

The Myth of Renewable Energy.

By

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Abstract.

It is often contended that all we need to do in order to solve the climate emergency is to transition from supplying our energy needs using fossil fuels to supplying them using renewable forms of energy. This paper will show that this idea is a myth, and that it does not take account of several important facts, not least of which are economic and population growth, and the immense political power, in all senses of the term, of the fossil fuel industry.

Keywords: climate emergency; fossil fuels; renewable energy; economic growth; population growth; political power; three faces of power; fossil fuel industry.

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[1] Introduction.

It is frequently argued, by for example, Holechek, Geli, Sawalhah and Valdez (2022 [1]), that the solution to the climate emergency is a transition from fossil fuels to renewable energy, even if, as they do, they acknowledge that achieving this by 2050 will be difficult. It is the purpose of this paper to propose instead that this will not only be difficult, but totally impossible, and that the idea that fossil fuels can be replaced as the main means of supplying energy until their reserves are exhausted (in 2069 and 2077, in the case of gas and oil, respectively; in 2159, in the case of coal – see Our World in Data, 2023 [2]) whilst

capitalism continues as the global economic system, and the world's human population continues to grow at its present rate, is a fantasy.

[2] The Contingencies of the Transition to Renewable Energy.

If we look at global primary energy consumption in 2022, we find that the world consumed a total of 644.0364 EJ (exajoules, 10^{18} Joules) of energy in that year (source: Our World in Data, no date [3]). Of this, oil supplied 29.61%, coal 25.07%, natural gas (methane), 22.03%, 'traditional biomass', 6.21%, nuclear power ~3.75%, and biofuels, 0.67%.

Renewable energy, in all forms, thus only contributed 12.66% of the total (op.cit.). Biofuels and biomass cannot be considered 'renewable energy', as they both put carbon dioxide (CO_2) in the atmosphere when burned, and no equivalent amount is removed from the atmosphere as they are replaced (Cho, 2011, 2016 [4]; Garson, 2023 [5]). Not only this, but they are harmful to biodiversity and have broader adverse environmental impacts (Fairley, 2022 [6]).

If we divide the total world energy consumption of 2022 by that year's global human population of ~7.906 billion (source: US Census Bureau, 2022 [7]), we obtain a figure for average energy consumption per capita in that year of 81.4617 GJ. Global demand for energy will have increased by 23% by 2045, according to Haitham Al Ghais, the Secretary-General of OPEC (the Organisation of the Petroleum Exporting Countries) in a speech he made in Abuja, Nigeria, in July 2023 (Bala-Gbogbo, 2023 [8]), a point also made in OPEC's *World Oil Outlook* (OPEC, 2022 [9]), which claims that global demand for oil will be 110 million barrels of oil per day in 2045, or 40.15 billion barrels (5.4775 billion tonnes) a year. It also calls for \$12.1 trillion of investment in the oil sector between now and then, which is \$550 billion a year. In context, that is 2.16% of the 2022 US GDP, in current dollar terms (\$25.46 trillion; source: Bureau of Economic Analysis, US Department of Commerce, 2023 [10]).

Holechek *et al* ([1], op.cit.) constrain global primary energy demand to an increase of 25% over the 2020 level by 2050, so the OPEC forecast is not one that can be dismissed. If the rate of increase of 1% p.a. in demand for energy is projected forward to 2050, total global primary energy consumption in that year will have increased by 28% over 2022, to 824.3666 EJ. The global human population in 2050

will be 9.755 billion (US Census Bureau, 2023 [11]), so the then primary energy consumption per capita will be 84.507 GJ, an increase of 3.738%, or 0.1335% p.a.

The question is, ‘How much of that will continue to be supplied by fossil fuels, given the need to reduce, and indeed, eliminate, carbon emissions in order to avert dangerous climate change?’ If they are still supplying over fifty percent of the energy mix in 2050, then that dangerous climate change will not have been averted (see Hansen *et al*, 2013 [12]), yet the International Energy Agency (IEA, 2023 [13]), in its *World Energy Outlook 2023*, informs us that, under its ‘Stated Energy Policy Scenario’ (‘STEPS’), which assumes no change to existing energy policies on the part of governments, world oil demand in 2050 will be 97.4 million barrels a day (Table 3.5, p.130); world demand for natural gas (methane) will be 4.173 trillion m³ (Table 3.6, p.135); and world demand for coal will be 3.465 billion tonnes of coal equivalent (Table 3.7, p.140).

