



Carbon Capture and Sequestration A Willful Delusion?

**How an emerging technology is paving the way for corporate profits
and climate overshoot**

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Introduction

Carbon capture and sequestration is being presented to the public and its elected leaders as an essential pillar in our nation's efforts to address climate change. But is it really? Certainly one might ask "how could an industry that seeks to remove carbon dioxide from the atmosphere be seen as anything but positive?" Yet, is heavily investing in this technology at the expense of other proven approaches sound policy when so much is at stake?

This seven part series lays out the argument that contrary to being an overarching tool for climate mitigation, the practical function of CCS is, and will be, to prolong the use of fossil fuels, provide a massive revenue stream for its developers and operators and give political cover to a national climate policy that has accepted the overshoot of safe temperature thresholds as the price of maintaining the near-term status quo.

Part 1 Fossil Fuels—The Birth of the American Dream

A Dream Barely a Century Old

Ask most Americans when the "American Dream" entered the national vocabulary, and many would guess it goes back to our country's founding, to Jefferson's "pursuit of happiness" or to the frontier mythology of Manifest Destiny. It doesn't. The phrase itself was coined in 1931, in the depths of the Great Depression, by the historian James Truslow Adams in his book "The

Epic of America". In his book, Adams described our nation as a land where life would be "better and richer and fuller for everyone," a dream not of "motor cars and high wages merely" but of a "social order where each man and each woman shall be able to attain to the fullest stature of which they are innately capable..." It's worth noting an irony that Adams himself may not have fully anticipated: he wrote those words to push back against pure materialism.¹ Yet within a generation the phrase would become shorthand for exactly the material abundance he'd tried to downplay, the car, the house, the appliances, the highway trip.

That drift in meaning didn't happen in a vacuum. It happened because, at the very moment Adams was writing, the physical infrastructure that would make mass material abundance possible, cheap, energy-dense, endlessly available fossil fuel, was on its way to reshaping what American life would look like. The dream and the fuel supply matured together, and in hindsight it is impossible to fully separate them.

Before the Fuel: Millennia of Hard, Local Living

Up until the late 19th and early 20th centuries, "the good life" was not available to most people, in America or anywhere else. Life was built on:

- **Difficult, unrelenting physical labor**—nearly everything, from farming to construction, to transport, ran on human muscle.
- **Animal power**—supplementing human effort, oxen, horses, and mules did the heavy pulling, plowing, and hauling.
- **Enslaved and coerced human labor**—in the American context specifically, chattel slavery was itself a form of energy extraction, a brutal system that powered agricultural production (especially cotton, sugar, tobacco and rice) before mechanization, and laws existed to replace it.
- **No advanced health care**—infection, childbirth, and routine injury were leading causes of death; average life expectancy in the U.S. was around 40 years as late as 1850.
- **Isolated communities**—without cheap transportation or energy-dense fuel, people mostly lived and died within a day's walk or ride from where they were born.

Energy, in this era, came from wood for heat and cooking, and from whale oil for lighting and machine lubrication, the fuel that lit lamps and greased the gears of the earliest industrial machinery, at least until it grew scarce and expensive as whale populations collapsed under the pressure of the 19th-century hunt. Populations were small, and settlements dispersed, so the pollution and ecological damage from these energy sources, while real, tended to stay local, smoke over a village, a depleted watershed, a hunted-out whaling ground, rather than growing into a planetary problem.

There were limits to the energy that the human species could draw from food, animal muscle, wood, wind and water. By the mid-19th century we were reaching those limits. Then a miracle happened.²

The Fossil Fuel Transition: Coal, Then Oil, Then Natural Gas

That localized, muscle-and-wood pattern of life ended because three fuels arrived that were unlike anything that came before them: energy-dense, storable, transportable, and critically, available in what appeared to be inexhaustible quantities.

Coal had been mined and burned in small amounts in America since colonial times, but it became the nation's dominant energy source around 1885, when it finally overtook wood. Once it did, coal didn't just supplement the old energy mix, it supplied more than half the nation's total energy for the next 65 years.³ Coal did the work that made industrial-scale steel, railroads, and steam power possible: it was the energy source that first fueled the industrial revolution.

Petroleum arrived shortly thereafter. On August 27, 1859, Edwin Drake, a former railroad conductor with no drilling experience, hired mostly because as a past railroad employee he could get free train passage to rural Pennsylvania, struck oil at 69 feet outside Titusville, Pennsylvania. It wasn't the first time oil had been found in America, but it was the first time it had been deliberately drilled for and produced commercially, and that distinction mattered: it proved oil extraction could be a business, not just a lucky accident of surface seepage. By 1862, Pennsylvania alone was producing three million barrels of oil a year. Within decades, oil would do what coal alone never could: power an entirely mobile, individualized form of transportation via the internal combustion engine and the automobile that came to symbolize the American Dream itself.^{4,5}

By the early 20th century, coal and oil together had done something no energy source before them had accomplished: they decoupled the availability of energy from the limits of muscle, wood lots, and whale populations. Energy became, for the first time in human history, something that felt unlimited.

It was in the mid-20th century that natural gas became a significant energy source for domestic heating and cooking.² Soon it became an important heating source for industry and eventually for power generation. Fossil fuels had transformed a nation and led to unprecedented economic production and consumption.

