

A Sixteen-Year Record of Global Natural Gas Flaring Derived from Satellite Data

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We have produced annual estimates of national and global gas flaring and gas flaring efficiency from 1994 through 2009 using low light imaging data acquired by the Defense Meteorological Satellite Program (DMSP). Gas flaring is a widely used practice for the disposal of associated gas in oil production and processing facilities where there is insufficient infrastructure for utilization of the gas (primarily methane). Improved utilization of the gas is key to reducing global carbon emissions to the atmosphere. The DMSP estimates of flared gas volume are based on a calibration developed with a pooled set of reported national gas flaring volumes and data from individual flares. Flaring efficiency was calculated as the volume of flared gas per barrel of crude oil produced. Global gas flaring has remained largely stable over the past fifteen years, in the range of 140 to 170 billion cubic meters (BCM). The 2009 gas flaring estimate of 145 BCM represents 22% of the natural gas consumption of the USA with a potential retail market value of \$50 billion. The 2009 flaring added an estimated 311 million metric tons of carbon dioxide equivalent into the atmosphere. The DMSP estimated gas flaring volumes indicate that global gas flaring has declined by 19% since 2005, led by gas flaring reductions in Russia and Nigeria, the two countries with the highest gas flaring levels. The DMSP data indicate that global flaring increased by 5% in 2009, with more than 85% of the increase occurring in Russia. It is anticipated that the capability to estimate gas flaring volumes based on satellite data will spur improved utilization of gas that was simply burnt as waste in previous years.

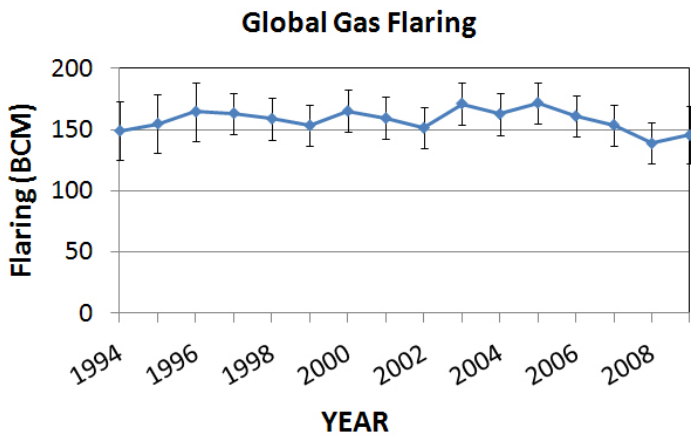


Figure 1. Global gas flaring estimates from 1994 through 2009.

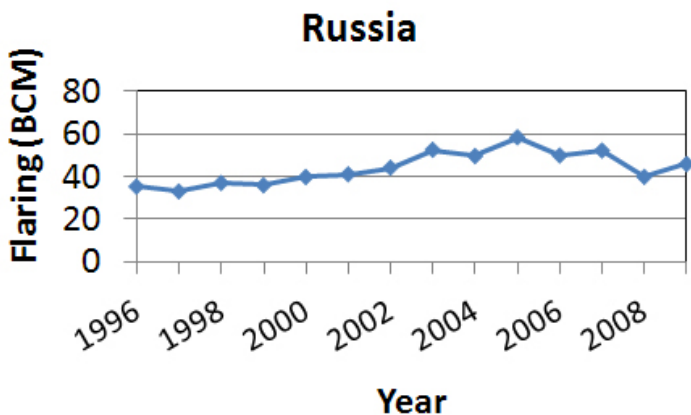


Figure 2. Gas flaring estimates for Russia from 1994 through 2009.