

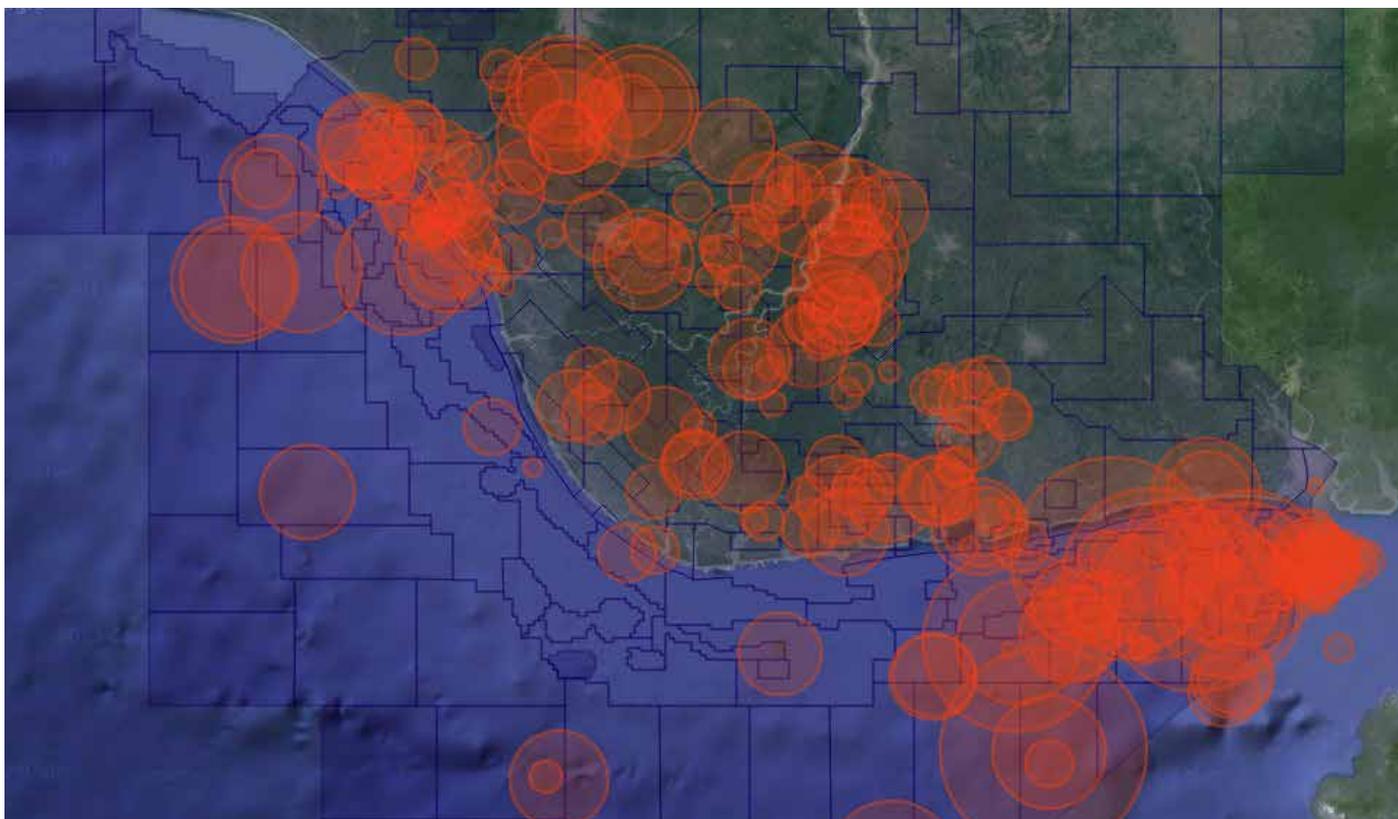
NIGERIAN GAS FLARE TRACKER BRIEFING DOCUMENT



THE VITAL IMPORTANCE OF ENVIRONMENTAL ISSUES IN
IMPROVING SECURITY AND STABILITY IN THE NIGER DELTA



NIGERIAN GAS FLARE TRACKER BRIEFING DOCUMENT



<http://gasflaretracker.ng/>

The Gas Flare Tracker uses the best available data at hand at this time in order to allow government, industry and civil society to begin to make further headway into reducing the flaring of associated gas in Nigeria. It is an advanced and accessible data repository and conceptual tool to guide further work, strategic decision-making and data gathering.

