremely strong, hence even minor leakages would have an overbearing impact on global warming and therefore, it is an essential source of emission cuts. Methane has a more significantly acute warming effect in the short term, increasing the rate of climate change and increasing the hazards associated with climate changes to drought, floods, and wildfires.

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Table 1: Environmental impact of methane compared to other greenhouse gases (CO 2, NOx, etc.)

Gas	Global Warming Potential (GWP)	Atmospheric Lifetime	Primary Sources	Environmental Impact
Methane (CH_4)	25 (over 100 years)	12 years	Oil and gas production, agriculture, landfills	High global warming potential, contributes to global warming and ozone formation, impacts air quality
Carbon Dioxide (CO_2)	1	50-200 years	Fossil fuel burning, deforestation	Major contributor to the greenhouse effect, long-term impact on global warming
Nitrous Oxide (N_2O)	298	114 years	Agriculture (fertilizer use), fossil fuel combustion	Powerful greenhouse gas, significant contributor to ozone layer depletion and warming
Nitrogen Oxides (NOx)	N/A	Days to weeks	Fossil fuel combustion, vehicle emissions	Contributes to air pollution, acid rain, and ground-level ozone formation, indirectly influences climate change

Methane emissions therefore need to be tackled so as to reduce global warming, maintain the quality of air, as well as prevent further deterioration of ecosystems. The leakage of methane is an action that is important to reduce in order to have a long-term environmental sustainability and climate change is checked.

IV. EFFECT OF METHANE GAS LEAKS IN ENVIRONMENTAL SUSTAINABILITY.

Methane gas leakages have direct and indirect environmental impacts that are majorly felt in the atmosphere and within the ecosystem. The first environmental impacts that are direct are the contribution of methane as an effective greenhouse gas because this gas has a much higher potential of trapping the heat in the atmosphere compared to carbon dioxide. The global warming potential of methane is about 25 times higher than that of CO 2 in a period of 100 years (Reay et al., 2018). This is a strong green house effect that increases the rate of global warming, which has led to the escalation of extreme weather conditions, such as droughts, floods, and hurricanes. Ground-level ozone, a damaging air pollutant, is also formed because of methane and negatively affects the quality of air and increases respiratory problems in people and animals (Fasasi et al., 2023).

Methane leakages can interfere with systems indirectly. Releasing the methane gas into the atmosphere causes a reaction with the other chemicals in the atmosphere including nitrogen oxides, resulting in the formation of particulate matter and the ozone, which in turn can harm the ecosystem by damaging the plant growth, the quality of soil, and the water sources. Also, the production of methane by agricultural and livestock activities can cause nutrient disturbance in the immediate environment, which also interferes with biodiversity (Lu et al., 2025).

Methane is an important contributor in global warming in terms of greenhouse gases, particularly due to its greater short-term effectiveness than that of CO 2. Although CO 2 has greater atmospheric lifetime, the greater heat-trapping capacity of methane causes it to become a more significant contributor to climate change in the short run (Reay et al., 2018). This implies that the short term climate objectives in terms of reducing the emission of methane would be essential as the mitigation of methane leaks can substantially decrease the pace of global warming.

V. CONTROL OF CLIMATE CHANGE AND METHANE LEAKS.

Methane is also a major cause of climate change because it has a great global warming capacity (GWP).

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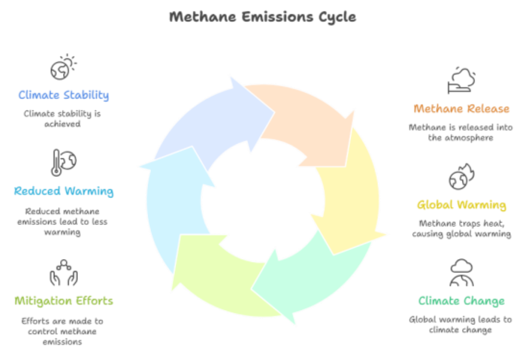
Methane is considered among the most dangerous greenhouse gases in the short run with its ability to trap heat in the atmosphere and an approximate of 84 times that of carbon dioxide (Anenberg et al., 2012). Although, the atmospheric lifetime of methane is relatively shorter than that of CO 2, its direct impact on global warming is huge, and this plays a key role in increasing the rate of climate change. Consequently, the issue of methane leaks needs to be discussed as a means of short-term climate risks reduction, especially when the temperature on Earth increases rapidly, and the process of climate warming must be restricted to 1.5°C as provided in the Paris Agreement (Shindell et al., 2021).