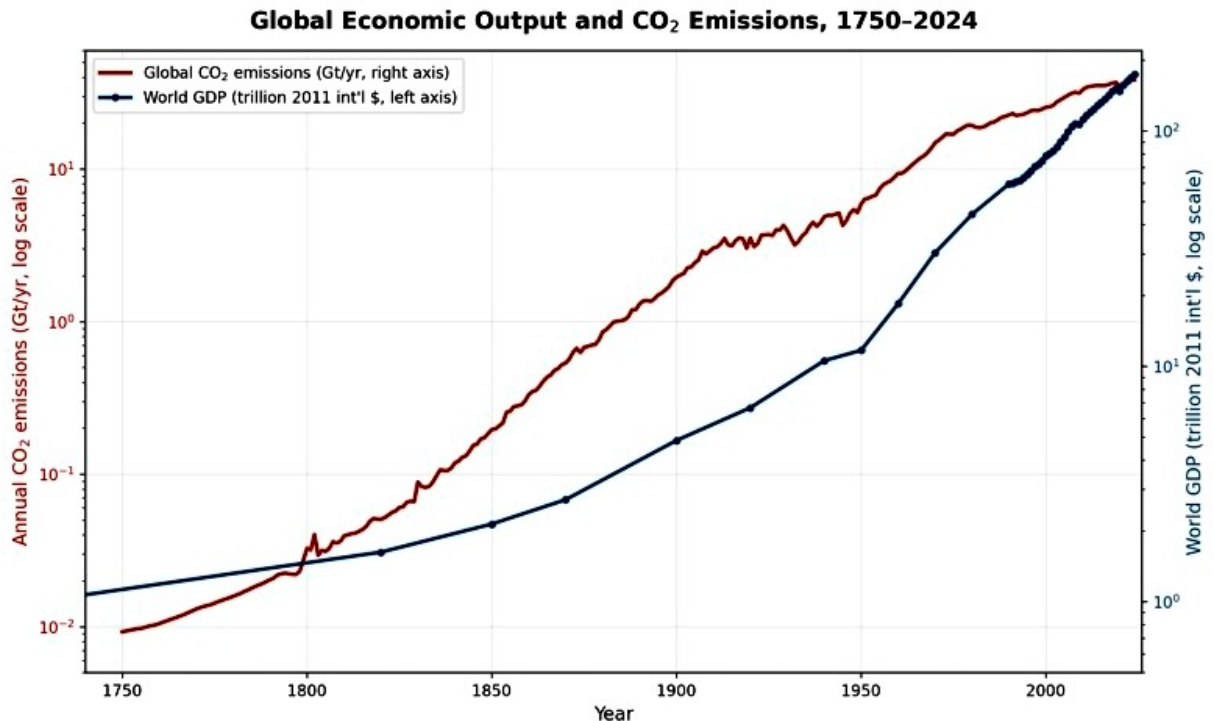
Building the "American Way of Life" on that Foundation

It's not a coincidence that Adams was reaching for a new phrase to describe American aspiration in 1931. The early 20th century had already begun rewriting what an ordinary life could contain: electric light instead of a lamp fueled by dwindling whale oil, a car instead of a horse, a house full of powered appliances instead of hand tools, food shipped from a continent away instead of grown down the road. None of it was free of labor or injustice. Industrial capitalism had brutal costs of its own, and the benefits were distributed unevenly along lines of race, class, and geography from the very start. But the possibility of that kind of material life for more people than ever before, even if not for all, was new and it was fossil fuels, not ingenuity alone, that made it physically possible.

This is the foundation on which the modern American Dream was built: not just a cultural aspiration toward individual freedom and upward mobility, but a literal energy surplus that let a consumer economy expand almost without limits. Cheap coal-fired electricity. Cheap gasoline. Cheap oil-derived plastics, fertilizers, and synthetic materials. An entire century of "more", more mobility, more convenience, more consumer goods, more square footage was underwritten, quite directly, by the energy density of fossil carbon.²

As the demand for consumer goods and services exploded, so did carbon emissions. Although it is difficult to quantify this relationship, global economic output is a reasonable proxy for consumptive expenditures, especially in the U.S. where such expenditures make up 71 % of GDP.⁶ Looking at the relationship between global economic output and CO₂ emissions over the 250-year period from 1750 to 2024 one sees a high correlation despite

historic variations in fuel carbon intensities and energy efficiency. Since 1820, global economic output has expanded over 100 times, while CO₂ emissions have grown over 760 times. On a log scale the two track each other closely enough that output alone explains 90% of the variation in emissions.^{7,8} Our comfort and relative affluence have thus come with a cost.



CO₂ emissions - Global Carbon Project / Our World in Data (fossil fuel + industry, production-based, World). GDP - Maddison Project Database via Our World in Data (2011 international \$, PPP-adjusted). GDP shown at available benchmark years before 1990 (sparse pre-1820); annual thereafter. Both series log-scaled to compare growth rates.

The Uncomfortable Inheritance

So here is the difficult truth this series has to reckon with before it can say anything about carbon capture or emissions overshoot: virtually everyone alive today, and especially everyone in the developed world, has benefited from the age of fossil fuels. The device on which this is being read, the road over which it was delivered, the medicine that keeps us alive longer than any pre-industrial generation could have expected, all of it traces back in some fashion to the energy surplus coal, oil and natural gas has provided.

Call it a societal addiction if the word fits, because in the sense that we have built an entire civilization's expectations and infrastructure around a fuel source we now know we cannot keep burning, it behaves like one. But it's worth resisting the temptation to make this a simple morality tale about a duped or greedy society. The honest question is not "why were we foolish enough to get hooked on fossil fuels?" It's "who, offered the actual choice at the time, would have turned down the life fossil fuels made possible?"

But the past is a given. The question today is "knowing what we know now about the relationship between fossil fuels and our changing climate, are we willing to continue to embrace them, overshoot carbon emission limits believed to be dangerous to our planet and bet on techno-fixes like carbon capture and sequestration to clean up the problem?"

Part 2 of this series takes a look at the long history of our knowledge of the greenhouse effect on our planet, the price of our delayed response and why it has been so hard to react.

References:

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NOTE: Banner image by Eco-Justice Collaborative. AI-generated, August 1, 2026.