The Gas Flare Tracker system provides data and insight that will help guide regulation, incentives and investment aimed at reducing gas flaring and its impacts while increasing energy security in Niger Delta communities and Nigeria as a whole.

EXECUTIVE SUMMARY

The Gas Flare Tracker builds on an informative and interactive picture of the huge business, environmental and social potential of the currently wasteful practice of flaring associated gas.

All parties could benefit from a reduction in gas flaring, should effective and appropriate action be taken by all parties building on this data.

Appropriate fines, backed by incentive feed-in-tariffs, with an industry that understands the benefits of having contented communities and a power sector keen to create new markets, Nigeria could do a lot more than just stop the flaring of associated gas. In the process it could also fund environmental agencies, increase power to the grid, reduce environmental pollution, provide restive communities with power and generate new markets for products and services.

BUILDING ON AND USING THE DATA

The Gas Flare Tracker is a starting point, using the best available data at hand at this time, to begin to make further headway into reducing gas flaring in Nigeria. It is an advanced and accessible data repository and conceptual tool to guide further work, strategic decision-making and data gathering.

ABOUT THIS DOCUMENT

This document accompanies the online Gas Flare Tracker application found at:

<http://gasflaretracker.ng>

It gives an outline of the project, the data, explains the calculations and assumptions, and outlines potential further areas of work that can be undertaken by civil society, regulators and industry to further improve the data and use for strategic insight.

RATIONALE FOR GAS FLARE TRACKER

“To provide reliable data on gas flares that will inform improved policy for the extractive community and reduce the negative impact of oil exploration on local communities in the Niger Delta.”

“This project will lead to the creation of a visual database that holds details on the location and size of all the gas flares in Nigeria. The Ministry of Environment (MoE) and other key stakeholders will use this information in the drive for the eradication of gas flaring. The database will be housed within the MoE but will also be publicly available.”

GAS FLARE TRACKER EXPLAINED

The Gas Flare Tracker system provides data and insight that will help guide regulation, incentives and investment aimed at reducing gas flaring and its impacts while increasing energy security in the Niger Delta communities and Nigeria as a whole.

The application is an online map that displays a number of physical and geographical GIS layers alongside satellite data on gas flares collected by the US National Oceanographic and Atmospheric Administration (NOAA). These satellite measurements from NOAA form the basis of all the calculations on the Gas Flare Tracker.

Over time, many of these measurements from the same locale are merged and averaged by the Gas Flare Tracker to come up with the estimated quantities of gas burned within a specific period of time from specific locations. From these measurements calculations are then made to show estimated figures for CO₂, gas quantity, and the potential value of the of gas.

The gas flare measurements from NOAA are then overlaid on other datasets related to oil, gas, population and power generation in order to provide detailed insight that can allow civil society, government and industry to act to reduce gas flaring.

HOW CAN CIVIL SOCIETY CONTRIBUTE TO THE DATA

- By encouraging communities located near onshore gas flare sites to keep a record of when gas flares are on or off and asking National Oil Spill Detection and Response Agency (NOSDRA) or MoE to upload this data as an attachment to the gas flare tracker for that flare site. This could be achieved through a text message service or by manual collecting of data that is then transcribed into a spreadsheet. This would allow further cross referencing of the satellite data with on-the-ground observations.
- By encouraging communities downwind of gas flare sites to catalogue the effects of gas flaring on their health and environment and asking NOSDRA or MoE to upload this data as an attachment to the gas flare tracker for that flare site.
- By supporting advocacy in communities affected by gas flares to encourage companies to make their own data available on specific gas flares would help to cross-reference the satellite data. It could also open channels of communication. NOSDRA or MoE could then be asked to upload this data as an attachment to the gas flare tracker for that flare site.

HOW CAN CIVIL SOCIETY USE THE DATA

- By using the statistics made available on the Gas Flare Tracker to advocate for fines for gas flaring to be paid and collected and for part of those funds to go towards healthcare, power, education and environmental programmes in the locality of the gas flare.
- By making a strong case for small-scale gas-to-power generation to feed localised micro-grids that can power local communities. It can be argued that when localities are powered by gas flares that rely on continued oil production, then interrupting this production (through damage to pipelines for illegal refining) will immediately impact on the power available to communities.
- If gas flares are powering local communities across the Niger Delta, then there will be a huge decrease in demand for illegally refined fuels to power generators, and an imperative to maintain pipeline integrity in order to keep the lights on.
- This argument could make it financially viable for oil companies to generate power from gas-flares and feed it into local micro-grids purely from the financial imperative to keep the oil flowing and the huge losses incurred when production is interrupted.

