

Big Tech: playing whack-a-mole with carbon?

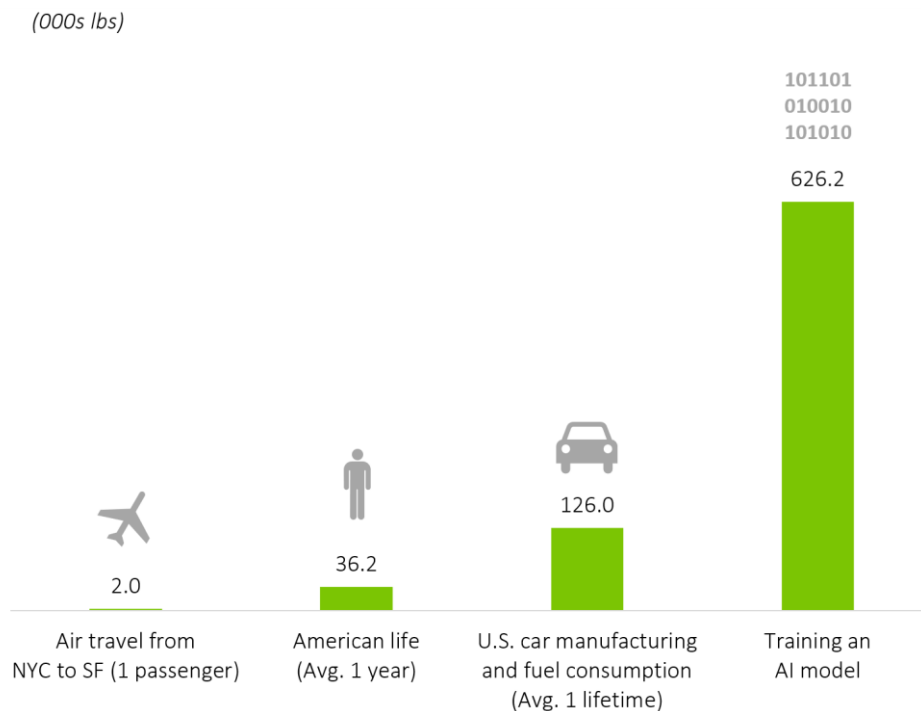
Introduction

It takes over 70bn kilowatt hours per year to power the internet, which means the tech titans leave behind a massive carbon footprint. This article will focus on the largest technology companies, most notably Amazon, Alphabet, Apple, Facebook, and Microsoft, and their growing impact on the Earth’s climate. It will look at these companies’ energy consumption, relationships with oil & gas clients, and finally, their climate activism.

Energy consumption

Technology companies consume extremely large amounts of energy to process data and develop artificial intelligence and machine learning algorithms. The training process for a common large AI model can emit over 626,000 pounds of carbon dioxide, nearly equivalent to 300 round-trip flights from New York to San Francisco. Although data centres have become more efficient, they have multiplied fast enough to offset any savings from that efficiency. The Big Five consume 45 tera-watt hours a year, a figure comparable to New Zealand.

Figure 1. CO₂ emissions footprint benchmarks



Source: University of Massachusetts Amherst

Further, Big Tech has been supplying evermore goods and services. Google’s energy usage tripled between 2013 and 2018. Facebook’s has quintupled. In the space of just a decade, the Silicon Valley behemoths have become the centrepiece of the climate change jigsaw. According to the Financial Times, the technology sector produces around 3% of world’s greenhouse gases emissions.

