Top 10 companies globally and their contributions to greenhouse gases as a percentage of global contributions.

INTRODUCTION

Greenhouse gases (GHGs) are an existential threat to Earth's habitability. They trap the sun's heat and cause a rise in global temperature and sea level, extreme weather conditions, and climate change [1]. Globally, an estimated 50 billion (Bn) tonnes of CO_2e (tCO_2e) are emitted yearly [22].
The rise in global temperatures has risen by approximately 0.18 °C every decade for the past 4.4 decades [23]. It is essential for Industries to develop carbon-free systems to meet the Paris Agreement's goal aimed at keeping the atmospheric temperature rise below 2 °C [24].

LIST OF TOP 10 COMPANIES BY MARKET CAP

1. Apple $3.456 trillion
2. Microsoft $3.230 trillion
3. Nvidia $2.900 trillion
4. Amazon $2.475 trillion
5. Alphabet (Google) $2.361 trillion
6. Saudi Aramco $1.800 trillion
7. Meta Platforms $1.655 trillion
8. Tesla $1.274 trillion
9. Berkshire Hathaway $1.023 trillion
10. TSMC $997.42 billion

This list is valid as of January 28, 2025[2].

Together, these companies have a market cap of $21.17 trillion[2]. This represents approximately 17.07% of the global stock market [25].

BREAKDOWN

Apple (The forbidden fruit)

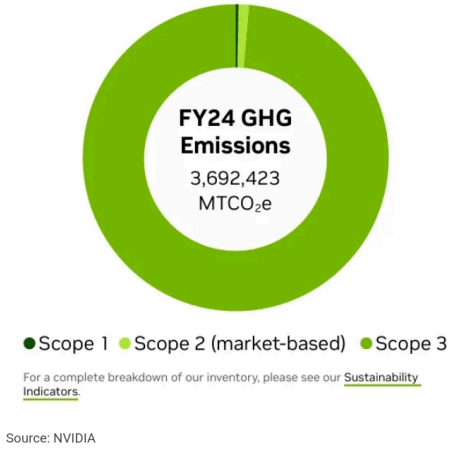
Apple in its report [3] conveniently stated its emissions cutting initiatives and impact, further failing to state the actual GHG emissions in the post. However, this could be found in its Sustainability Report 15.6 million[4] stating that it emitted 15.6 million metric tons of carbon dioxide equivalent ($MtCO_2e$) [3,4;pg77]. It is important to note that the company has several initiatives towards addressing its emissions and significant impacts as a result.

Microsoft (Tech Giant)

Microsoft also witnessed an increase of its GHG emissions from 17.162 million metric tons of carbon dioxide equivalent ($MtCO_2e$) in 2023 [7;pg03], to about in 2024[7], the same year it signed the largest ever carbon removal deal with Stockholm Exergi [6].

Nvidia (Chip juggernaut)

In 2024, the global chip juggernaut emissions amounted to 3.69 million metric tons ($MtCO_2e$) of CO2 equivalent [8]. A significant



Amazon (E commerce)

E-commerce giant - Amazon disclosed 68.82 million metric tons of carbon dioxide equivalent for 2023 [19]. This is a 3 percent decrease compared with 70.74 million the previous year [19]. However, this is a significant increase when compared to Amazon's baseline year in 2019, it

reported 51.17 million metric tons [19]. Its reduced emissions year-on-year is accredited to increased adaptation of renewable energy [19].

Meta Platforms (Social Networking Giant)

Meta in its 2023 Sustainability Report, reported that it emitted approximately 14.067 million metric tons of carbon dioxide equivalent ($MtCO_2e$) [14]. This value increased from its previous year, this has been linked to the growth in its data centers [14].
This has been regarded as highly counterproductive to its goals to cut emissions. It uses AI to identify opportunities to reduce greenhouse gas emissions or improve energy efficiency.
According to Meta,
"It's about being able to run all the simulations, process all of that data, and then come up with judgments or recommendations."

However, this at the same time seems to be the Achilles heel negatively affecting its emissions cutting plans. More AI leads to more data centers, which leads to more energy consumption, which leads to more GHG emissions (until they invest in sustainable energy solutions) [14].