HOW CAN ENVIRONMENTAL REGULATORS CONTRIBUTE TO THE DATA

- By producing, locating, coordinating and maintaining up-to-date and accurate contextual GIS layers like oil block concessions, pipelines, oil wells, population etc and making these available. The production of GIS data to inform decision-making is primarily the role of government departments and the ongoing provision and accuracy of these GIS data files would be an important concern of any environmental regulatory body or department.
- By encouraging producers and operators to release figures of gas flaring per site in order to cross-reference the satellite data. To then make this publicly available by uploading this data as an attachment to the gas flare tracker for that flare site.
- By encouraging producers and operators to explain how their own gas flaring figures are measured and calculated.
- By encouraging producers and operators to provide detailed GIS data on their operations (pipelines, installations etc) that can be used by the regulators for gaining strategic insight.

HOW CAN ENVIRONMENTAL REGULATORS USE THE DATA

- Through enforcing the payment of fines for gas flaring, currently at \$3.50 per mscf, large reserves could be built up that could be used directly to strengthen environmental regulators and provide the resources, expertise and equipment needed to deal with the environmental, health and social fallout associated with oil and gas extraction in the Niger Delta.
- Prioritise engagement with specific gas flare producers and operators based on the size of a flare site, its proximity to population centres and environmentally sensitive areas.

HOW CAN INDUSTRY CONTRIBUTE TO THE DATA

- By engaging with national environmental and energy regulatory bodies and providing up-to-date GIS data (power lines, power stations, pipelines, infrastructure) to them so it can be made publicly available and contribute to strategic decision-making.
- Producers and operators could provide their own data and statistics on the scale of gas flaring from each of their gas flare sites to be cross-referenced with the satellite data.

HOW CAN INDUSTRY USE THE DATA

The oil, gas and power sectors can use the available data in the Gas Flare Tracker in order to:

- Further explore strategic opportunities to reduce gas flaring.
- Increase power availability to the grid.
- Mitigate environmental and social impacts.
- Reduce interruptions to oil and gas flow.
- Create commercially viable business models and new markets.

LIMITATIONS TO DATA MEASUREMENTS AND CALCULATIONS

VIIRS MEASUREMENTS

The VIIRS instrument that measures the gas flares is on a satellite that orbits at 500 miles above the earth. Each night (usually between 11am and 2 am in Nigeria) it gathers data on infrared light intensity from flames burning around the world. Provided the VIIRS can get an accurate reading, it will then measure the source of a flame in terms of cubic metres of methane equivalent burned per second. It is this quantity that all further calculations are based upon.

When the VIIRS is not able to get an accurate reading because of cloud cover or atmospheric interference it will not make a calculation. Cloud cover is prominent in the Niger Delta for large parts of the year, leading the VIIRS instrument unable to take consistent, permanent measurements.

As such the Gas Flare Tracker makes use of a partially complete but indicative dataset.

NOAA YEARLY ESTIMATIONS

NOAA publishes global estimates of gas flare totals each year and uses its VIIRS data in a similar way to the Gas Flare Tracker to calculate estimated quantities. What it then does is calibrate these against official statistics (in Nigeria this is the National Nigerian Petroleum Corporation (NNPC) data) and multiplies its readings to get to similar figures to those officially reported from other gas flaring countries.

This 'calibration' to match officially published figures involves a certain amount of guesswork which the Gas Flare Tracker does not do. This will in some way explain the lower figures that the Gas Flare Tracker displays compared to officially reported data from NNPC.

NNPC MONTHLY AND YEARLY ESTIMATIONS

NNPC publishes on its website oil and gas industry data each year which includes gas flare quantities. These are voluntarily provided by the oil and gas operators.

GIS DATA LAYER LIMITATIONS

The GIS layers that are used to contextualise the identified gas flares are either made available by third parties like Google Earth and Esri, have been manually created, or have been provided by Nigerian Government agencies.

Layers like the oil blocks, gas pipelines, power stations and oil and gas infrastructure are static and from specific time periods.

It is the responsibility of Government agencies and departments to keep this type of data up-to-date and accurate, and it should be a primary concern of various government agencies and departments to do so. It is only with the most up-to-date and accurate GIS data that the most effective insight can be gained from tools such as the Gas Flare Tracker.