Nevertheless, the reduction of methane leaks has a variety of technical and policy issues. In the technical sense, it may be challenging to detect and fix methane leakages, with most of them being found on inaccessible locations in old infrastructure, including oil and gas pipelines, storage tanks, and in natural gas distribution systems (Fetisov et al., 2023). In addition, the absence of real-time monitoring sensors on methane emissions further complicates the process of detecting and measuring the leaks correctly. Policy-wise, an uneven distribution of regulations in different areas, the lack of enforcement strategies, and the model of international methane reduction policies make it difficult to properly manage methane emissions (Hildebrandt and Marszowski, 2024). There is also the economic barrier of the cost of detecting and repairing leaks especially in developing countries where the resources to mitigate against methane are scarce.

The leakage of methane will discourage the objectives of climate control programs. Since the methane gas is a short-lived but highly effective greenhouse gas, its emissions have a disproportional effect on the rate of global warming. The fight against global warming is sabotaged by persistent methane escapes in the atmosphere through oil and gas, agriculture, and waste management companies (Nisbet et al., 2020). Global warming will persist due to the emission of methane, which is difficult to, without extensive mitigation strategies, reach the international climate goals (Molnár, 2018). Consequently, the prediction of methane gases plays a vital role to achieve global climate goals and reduce the negative impacts of climate change.



VI. EXISTING TECHNOLOGIES AND MITIGATION MEASURES.

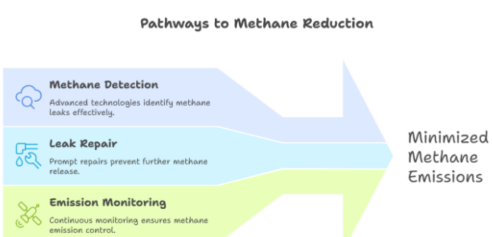
Improvement in methane detection and monitoring technologies has led to a major improvement on detecting and quantifying methane leaks. Among these technologies are those that operate on the ground, as well as those that operate on the air and on the satellites. Other methods like infrared cameras and laser systems are usually employed as a method of detecting the presence of methane plumes in real time and are more accurate and efficient in detecting the existence of leaks in pipelines and storage facilities (Alvarez et al., 2012). Also, satellite monitoring has emerged as an effective instrument to monitor large-scale methane emissions, which covers the globe and can identify emissions of both point and diffuse sources (Aksyutin et al., 2019). Such technologies make it possible to detect the leaks of methane in time and provide a quick response and minimize the harm to the environment of the emissions.

Methane leakage minimization requires the combination of equipment upgrades, approaches to repairing leaks, and leak detection systems. Leaks in aging infrastructure can be avoided through equipment upgrades, i.e. better seals, pressure-relieving valves. Moreover, pipeline replacement, which is one of the methods of repairing the leak, or the use of seals assists in reducing sources of methane emissions (Hendrick et al., 2016). The leaks can be spotted before they get out of control by installing early detection systems that use continuous monitoring technologies, and thus, repair them before they cause much damage to the environment (Anifowose & Odubela, 2015). The combined efforts play a significant role in reducing the amount of methane emission and regulate its effect on the global warming.

Table 2: summary of Methane Leak detection and mitigation technology and their efficacy.

Technology	Effectiveness	Implementation Cost	Suitability
Infrared Sensors	High - Can detect methane in real-time with high sensitivity	Medium to High - Requires specialized equipment	Suitable for oil & gas, pipelines, and agriculture
Laser-based Detection Systems	Very High - Provides long-range detection with high precision	High - Requires advanced technology and setup	Best for large-scale facilities and industrial applications
Satellite Monitoring	High - Can cover large areas and detect emissions remotely	High - Expensive setup, limited availability	Ideal for large fields, remote locations, and global monitoring
Drone-based Detection	High - Capable of inspecting difficult-to-reach areas and large areas quickly	Medium - Cost of drones and maintenance	Best for remote or difficult-to-access areas in oil & gas fields
Acoustic Methane Detection	Medium - Effective in detecting leaks from pipelines and storage tanks	Low to Medium - Cost-effective sensors, easy to implement	Suitable for natural gas infrastructure and residential areas
Continuous Monitoring Systems (IoT)	Very High - Real-time data, alerts for rapid leak response	High - Requires network infrastructure and continuous maintenance	Ideal for high-risk industries like oil & gas, landfills, and agriculture
Pump and Valve Upgrades	High - Reduces leaks at their source by improving infrastructure	Medium to High - Initial cost but offers long-term savings	Suitable for aging infrastructure in oil & gas and industrial sectors
Flare Gas Recovery Systems	Medium to High - Reduces methane emissions by capturing and burning the gas	High - Requires installation of specialized recovery units	Best suited for industrial facilities, landfills, and waste management