Alphabet

The world's third largest tech company disclosed it generated a total GHG emissions of 14.3 million tCO_2e [15].
The company's GHG emissions have seen regular increases- a 13% compared to its previous year and a 48% increase compared to its 2019 base year emissions [16]. Once again, data centers are linked to this increase.

Saudi Aramco (Oil giant)

For 2023's financial year, Saudi Aramco reported total greenhouse gas (GHG) emissions of 72.6 million metric tons of carbon dioxide equivalent ($MtCO_2e$) [17]. While this represents an increase of roughly 1.1 percent from the previous year, which may be considered a small increase, in relation to its scale is quite large- approximately 726 thousand $MtCO_2e$ of GHG emissions [17].

Tesla

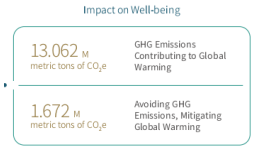
For a company whose operations and innovations are allegedly centered around sustainability and a cleaner future, Tesla's GHG emissions for 2023 was a staggering 50 million metric tons of carbon dioxide emissions ($MtCO_2e$) [9].

Berkshire Hathaway (The conglomerate)

Berkshire Hathaway- originally a textile company, now one of America's largest conglomerates with its hands in insurance, transportation and logistics, energy generation, manufacturing and retail, amongst others [10]. Some Berkshire Hathaway's companies are GEICO, BNSF , McLane, FotL, Marmon, PCC, Clayton Homes [12].
Berkshire Hathaway Energy Company alone emitted 52.7 million metric tons of carbon dioxide equivalent ($MtCO_2e$) in 2023 [11]. Berkshire Hathaway is not transparent with its GHG emissions reporting, "Berkshire Hathaway Inc. does not have a net zero target and has not specified what gases are covered by its target" [21].
However, in 2022 the company emitted an estimated 138.5 million metric tons of carbon dioxide emissions ($MtCO_2e$) [19]. With plans towards a more renewable future, in 2022, it planned to invest in renewable energy and retire an additional 16 coal generation units between 2023 and 2030 [20;K-10].

TSMC

Taiwanese SemiConductor reported GHG emissions of 13.062 million metric tons of carbon dioxide emissions ($MtCO_2e$) for 2023, with a bulk of its emissions from its scope 2 (indirect emissions) [13;pg16]. Notably, it was able to avoid about 1.672 million metric tons of carbon dioxide emissions ($MtCO_2e$) the same year [13;pg16].

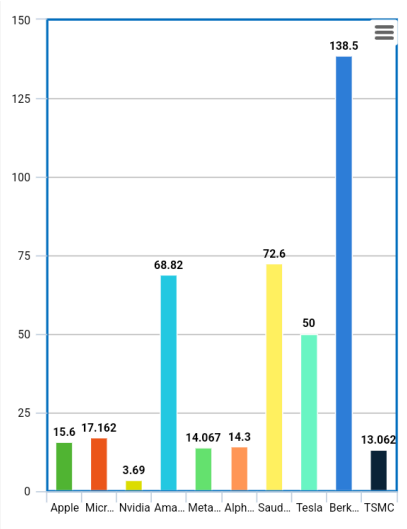


DATA IN TABLE FORM

S/N	COMPANY	2023 EMISSIONS ($MtCO_2e$)
1	Apple	15.6 million
2	Microsoft	17.162 million
3	Nvidia	3.69 million
4	Amazon	68.82 million
5	Meta Platforms	14.067 million

6	Alphabet	14.3 million
7	Saudi Aramco	72.6 million
8	Tesla	50 million
9	Berkshire Hathaway	138.5 million
10	TSMC	13.062 million

DATA IN BAR CHART FORMAT



COMPARISON TO GLOBAL EMISSIONS

The total emissions as reported for 2023 amounts to 407.801 million tCO_2e. This represents approximately 0.8 percent of global annual emissions [22].

CONCLUSION

While most companies claim to have a climate friendly and emissions cutting goal, very few of them actually meet up to its goals in reality. Hinting that said climate goals may just be baits to lure investors into investing in them.
Further, the race for AI superiority amongst tech companies doesn't seem to be slowing down anytime soon, this has led to the exponential increase in data centers, the power needed to power the centers and as such the increase of GHG emissions.

Stricter government regulations and potentially the introduction of a stable and standard carbon tax system may be important to drive the desired change, transitioning the ‘green dream’ from green washing attempts to a not so distant reality.

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