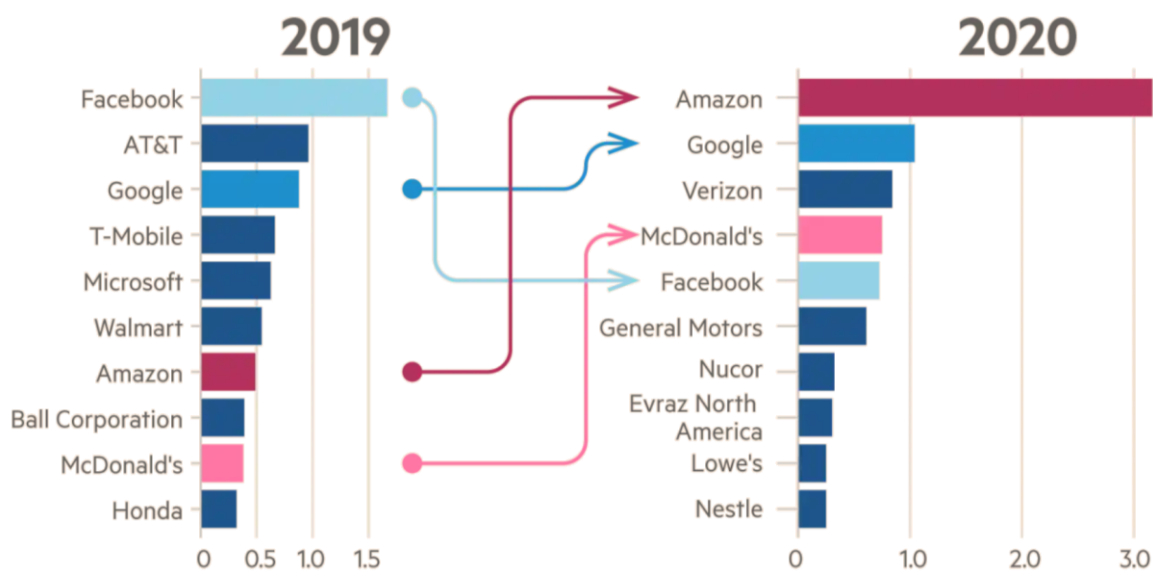
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Although not the first obvious culprit, Big Tech has finally begun to feel the political and social pressure to fight climate change. Employees pressured the boards of the biggest firms. Their campaign bore fruit, technology companies acquired 38% of clean energy in the US over the last five years. In 2020 alone, US corporations have bought 10.6 GW of green capacity, a figure equal to the UK's total offshore wind power generation capability.

Technology companies have made many green pledges. Google has told its employees and investors that it wants to run all its data centres using carbon-free electricity by 2030. Microsoft vowed to become “carbon-negative”, that is to extract more carbon dioxide from the atmosphere than it emits through its operations. Jeff Bezos, who recently stepped down as Amazon’s CEO, has also pushed his company towards a reduction in carbon emissions. Amazon bought the most clean energy in 2020, over 3GW.

Figure 2. Renewable power purchase agreements in 2019 and 2020

Deal tracker for renewable power purchase agreements by large buyers (GW)



Source: Financial Times

Critics claim that many of the companies’ pledges are greenwash, a simple PR stunt aimed at appeasing climate-conscious employees or ESG investors. Often, they are right. Carbon neutrality is extremely hard to quantify. Companies often engage in window dressing when showing the progress they have made in reducing carbon emissions. Amazon, for example, offsets the greenhouse gases it releases through “carbon credits”, i.e. tradable certificates that represent the right to emit one tonne of carbon dioxide. Despite backing over 40 projects aimed at capturing carbon dioxide, Google has also been accused of achieving its carbon-neutral status through significant carbon credit purchases. Although carbon credits aim to reduce emissions, this instrument is often overused and criticised for inaccurately valuing gases discharged into the atmosphere. Their prices are too low to make any impactful change at the moment. According to Mark Carney, former Bank of England Governor and current UN envoy for climate change, volume of carbon credit trades should reach \$50-100bn annually to be considered meaningful. As of 2020, that value stood at \$300m, rendering the mechanism insignificant.

Questions arise concerning the extent to which technological companies can be trusted to deal with the issue. So far, governments have made little intervention. Only 9 countries in the world have set legally-binding national net

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zero emissions target: the United Kingdom, France, Denmark, Sweden, Hungary, New Zealand, China, Japan and South Korea. Countries have implemented measures such as introducing carbon levies, subsidies for renewable energy, and adhering to the EU Emissions Trading Scheme but these measures have shown limited success in actually reducing carbon emissions.