[3] The Fossil Fuel Industry and Political Power.

If we are to understand the continuing dominance of the fossil fuel industry, we must first understand the concept of political power, and understand that it has not one, but three aspects, faces or dimensions. The first of these is easy enough to grasp, and is simply the power of person A to change the behaviour of person B in some way according to A’s will and contrary to B’s. This is the understanding of power presented by Dahl (1957 [14]) and Polsby (1960 [15]), following Weber (1919, in Waters and Waters, ed. & trans., 2016 [16]).

That this view of power is incomplete was noted by Bachrach and Baratz (1962 [17]; 1963 [18]), who argued that there were two faces of power, the second being where dominant political actors exercised the ability to exclude issues from the agenda, thus preventing from debating in the political arena in the first place.

A good example of this in practice was described by Crenson (1971 [19]), who reports on two contrasting cities in the US State of Indiana, one where clean air legislation was passed, the other – Gary, immortalised in song – where it was not, for many years, and then only in very weak form, owing to the presence there of US Steel, the major source of employment and income in the city, and also the major source of air pollution. Local politicians, journalists and citizenry, he tells us,

were all too afraid of the potential consequences in terms of lost jobs and income of raising the issue of regulating air pollution – to such an extent that US Steel and its directors did not need to take any action at all.

The third face, or dimension, of political power is described by Lukes (2021 [20]), and is based on the concept of ‘hegemony’ promulgated by Gramsci (1971, 2005 [21]), which, in turn, is based on the understanding of ideology as part of the ‘superstructure’ (*überbau*) generated by the economic base or foundation (*grundlage*) of society developed by Marx (1859, [22]) and that of ideology as ‘false consciousness’ (*falsches bewusstsein*) proposed by Engels ([23]).

It is the capacity of a class, or élite, of political actors, to determine the behaviour of the rest of society by determining their thinking, through the shaping of their ideas by means of political and religious ideology, howsoever mediated. These days, there are numerous media for the communication of ideas, not merely television, radio, newspapers, magazines and word-of-mouth but also the internet, and this is of particular importance now, especially in regard to the spread of misinformation and conspiracy theories, and the creation of political polarisation, to the benefit of right-wing populist politicians (Kubin and von Sikorski, 2021 [24]).

These politicians are noted for their stated disbelief in the very existence of anthropogenic climate change. At the first of the televised debates between the candidates for the US Republican Party’s nomination for the American Presidency in 2024, which took place on the 23rd August of this year, only one of those present, Nikki Haley, expressed her belief in it, and then only to call on China and India to reduce *their* carbon emissions, saying nothing of those of the US, and the rest denied its existence – Vivek Ramaswamy vehemently so (Marcus, 2023 [25]). The views of the absentee from the debate, Donald Trump, are well-known (Philips, 2016 [26]; Dale, 2023 [27]).

However, more mainstream politicians are equally in thrall to the fossil fuel industry and its interests. Thus, in the US, President Biden has issued more oil and gas drilling licences than his predecessor did – 6,430 in his first two years of office compared to 6,172 issued by Trump in his, 4.18% more (Center for Biological Diversity, 2023 [28]). In the UK, the Prime Minister, Rishi Sunak, announced 100 new oil and gas drilling licences in the North Sea at the end of July (Walker, 2023 [29]), promptly followed by a commitment by the Opposition

Leader, Sir Keir Starmer, that the Labour Party would honour these licences if Labour was returned to power after the General Election, due no later than January 2025 (Blewett, 2023 [30]).

It is this domination of mainstream politics, and politicians, that accounts for the continuing heavy subsidy paid to fossil fuels, and the fear these politicians have of public reaction in case this subsidy was to be cut. A survey of public opinion in Europe found widespread support for policies to tackle climate change, but with a crucial caveat – that those policies must *not* have any impact on material standards of living (Henley, 2023 [31]).

