

Optimising Gas Flaring Policy for Net Zero

The challenge

Global policy on gas flaring reduction has had limited impact to date. The World Bank/GGFR estimated that 146.8 billion cubic metres (bcm) of natural gas was flared in 2022. The practice has continued due to failures in the overall design and implementation of gas flaring policies, incoherent legislative and regulatory frameworks, non-transparent reporting and disclosure of statistical data, and failure to provide an enabling flaring framework to address flaring, including fiscal and emission reduction incentives.

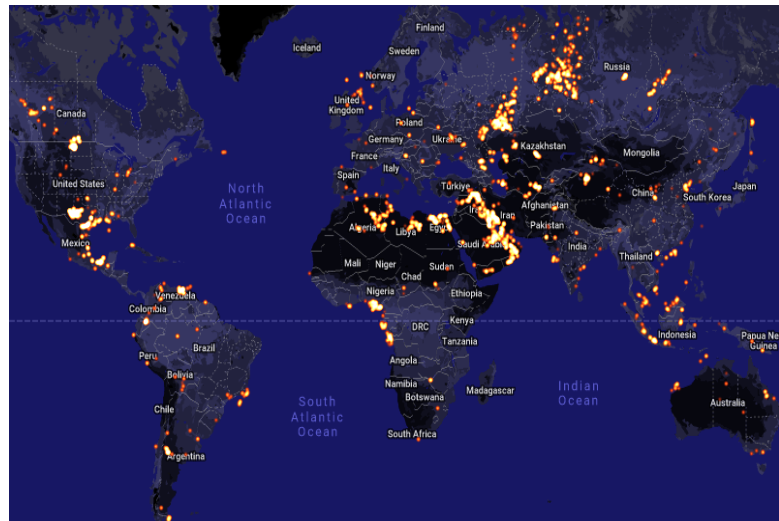
While gas flaring creates global externalities from associated greenhouse gas emissions, leading to local and global environmental injustices, consistency and policy coherence across oil and gas producer and non-producer nations participating in flaring reduction initiatives are key policy goals. The instruments used by governments to reduce emissions vary across different countries, including those to address gas flaring. Efforts to reduce flaring have been hindered due to a lack of coherent environmental policies and regulations. There is a need to evaluate stakeholder preferences for various policy and regulatory options and determine the most efficient policies and regulations, as well as the most effective approaches to stimulate the elimination of routine gas flaring by 2030 and achieve net zero emissions by 2050, while addressing any unfair implementation of policies and regulations.

Research aim

This research aimed to evaluate stakeholder preferences for different policies and regulatory options, determining the most optimised and effective to help eliminate routine gas-flaring by 2030 and achieve net zero emissions by 2050 whilst addressing good governance, justice, and fair implementation.

Research Questions

- i. What are the key criteria and, sub-criteria, and alternative gas flaring policies and regulatory frameworks that can help meet the 2030 zero routine flaring targets?
- ii. How can these criteria, sub-criteria, and alternative policy scenarios be prioritised, selected, and benchmarked to stimulate flaring reduction actions?
- iii. What are the optimal gas flaring policies and regulatory framework criteria and sub-criteria, presenting the best alternative policy scenario to stimulate flaring reduction actions?



Satellite-Detected Natural Gas Flaring by the Earth Observation Group, Payne Institute for Public Policy, Colorado School of Mines

Methods

The research used mixed methods incorporating literature and document review, semi-structured interviews with seven experts, consisting of four representatives from environmental NGOs and advocacy groups, as well as three environmental campaigners, expert surveys (23 experts out of the 59 contacted responded and completed the survey via email), a Q-methodology survey, exit interviews, an Analytical Hierarchy Process (AHP) and a Technique for Order of Preference by Similarity to Ideal Solution (G-TOPSIS).

Key findings

- **All gas flaring policy and regulatory framework criteria** (*policy and targets, legal, regulatory framework, and contractual rights, regulatory governance and organisation, licensing and process approval, measurement and reporting, fines, penalties, and sanctions, and enabling framework*) **and sub-criteria** (*background and the role of reductions in meeting environmental and economic objectives, targets and limits specified by the regulator, primary and secondary legislation and regulation, legislative jurisdictions, associated gas ownership, regulatory authority, regulatory mandates and responsibilities, monitoring and enforcement, development plans, economic evaluation, flaring or venting without prior approval, authorised flaring or venting, measurement and reporting requirements, measurement frequency and methods, engineering estimates, recordkeeping, data compilation and publishing, monetary penalties, nonmonetary penalties, performance requirements, fiscal and emission reduction incentives, use of market-based principles, negotiated agreements between the public and the private sector, and interplay with midstream and downstream regulatory framework*) **identified were shown to be integral to achieving the targets of zero routine flaring by 2030 and net zero emissions by 2050 through the ranking of individual criteria.**
- **The individual criteria: “Policy and targets” and “Enabling framework”, were deemed the most important.**
- **The “background and the role of reductions in meeting environmental and economic objectives” and “nonmonetary penalties” were the most crucial sub-criteria to abate global gas flaring.**
- **Analysis showed that full implementation of gas flaring policies and regulatory framework criteria to limit temperature warming to 1.5°C is considered the most effective policy alternative.**

Policy recommendations

1. Governments should agree and establish consistent and fair transnational policies and regulatory frameworks to reduce gas flaring. This should be accompanied by legally binding agreements between countries to ensure reciprocity and accountability to improve policy coherence and promote effective implementation.
2. It is recommended that countries develop strategies to reduce gas flaring and promote collaboration among stakeholders.
3. Governments should ensure flaring monitoring systems and optimise process controls to decrease flaring levels.
4. Well-designed contracts and regulations are crucial to encourage cooperation among upstream and midstream operators.

This policy brief is based on a manuscript currently under review as follows:

Aigbe, G. O., Stringer, L. C., & Cotton, M. Optimising policies and regulations for zero routine gas flaring and net zero. *Clean Technologies and Environmental Policy*.

<https://doi.org/10.21203/RS.3.RS-3427398/V1>

For more details about the project, please contact:

Godwin Aigbe:

gaigbe01@googlemail.com

Professor Lindsay Stringer:

lindsay.stringer@york.ac.uk

Professor Matthew Cotton:

m.cotton@tees.ac.uk

This cross-national gas flaring research could support the IPCC's analysis of the social and political aspects of climate change. This approach used in this analysis aligns with the post-Paris Accord emphasis on continuous research to monitor and facilitate the achievement of national targets for climate change mitigation.

AHP and G-TOPSIS methods could offer efficient ways to conduct social science research on energy and climate change analysis, consistent with the systems approach in this research. Also, these combined methods could enhance stakeholders' participation in decisions concerning other complex and controversial environmental issues.