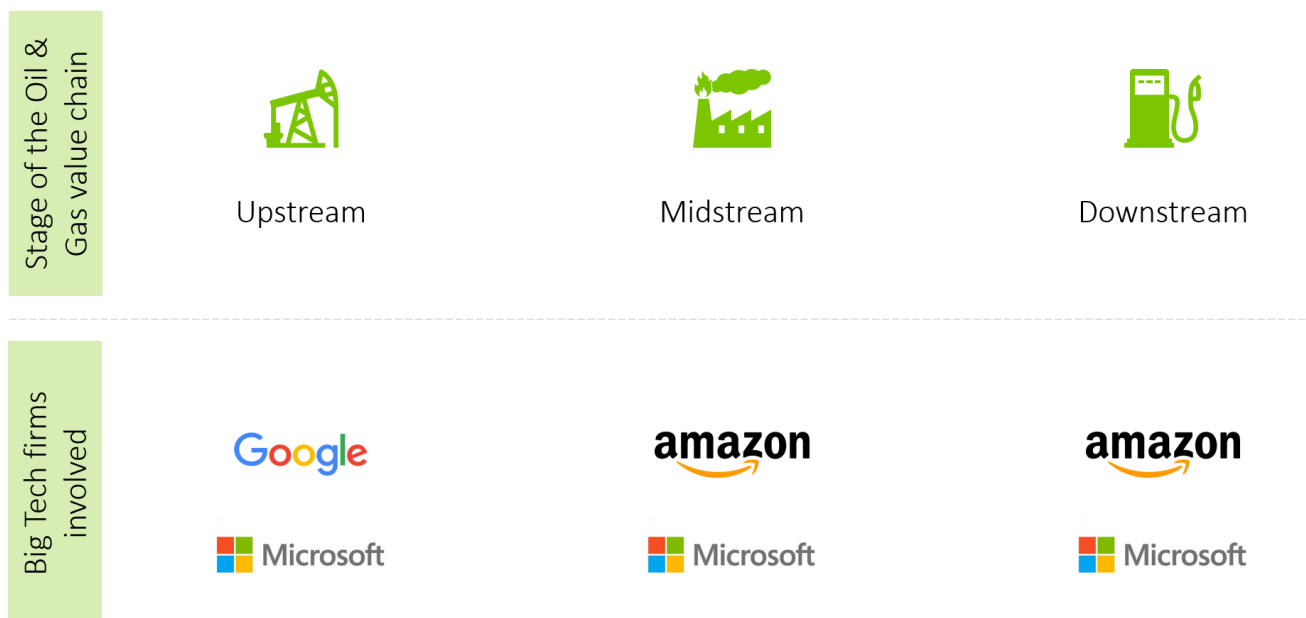
Relationship with Big Oil

For all its positive actions to reduce its carbon footprint, Big Tech still contributes to one of the most polluting industries: Big Oil.

In recent years, it has become much harder and more expensive for oil & gas companies to extract their fossil fuels as the easy-to-work-with reservoirs are almost depleted. Thus, the industry turned to AI and advanced analytics to facilitate the process, and Big Tech entered the game. According to different sources, the annual spending of Big Oil on cloud services, AI, and advanced analytics can range from \$2.5bn to a hefty \$20bn, which might account for as much as 20% of the overall cloud market. To get a piece of this growing pie, Big Tech develops specialized AI products and provides its cloud services to the entire supply chain: from discovery to extraction, refining, and distribution.

A recent report by Greenpeace titled “Oil in the Cloud: How Tech Companies are Helping Big Oil Profit from Climate Destruction” analyzed 14 contracts between Big Tech companies, namely Amazon, Google, and Microsoft, with major oil & gas corporations such as ExxonMobil, Chevron, BP, and Shell. The oil and gas industry can be described by 3 phases of the lifecycle of oil and gas, upstream (finding and extracting oil and gas), midstream (transporting and storing oil and gas), and downstream (refining, marketing, and selling oil and gas), and Greenpeace’s report has found the following links between Big Tech and Big Oil, summarized in the figure below.

Figure 3. Big Tech’s involvement in the Oil & Gas lifecycle



Source: Greenpeace

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The biggest issue is not Big Tech's business relationships with Big Oil themselves, but the substance of these relationships. Amazon, Google, and Microsoft directly help oil and gas companies extract and sell their fossil fuels faster, cheaper, and in larger quantities, and tech majors are actively advertising such services as well.

In 2018, Google appointed Darryl Willis, a former President and General Manager of BP, as VP of Oil, Gas, and Energy at Google Cloud to strengthen the business vertical by developing new products and solutions and building relationships with key people from oil and gas industry. Later, in August 2019, Willis left Google and became VP of the Energy Industry at Microsoft.

