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What the Donald Trump Presidency Implies for Climate Change

By: Nagraj Adve

Trump's promised actions to reverse many US policies to combat climate change - some of which he has already carried out - will not only cause damage to the US and its people but will also weaken international climate efforts, risking environmental damage and significant climatic consequences.

The planet is already at the edge of a precipice. Climatically, we just experienced the worst year ever recorded-2024 was the first full year in which the global average temperature exceeded 1.5°C above pre-industrial levels. The Arctic tundra has turned into a source of carbon dioxide instead of acting as a carbon sink, implying faster warming in future. And some of the world's key ecosystems, such as the Amazon, are close to tipping over into states from which they will not recover on human timescales.

What will Donald Trump becoming the 47th President of the United States imply for climate change? This article reflects on this question through an examination of Trump's first tenure as president, US's energy trajectory over the last 20 years, Trump's threats to undermine Biden's key climate change laws, and relevant presidential orders signed immediately after assuming office on his second term.

What Trump's First Term Tells Us

Examining the US's trajectory of fossil fuel production and use during Trump's first presidency, and in the last couple of decades in general, provides some pointers to what the second Trump presidency (hereafter, Trump 2) may imply for climate change.

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Many assume that Trump 2 will increase the country's use of fossil fuels, but this assumption clubs together coal, oil, and gas under the term "fossil fuels". A disaggregated view of these three energy carriers provides a more accurate picture of their consumption and production, and linked to that, greenhouse gas (GHG) emissions in the US and beyond.

Table 1 shows oil, gas, and coal production and consumption in the US through the Trump 1 and the Biden presidencies, and the first and last years of presidents George W. Bush and Barack Obama. Hence, it broadly shows key energy trends over the last 20 years.

Table 1: US Oil, Gas, and Coal Production and Consumption, 2005 to 2023

President	Year	Oil (million barrels/day)		Gas (billion cubic metres/year)		Coal (million tonnes/year)	
		Production	Consumption	Production	Cons	Production	Cons
Bush	2005	6,897	20,402	511	623	829	574
	2008	6,784	19,490	570	659	852	564
Obama	2009	7,267	18,030	557	617	739	673
	2016	12,356	18,593	727	749	660	486
Trump	2017	13,140	18.845	746	740	702	473
	2018	15,321	19,417	841	822	686	453
	2019	17,135	19,424	928	851	641	387
	2020	16,493	17,183	925	834	486	314
Biden	2021	16,953	18,785	944	836	523	360
	2022	17,844	18,862	993	879	539	338
	2023	19,358	18,984	1,035	886	526	279

Coal consumption (and production for the most part) fell during Trump's first presidency, contrary to popular perception. This fall largely reflected a long-term decline of coal consumption in the US, which peaked 15 years ago. It was sharper in 2020 because of the Covid-19 lockdowns, and it has not recovered after that.

Coal is far more damaging in terms of planetary warming than gas or oil. Reduced coal consumption over time was the one key reason-greater energy efficiencies being another-that US's greenhouse gas emissions declined from 7,123 million tonnes (mt) in 2005 to

5,960 mt of carbon dioxide-equivalent in 2023. So, will coal consumption rise by a significant degree now? Unlikely. It may at worst be marginally higher in comparison to what it might have been had Kamala Harris been president, but not by much and the trend is downward.

This decline in coal use was partly enabled by a fall in prices of natural gas, and a huge increase in its consumption for electricity generation, transport, and heating homes and other spaces. This rise began in the Obama years, around 2012, aided by fracking and the tapping of shale gas (and oil) in sedimentary shale rock formations, of which the US has massive reserves in the Permian Basin and the Marcellus Formation. Annual gas consumption rose by over 225 billion cubic metres (bcm) in the decade since then, to nearly 900 bcm in 2023 (see Table 1), the latest year for which data is available.

Exploiting shale formations has also enabled the US to sustain its oil consumption at an extraordinarily high level, more than 18 million barrels a day (mbd) over the last 15 years. In this respect, Trump 1 was qualitatively no different from the Democratic presidents before and after him, given Obama's and Biden's sustained push for oil and gas. As economic historian Adam Tooze said in a recent podcast, there has been wide bipartisan support for low energy and fuel prices in the US. This reflects the wide support in American society for low prices of oil and gas.

The Threat to Climate Change Laws

The Biden administration's key climate change laws-the Inflation Reduction Act (IRA) and the Bipartisan Infrastructure Act-provide thousands of dollars to any household that seeks to install solar panels or a heat pump, or buy an electric car. It also provides subsidies for manufacturing solar panels and infrastructure for other renewables, producing batteries and deploying them, and producing hydrogen energy. How these Acts work is that government funds are offered as subsidies, but companies are required to put in at least as much as investment.

