How to eliminate natural gas flaring & venting without causing a political backfire

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Abstract

Oil wells extract large quantities of associated gases. They are flared and vented for economic, operational, and safety reasons. All over the world, regulators discourage both practices due to their negative economic, environmental, and health effects. We show that the current regulation backfires due to a hidden substitution effect. Namely, producers intentionally vent a fraction of gas, which they would flare in absence of regulation. Since carbon dioxide has a smaller global warming potential than methane, even a small substitution effect could accelerate climate change.

To defuse it, we propose an original tax scheme, which eliminates both practices without affecting the aggregate tax burden of the oil & gas industry or the consumers' income. We estimate its environmental outcome analyzing the behavior of 4,336 United States onshore oil & gas fields over the time interval 2000-2020. According to our calculations, the proposed tax reform would avoid the waste of 61 billion cubic meters of gas per year (6.4% of annual production) and reduce greenhouse gas emissions by 106 million metric tons of carbon dioxide equivalent per year (2.1% of United States emissions).