Microsoft, which is present in all 3 segments of the oil and gas lifecycle, appears to be the biggest tech partner for the oil and gas industry and actively engages with potential clients in the sector. In 2019, it announced the "AI center for excellence", which focuses on the digital transformation of the energy industry. It partners with Schlumberger and Baker Hughes, two of the largest companies offering oilfield services. Microsoft also sponsored the International Petroleum Technology conference in Saudi Arabia. Like Google, Microsoft has a division that develops and sells products and solutions specifically for energy companies.

Amazon attracts clients from the oil and gas sector as well. Its subsidiary Amazon Web Services, the leading cloud services provider in the world, which accounts for nearly one-third of the total market, openly targets oil and gas companies. Amazon has issued a policy stating that it will sell cloud services to oil and gas companies only to help them accelerate their transition to renewable energy. However, Greenpeace's study found Amazon machine learning contracts that did not align with this policy.

Amazon, like Google and Microsoft, has rebranded its service offering from purely "oil and gas" to the more socially acceptable "energy". The substance of its contracts has not changed though, and oil and gas companies remain the main targets.

So, a very important question arises: how do Big Tech companies respond when society criticizes their relationships with Big Oil? Google, Microsoft, and Amazon have chosen different paths.

In response to the Greenpeace report, a Google spokesperson said that the company will not "build custom AI/machine-learning algorithms to facilitate upstream extraction in the oil and gas industry". The company also added that the revenue from oil and gas services in 2019, which was around \$65m, accounted for just 1% of the money generated by Google Cloud over the year. This statement suggested Google would be the first Big Tech firm to take the high road. However, it remains unclear whether Google's existing contracts, some of which might last for years—will be terminated in the near future.

Microsoft and Amazon have a different view on their contracts with the oil and gas industry. Both companies acknowledge the problem, but also underline the importance of helping oil and gas companies transition to clean energy. The two tech giants see it as their mission to help the transition with their cloud services. Amazon CEO Jeff Bezos defended his company's work with the oil and gas industry in 2019 by saying that "we need to help them instead of vilifying them". In a response to the Greenpeace study, Microsoft pointed out that "the reality is that the world's energy currently comes from fossil fuels and, as standards of living around the world improve, the world will require even more energy". Microsoft further added that the company is "encouraged by the growing number of energy-sector commitments to transitioning to cleaner energy and lowering carbon emissions, but they can't do it alone".

However, this position seems highly questionable because it does not line up with the climate pledges Microsoft and Amazon have taken. For instance, Microsoft's contract with ExxonMobil alone might add an additional 3.4m

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tons of carbon into the atmosphere by 2025. That would account for roughly 21% of Microsoft's 2020 carbon footprint, which sums up emissions from scopes 1-3. The carbon footprint of contracts with oil and gas companies is not included in the calculation of Microsoft's carbon footprint and hence is not reflected in the company's plan to become carbon negative by 2030. For Amazon, which pollutes far more given its carbon footprint of 44.6m metric tons, the problem is even more urgent. Terminating contracts with oil and gas companies might be necessary to help the climate crisis.

Climate activism

Another point of concern is Big Tech companies' actions when it comes to cooperation with political forces. According to a study by InfluenceMap, out of the reported US federal lobbying spending of Apple, Alphabet, Amazon, Facebook, and Microsoft in 2019-2020, only 4% was related to climate. Given the enormous economic and financial power of the five Big Tech firms, they can strategically influence governmental climate policy but refrain from it for some reason. It contrasts with the strategic actions taken by other corporations, advocating for more ambitious movement towards the Paris Agreement goals, like Unilever, and with the actions taken by oil majors, headed in the opposite direction, but still focused on their goal. While they remain muted on the public policy front, some Big Tech companies have taken a more active role within their own platforms. Facebook, for instance, has launched a campaign in 2020 that aims to limit climate change misinformation.

Conclusion

All in all, Big Tech includes some of the most influential companies in the world, and their actions can either postpone or fast forward climate crisis. With their size and complexity of operations and business relationships, there are no easy solutions. However, their everyday actions and strategic decisions carry weight. Big Tech is already well aware of the climate problem, and each of the five companies has already taken at least some decisive actions and pledged at least to carbon neutrality in the future. More hard business and ethical decisions await Big Tech firms in the future to undo the damage that has already been done.

TAGS: Big Tech, Big Oil, Greenhouse, CO2, Carbon, green, environment, environmental, emissions, footprint, renewables, renewable, clean energy, Google, Amazon, Microsoft, Facebook, Alphabet, Apple, technology, consumption, FAANG

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