Diagram 2: Technologies of Methane Leak Reduction and the Environmental Impact mitigation



VII. POLICY AND REGULATORY MEASURES

International action to limit the emission of methane has been on the increase over the recent years with the international agreements like the Paris Agreement urging stricter measures of the emission of greenhouse gases. Local policies to reduce methane leakages have also been introduced by governments in form of carbon pricing and the oil and gas industry being required to use leak detection and leak repair policies (Shindell et al., 2021; Nisbet et al., 2020). Such initiatives play a crucial role in encouraging firms to go green and cut their production of methane emissions as part of the worldwide effort to combat climate change.

The policy measures are effective in curbing the emission of methane depending on the region and industry. In nations where the system is properly enforced and clear regulations are already established, the decrease in methane was even higher. Nevertheless, in those areas where regulations are not strict or are not difficult to enforce, the level of methane emissions is high, which cancels climate ambitions (Ogbowuokara et al., 2023; Brandt et al., 2014). Furthermore, the absence of international

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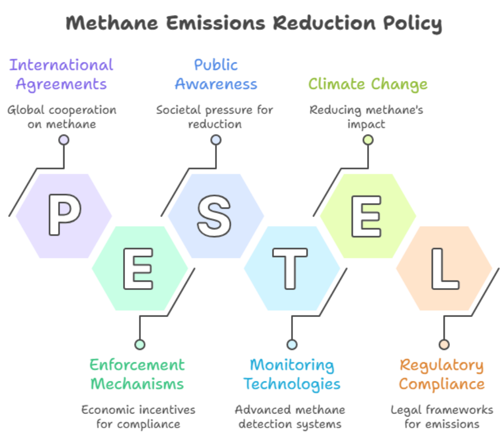
coordination in mitigation of methane has also contributed to the inconsistencies in policies and hence, making the problem more difficult.

Even though this has happened, there are still a number of obstacles to policy implementation. They also include the lack of funding of monitoring as infrastructure, opposition of industries in which compliance is too expensive, and lack of political will to create and implement laws to reduce methane (Reay et al., 2018; Milich, 1999). These barriers must be tackled in order to realize substantial decreases in the emission of methane and the success of climate policies

Diagram 3: Policy Framework and enforcement mechanisms of reduction of Methane emissions.



VIII. CASE STUDIES AND REAL-LIFE EXAMPLES.

Successful Case Studies

A number of states and businesses have gone a long way towards the elimination of methane emissions by developing novel approaches and technologies. As an example, in the United States, the Environmental Protection Agency (EPA) has collaborated with the oil and gas sector in establishing the Methane Emissions Reduction Program that aims at reducing the emission of both the new and existing infrastructure. This program has served to reduce the emission of methane through the implementation of leakage-detecting and repairing regulations, as well as increased monitoring applications (Nwakile et al., 2024). Equally, Norway has been able to incorporate carbon capture and storage (CCS) techniques in its natural gas production and thus greatly cut on the amount of methane escaping to the environment. Both nations have demonstrated significant developments in curbing the effect of methane on the environment by focusing on methane monitoring and using leakage control frameworks (Lu et al., 2025).

Aborted Efforts and Experiences.

Other attempts to curb the emission of methane have not been as effective though some areas have been enjoying that development. The example of Russia is the case where methane leakage through pipes is a major problem because of the old pipelines and lack of proper enforcement of regulations. Despite some of the measures taken by Russia concerning emissions reduction, insufficient strategy and irregular monitoring have contributed to the low success of the country in reducing methane emissions (Molnár, 2018). The other failure was in Nigeria, where the mitigation of methane was compromised by the inadequate investments in finding technologies and the absence of powerful government policies (Anifowose & Odubela, 2015). These examples underscore the need to ensure that infrastructure is strong, there is constant observance and effective regulatory frameworks to ensure that the mitigation of methane emissions is achieved.