McCulloch *et al* (2022 [32]) list no fewer than 41 countries, including France, that had at least one riot between 2008 and 2021 associated with rising fuel prices, and they found they were more likely to occur where the countries concerned had large, but fiscally unsustainable, fuel subsidies. They are more likely to occur under authoritarian (and corrupt) regimes, and less likely to take place in open, democratic societies, where potential conflicts can be resolved by civic dialogue. France, with the *gilets jaunes* ('yellow vest') protests of 2018 and 2019, was an exception (Ward, 2018 [33]; Matamoros, 2019 [34]). As Matamoros explains, President Macron's Government wanted to increase the tax on diesel and the carbon tax on fuel, for two reasons, (a) to encourage motorists to switch from dirtier diesel to cleaner petrol, electric or hybrid vehicles; and (b) to help fund renewable energy projects, to enable France to meet its 2015 Paris Agreement targets. However, the Macron Government was soon forced into a U-turn, which did not, unfortunately, stop the rioting¹.

This would explain the enormous size of the global taxpayer subsidies to fossil fuels recorded by the International Monetary Fund (IMF; Parry, Black and Vernon, 2021 [35]; Black *et al*, 2023 [36]). They amounted to US\$5.9 trillion in 2020, or 6.8% of global GDP, expected to rise to 7.4% of global GDP by 2025 ([35], op.cit.). They rose to \$7 trillion in 2022, which was 7.1% of global GDP ([36], op.cit.). In 2025, global GDP will be ~\$116.45 trillion (source: O'Neill, 2023 [37]), so 7.4% of that will be \$8.6173 trillion, or \$273,252.79

¹ The present author is able to contribute some personal evidence: at the time of the rioting, he had a friend in Paris, who was one of the protesters. When he pointed out to him that President Macron was seeking to raise the carbon tax on fuel in order to help France tackle climate change, the friend retorted that petrol 'had nothing to do with climate change'. The author did not bother to enlighten him, and broke off the friendship immediately.

every single second. Compared to this, global military expenditure is relatively modest, \$2.24 trillion in 2022, or 2.2% of then global GDP, according to the Stockholm International Peace Research Institute (SIPRI; see Tian *et al*, 2023 [38]).

[4] Conclusion: The Limits of Renewable Energy.

As Moriarty and Honnery (2021 [39], p.812) argue,

‘renewable energy must be assessed on its ecologically sustainable or “green” energy return, which includes the energy costs of ecosystem maintenance as input energy costs. The green energy return is accordingly much lower than the conventional value, so that ecologically sustainable renewable energy is unlikely to deliver anything near existing global energy use... such constraints on renewable energy growth rates mean it cannot be a timely response to global climate change.’

This, they say, means that global energy reductions are essential, particularly in high energy use countries (*ibid.*).

Unfortunately, with a capitalist economic system, this is quite impossible, as the present author has argued elsewhere (Blaber, 2023a [40]; Blaber, 2023b [41]).

Capitalism has to grow, or it dies, and thus needs ever more in the way of material resources and energy, and also needs an ever larger population in order to consume its products and services, even if, in these days of automation and artificial intelligence, it does not need more workers to produce them. It cannot be anything *but* harmful to the Earth, which has finite resources, and a finite capacity to absorb our waste and pollution. There can be no such things as ‘green capitalism’ or ‘green growth’ – these are contradictions in terms (see: Hickel and Kallis, 2019 [42]).

Will renewable energy be able to supply 100% of the 824.3666 EJ global primary energy demand in 2050, and 84.507 GJ per capita primary energy demand in that year? The short answer is ‘No,’ and the longer answer is ‘Not even half that,’ which implies that the goal of ‘net zero by 2050’ is a nonsense, and the 2015 Paris Agreement target of keeping global warming well below 2°C is in very serious jeopardy.

The idea that a simple transition to renewable energy is all that is needed to ‘solve’ the climate emergency is a myth, and a dangerous myth, at that.

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