In the over two years since the IRA was launched in August 2022, 325 new clean energy projects have been announced across 41 states, according to environmental research group E2. In a podcast on Columbia University's Columbia Energy Exchange, a key Biden government official responsible for implementing these Acts said that the government handed out US$50 billion but private investment has been more than two times that. By the end of 2024, (a proxy for the end of the Biden administration), it would have budgeted $80 billion, of which two-thirds would have been awarded to private parties.

Though much more was possible in a 27 trillion-dollar economy, these policy measures have resulted in a faster expansion of renewables in the US-its solar capacity rose from 76 gigawatts (GW) in 2020 to 139 GW in 2023 during Biden's tenure, or by 63 GW, almost as much as India's entire solar capacity now. Wind capacity also grew, from 118 GW to 148 GW over that period. After the initial phase of an energy transition anywhere, a continued expansion of solar, wind, and other renewables would constrain actual and potential fossil fuel use-even though the process is never smooth.

Will Trump's threats to dismantle the Biden administration's climate change laws undo these gains and raise US oil and gas consumption instead? Undoubtedly, yes. On his very first day in office, he revoked a September 2022 order regarding the implementation of the energy and infrastructure provisions of the IRA. Trump 2 may not be able to completely get rid of these key acts, but it may use the Republican Party's control over both the House of Representatives and the Senate to significantly tweak their rules. It could also create hurdles to ensure that household subsidies are strangled and the future roll out of power from renewables, and its related infrastructure, slows down. American writer and activist founder of 350.org Bill McKibben warns that all lines to transmit renewable energy need many permissions, which Trump can obstruct, using politically friendly officials. Trump has already ordered a halt to offshore wind energy projects on the ground that they have high energy costs. All this will adversely affect the expansion of renewables, and it will, in turn, boost oil and gas consumption at the margins.

However, there are at least two damage limitation factors. One, the prices of solar and wind power in the US, and even of batteries, have fallen sharply in the last few years and become the preferred source of electricity or energy for many companies. Two, there is enough political support and momentum for renewable power even in Republican states-such as in Texas, where at one point last year 70% of electricity generated was from solar and wind.

Drill Baby, Drill … And Then Export

However, the problem is not only fossil fuel consumption in the US. Given how widely oil and gas are traded and transported internationally, a key problem-with a direct bearing on greenhouse gas emissions anywhere-is the production of oil and gas. Because of the drilling for shale oil and gas, the US's oil production has skyrocketed from less than 8 million barrels a day (mbd) in 2011 to more

than 19 mbd in 2023. As a matter of fact, 2023 was the first year in which the US produced more oil than it consumed. Annual gas production in the US has also expanded hugely in recent years, crossing a trillion cubic metres for the first time ever in 2023, exceeding consumption by well over 100 bcm.

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Trump has promised to expand the production of oil and gas even further, including in territories with pristine wilderness. On his very first day on re-assuming office, Trump signed a number of executive orders to encourage energy exploration and production on federal lands and waters, including the Outer Continental Shelf; to "expedite energy and natural gas projects in Alaska … and within the Arctic National Wildlife Refuge"; and declared a national energy emergency for the production, transportation, and refining of domestic energy resources.

Economic factors also underlie this-powerful oil and gas lobbies have been pushing for such an expansion. Companies are investing more in shale oil because it has a certain flexibility-production levels can be taken up or down quickly, unlike with conventional crude. Also, shale oil becomes more profitable when the price of conventional crude crosses $70 a barrel. The average price of crude-$76 a barrel in January 2025-has remained above that since 2021.

Even if all the excess oil and gas it produces is not consumed within the US, it will be exported, as crude or refined petroleum products. Or it can be exported as liquified natural gas (LNG), a process whereby natural gas is super cooled to liquid form, transported in tankers, and converted to gas again in the country of use. For instance, following the Ukraine war, Europe has become far more reliant on LNG imports from the US to make up for the precipitous drop in pipeline supplies from Russia.

Overall, in 2023, according to the US Energy Information Administration (EIA), the US exported about 10.15 mbd of petroleum to 173 countries. Crude oil exports were a little over 4 mbd, and the rest comprised hydrocarbon gas liquids (HGLs) derived from natural gas, and refined petroleum products such as petrol, diesel fuel, and biofuels.