Table 3: Cases of Methane Leak Reduction Projects in Various Regions (Success/Failure, Scale, Methods

Region	Outcome	Scale of Implementation	Methods Used	Lessons Learned
United States	Successful	Nationwide (oil and gas industry)	Leak detection and repair programs, policy enforcement	Need for consistent monitoring and industry collaboration
Norway	Successful	National (natural gas extraction)	Carbon capture and storage, real-time monitoring	Effective use of CCS but requires continuous investment
Russia	Failed	Regional (oil and gas pipelines)	Infrastructure upgrades, basic leak detection	Outdated infrastructure, lack of enforcement undermines success
Nigeria	Failed	Regional (oil and gas industry)	Basic leak detection, voluntary reporting	Lack of strong regulations and investment hindered progress

This table provides the summary of important case studies of the methane leak reduction projects with successful and unsuccessful examples. The victories emphasize the role of modern technology and the regulation, whereas the defeats emphasize the issues of antiqueness and ineffective policy structures. These lessons are important in that a global and sustained strategy towards mitigation of methane is necessary.

IX. RESULTS AND DISCUSSION

Findings

The discussion of methane gas leakages and mitigation measures brings out a number of important findings. Methane emissions contribute to climate change on a huge scale, their potential to create global warming being much greater than that of carbon dioxide particularly in the short term. The analysis of the methane detection technologies has shown that the real-time monitoring technologies such as infrared cameras and laser based sensors as well as satellite monitors are becoming effective in detecting leaks. Such technologies have proved their potential in the oil and gas industry as well as agriculture where the leak of methane is common. Also, the efficiency of leak repair technologies, including high-quality seals, pressure-relieving valves, and infrastructure improvements, can be seen in case studies of such countries as the United States and Norway where preventive measures have caused a steep decrease in emissions (Nwakile et al., 2024; Lu et al., 2025).

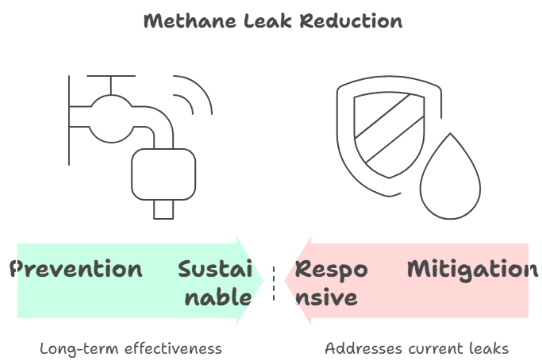
Policymaking has seen some success with global policies to control the emissions of methane like the Methane Emissions Reduction Program in the United States and international treaties like the Paris Agreement to regulate the emission levels. Nevertheless, obstacles still exist, particularly in such countries as Russia and Nigeria, where the unmodernized infrastructure, the absence of its enforcement, and insufficient investments become an obstacle (Molnár, 2018; Anifowose and Odubela, 2015).

Comparison of Strategies

The comparison of different mitigation strategies shows that a combination of technologies in terms of detection, prevention and repair is key to effectively reducing methane emissions. Prevention strategies such as infrastructure improvements are the most cost effective, in the long term sustainable. These measures help to reduce the risk of leaks occurring, and limit the emissions at their source. However, mitigation strategies, such as leak detection and repair systems, have an important role to play in solving existing leaks and limiting their effects on the environment. Although effective, these strategies are often more costly to operate and thus need more frequent monitoring.

While enforcement of policies to curb methane emissions will always be an important part of mitigating methane emissions, the effectiveness of regulatory measures differs by region. Countries with good regulatory systems and monitoring systems, such as Norway and the United States, have seen good results in methane emission reductions. Conversely, some places with weaker enforcement, like Russia and Nigeria, still experience high levels of methane leaks that make consistent implementation of the policy and measures highly important (Reay et al., 2018; Shindell et al., 2021).

Diagram 4: Success of Methane Leak Reduction Strategies (Prevention compared to Mitigation)



finally, the most effective solutions in order to substantially decrease the release of methane and to fight climate change are a multiple-faceted solution that involves prevention, mitigation, and effective enforcement of the policy. this requires the governments, industries, and technology developers to work together effectively to provide all-encompassing solutions to methane leakages and their effects on the environment.

X. FUTURE RESEARCH DIRECTIONSIDENTIFYING GAPS

Although there are considerable achievements in the study and reduction of methane emissions, a number of gaps in the research and policy need to be resolved. The absence of comprehensive data on the emission of methane, especially diffuse sources like agriculture and landfills is one of such gaps. Though, larger sources of methane in the oil and gas industry have been well-investigated, minor and diffuse sources of these sectors are not well quantified. Studies are required to enhance the procedures of measuring the emission of methane in a variety of sources with precision, particularly those that are inaccessible or remote. More longitudinal studies that can determine the overall impact of methane gas leakage over time, their effect on the quality of air, ecosystems, and the potential of global warming is also required.