Under Trump 2, the US will not be consuming all the oil and gas it produces, but it will be consumed-and greenhouse gases emitted-somewhere else. Because of Earth system physics, it does not matter where the carbon is emitted; it mixes through the atmosphere quite quickly and results in warming globally.

Implications for Climate Politics and Finance

Trump has taken the US out of the Paris Agreement-as he did in 2017-which will come into effect after a year. The US has never been the world's climate leader it claims to be, but when the world's second largest emitter, and historically the world's largest emitter of greenhouse gases, withdraws from the one global agreement designed to address the issue, we do have a problem on our hands.

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Trump 2 will also have an adverse bearing on much-needed climate finance, and in particular the New Collective Quantified Goal (NCQG), which was negotiated at the 29th Conference of the Parties (COP 29) in November 2024 in Baku, Azerbaijan. According to the US Department of State, the country's support for international climate finance had risen from $1.5 billion in 2021 to $11 billion in 2024.

A sum of $11 billion-and the little more that the US gives to multilateral development banks, who in turn contribute to climate finance-is a pittance for a $27 trillion-economy. The Baku COP 29 pushed through a sum of $300 billion as the NCQG from developed country budgets. With Trump in power, the much larger amounts demanded by China, India, and other developing countries as the NCQG-$1.3 trillion annually-will seem fanciful. The US's contribution to the separate Fund for Responding to Loss and Damage (FRLD), which aims to help people cope with climate disasters after they hit, is even more pathetic, merely $17.56 million as of December 2024. Trump has stopped even these relatively small amounts, by promptly signing an executive order to "cease or revoke any purported financial commitment made by the United States under the UNFCCC".

Targeting Chinese Companies

There are other direct or indirect ways that Trump 2 may hamper US efforts to address climate change. President Trump and his close aides have threatened to impose 60% tariffs on Chinese imports. The US imports solar panels mostly from Vietnam, Thailand, Malaysia, and Cambodia, but much of it is manufactured either by Chinese companies there or by companies with major Chinese investment. If the tariffs are extended to solar panels imports from those countries, it would adversely affect the solar expansion in the US. But protecting or promoting domestic industry has become more important for policymakers-both in the US and elsewhere-than urgently addressing climate change.

The new administration may also cause varied environmental damage with direct or indirect climatic effects. Trump's first tenure provides strong hints. In 2018, Trump 1 lifted rules on toxic air pollution from electricity plants and industrial sites. In 2020, it rolled back a US Environmental Protection Agency (EPA) rule on the oil and gas industry's methane emissions, which is several times more potent a greenhouse gas than carbon dioxide in terms of causing planetary warming. It also rolled back energy efficiency regulations in 2020. According to a piece in *Nature*, Trump 2 is also likely to target the EPA by cutting its funds and projects, and other agencies that directly research and monitor climate change, such as NASA and the National Oceanic and Atmospheric Administration (NOAA).

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Some leading US scientists have been saying recently that more resources are needed to understand why global warming has accelerated in recent years, including a more comprehensive monitoring of air pollutant aerosols. Funding for such important work is out of the question under Trump 2. It becomes that much more difficult to address a problem if one does not fully understand it in the first place.

Four Billion Tonnes of Emissions

Finally, what does all of this imply for US's and global greenhouse gas emissions? This question's pertinence is because, at the end of the day, Earth system physics dictates that the volume of emissions is what matters, not why or where they come from.

An analysis by Carbon Brief, based on carbon modelling by various US research groups, has suggested that a Trump presidency would result in the emission of 4 billion additional metric tonnes of carbon dioxide equivalent by 2030. This figure is non-trivial; it is equal to the annual emissions by the European Union and Japan combined. It is two times all the emissions saved globally over the past five years by the deployment of solar power, wind, electric vehicles, and heat pumps.

Conclusions

In conclusion, all this has at least three implications within the United States and beyond. One, it puts paid to the US meeting the target pledged in its nationally determined contribution submitted to the UNFCCC of reducing its net greenhouse gas emissions by 61-66% below 2005 levels by 2035. Two, Trump's policies will cause untold environmental damage locally, which will unequally affect both the American people and other species. Three, the increased greenhouse gas emissions that will ensue, directly or indirectly, during Trump's second term as President do not augur well for a world already staring into an abyss, having already reached 1.4°C of warming (if one takes longer averages, not just one year's) and warming much faster than it did 15 years ago.

Nagraj Adve (nagraj.adve@gmail.com) is a member of Teachers against the Climate Crisis and the author of Global Warming in India: Science, Impacts, and Politics *(Eklavya, 2022).*