The other gap is the lack of understanding of the social and financial effects of mitigation of methane activities. Although there are the technical solutions like methane detection systems and repair systems, the economic viability of application of the said technologies in the global context particularly in the developing countries is under-researched. A study based on the cost-efficiency of the measures to mitigate the emission of methane in various industrial sectors and areas would be of great informational value to the policymakers and the industry stakeholders.

Future Technologies

Innovations that will be developed in future have great potential in offering solutions to the issue of methane emission. The state of the art sensing technologies lead in the methane detection research. As one example, miniaturized sensors with high sensitivity may also be developed in order to monitor continuously and in real-time at reduced costs so that leak detection can be more common and accessible (Aksyutin et al., 2019). Also, there are new technologies in artificial intelligence (AI) and machine learning that may improve the accuracy of methane detection and prediction models. Construction of AI-enabled systems may be more efficient to handle sensor-collected data and determine patterns of leakage and potentially the future leakage of water by relying on past information.

There is also a massive potential to expand the scope of the methane monitoring through the use of drones and satellite-based systems. Such systems are able to give images and data of high-resolution of methane emission of large infrastructure including pipelines and oil fields without having to do inspections at ground level. Changing these technologies might lead to a comprehensive and automated methane monitoring system with the mix of the Internet of Things (IoT) networks and enhance the detection and mitigation process on an international level (Shindell et al., 2021).

Policy Innovations

In order to augment technological progress, there must be policy creativities to take into consideration the emerging sources of methane emission. The world has to have a more unified global policy framework to control the emission of methane in the trade sectors of agriculture, waste management and energy production. Stricter emissions rules can be implemented by governments, and initiatives to encourage industries to use technologies that reduce methane can be established. A further way to increase carbon pricing would be to extend it to methane gas, thus encouraging firms to adopt detection and reduction technologies.

New sources of methane, including biomass energy production sources or methane hydrates are also to be covered by new regulatory frameworks to avoid allowing new sources of emissions to become major contributors to climate change. The cooperation between countries will play a significant role in establishing common standards and in making sure that the emission of methane is always covered across boundaries, particularly in areas where regulatory controls are weak (Shindell et al., 2021).

To sum everything up, research gaps are to be addressed in the future, new methods of detecting methane are to be invented, and new policy instruments are to be innovated that will handle the changing situation of the methane emissions and guarantee the achievement of climate objectives at the global level.

XI. CONCLUSION

Summary of Findings

This paper has discussed the importance of the issue of methane gas leaks towards environmental sustainability and in the control of climate changes. Among the main indications found are that even though methane has a lower level of concentration compared to CO_2, it has a significantly greater global warming potential that is contributing to global warming and climate change. The industrial and waste management activities, including the oil and gas, agriculture, and waste management industries, are the major sources of methane gases that have direct and indirect environmental effects such as the deterioration of the quality of air, the destruction of ecosystems, and the increase in global warming. The existing detection and mitigation solutions like the infrared cameras, satellite monitoring and leak repair systems are and are effective, but still have areas where there are gaps, especially in detecting and quantifying the emissions of methane by the diffuse sources.

Significance of Methane reduction.

Methane leaks mitigation is essential to solve the pressing issue of the threat of climate changes. Although the world has so far been concentrated on CO_2, the short-term strength of methane as a green house gas causes the need to put more attention on methane. Methane emissions can be substantially reduced, which will contribute to slowing global warming, improving the air quality, and improving the health of ecosystems. Furthermore, dealing with methane leakages will be in accordance with the targets of the Paris Agreement and is necessary in achieving the climate targets of maintaining the temperatures at 1.5 C above those prior to the industrial era. Thus, effective mitigation measures of methane are not only good but also necessary to the long-term sustainability of the environment.

Call to Action

In order to successfully address the problem of methane emissions, there are several steps that will have to be undertaken by industries, governments and the scientific community. The introduction of advanced leak detection and repair technologies should be of a priority by industries especially in the high-risk industries like the oil and gas industry, agricultural industry and waste management. To enforce the regulations, governments must make the rules tighter, with more stringent standards on emissions of methane, as well as create transparency by introducing regular monitoring and reporting. Moreover, the global collaboration is very essential in order to develop common world policies towards reduction of methane. To gain knowledge on diffuse source methane emissions, the scientific community should still advance in detection technologies and make efforts to generate more precise data. With such efforts in the front it can be greatly reduced that there

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is a reduction in the emission of methane and there is minimization of the effect of climatic change and the environment.

Finally, mitigation of methane leakage must be regarded as high priority issue in the global agenda of tackling a climate change. The issue of taking decisive action now to save the planet to the future generation is all-inclusive and requires concerted efforts.

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