

Outlining How the U.S. Energy Space Retakes Their Best-In- Class Narrative

**"You play to win the game.
You don't play to just play it...
you play to win the game"**



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CONTENTS

A Change in Mindset Will Facilitate a Long-Term Material Victory	4
“Winning” the ESG War Is Impossible Unless the Industry Provides Data	5
Empirically, the ESG Realities of U.S. Energy Are Global Best-In-Class	7
Why Are the Economic Realities of Energy Not Told?	17
How to Combat the ESG Data Conundrum / Action Items	22



A Change in Mindset Will Facilitate a Long-Term Material Victory

The energy sector has been largely playing defense since the formal arrival of the ESG movement in the global capital markets. It's fair to say that ESG efforts were initially laden with pre-existing biases that disproportionately affected legacy energy companies. Today, ESG data is still in its relative infancy and many of the methodologies used to evaluate companies are either inaccurate, uncorrelated, or driven by preset agendas rather than grounded in empirical integrity.

The battleship debating the utility of ESG data and disclosure has left the dock and is most likely never returning. ESG is now a permanent mainstay within the capital markets. Whether the energy industry likes it or not, ESG data and disclosure are now deeply embedded within the processes that determine eligibility for equity, debt, and insurance. Granted, investors display a wide spectrum of expectations regarding disclosure, but arguing against voluntary minimal ESG reporting is counterproductive. All private and public companies are now expected to provide some degree of ESG-related material to remain eligible for capital markets participation, including insurance¹. Moving forward, the industry's collective focus should emphasize the importance of quantitative material trends as opposed to questioning the overall conceptual utility of ESG.

The energy industry had an opportunity to push back against disclosure requirements, but unfortunately, that battle was lost. It's important to keep in mind, however, that this was only one battle. Continuing to debate the merits of additive disclosure as a mandate should not be the sole focus, particularly since it has now become a global regulatory issue. The incremental utility of an additional framework will also prove marginal at best. The ESG vocabulary has already been established and is widely adopted by regulatory bodies across the globe. The sector's narrative should focus on the data because the actual data (as opposed to ratings or aggregators) portrays an incredibly promising trend and an eye-opening set of impressive firsthand truths.

These trends are typically difficult for a generalist investor to understand, primarily because of all the "noise" condemning the hydrocarbon businesses. To properly convey the factual narrative, the industry must increasingly become "bilingual" and better understand the terminology of the sustainability professional. In many cases, the qualitative ESG-related language currently employed remains more of a foreign dialect in the broader hydrocarbon space. The most efficient translation mechanism is quantitative data from the companies, not the rating agencies. More importantly, objective self-reported data is the firepower required for the industry to transition away from continually finding itself in a defensive position.

The time has come to play offense and to proactively convey the positive set of economic realities which exist in the energy sector. Above all, the industry wins by collectively highlighting these bottom-up economic truths by utilizing trending data – especially given the empirical fact the data indicates the United States' energy sector is leading the way in decarbonization, safety, efficiency, reliability, and affordability. The sector's observed trend over the last quarter century is incredibly impressive, and the industry needs to come together to deliver the story and showcase just how mistaken the fossil fuel detractor community is.

¹ <https://news.chubb.com/2023-03-22-Chubb-Announces-New-Climate-and-Conservation-Focused-Underwriting-Standards-for-Oil-and-Gas-Extraction>

“Winning” the ESG War Is Impossible Unless the Industry Provides Data

Now is the perfect time for the energy sector to play to win, not because of anything necessarily philosophical or idealistic, but because empirical evidence distinctly supports the magnitude of our country’s decarbonization success. The great irony of energy ESG is that there remains hesitancy within the space to proactively tell its story even though it is incredibly impressive and promising. At a high level, the attempt to “win” the ESG battle makes conceptual sense. The legacy energy space has yet to collectively outline what the industry desires to win. There exists a variety of individual company objectives and goals, but industry consensus regarding a potential ESG endgame remains ambiguous. The focus has placed a greater emphasis on rebutting the multitude of detracting narratives rather than consistently conveying collective economic realities, and the space remains misaligned when it comes to characterizing the actual attributes of defining goals of ESG disclosure.

Since there currently lacks a common denominator that unites the ultimate end goals and objectives of ESG reporting and strategy, the perception of winning remains subjectively case by case and somewhat abstract. Management teams must be thoughtful when individually blueprinting material long-term ESG success, but the aggregated sector must also convey greater alignment. The lack of achievement relative to other sectors is in part due to the complexity of the space, but it can also be attributed to the fact the sector has been playing defense for far too long. Adversaries and detractors of the fossil fuel industry have engrained and profoundly embedded their philosophies, perspectives, and collective arguments within the influential spheres of society and government. The common citizen is now assumed to understand the anti-fossil fuel stance and remains without equal firepower to pragmatically and objectively counter such arguments.

Historically, the industry’s spotlight has generally focused on countering instead of attacking. In the cases where a proactive argument has been offered, the fossil fuel perspective has mostly been relegated to and over-relied on philosophical or anecdotal reasoning. For example, the “anti-ESG” stance should be expressed more in economic terms rather than political ones². That is not to say the political perspectives are unfounded. It is, however, a subjective argument that tends to appeal to opposite ends of the political spectrum as opposed to remaining completely founded in factual economics. This approach represents a distinct shortcoming within the pro-fossil fuel debate, i.e., appealing to a philosophical base as opposed to simply relying on empirical details and engaging with the pragmatic middle.

As the energy space relies less on data to express its view, the more engrained fossil fuel opponents become with their existing ideology – and the more confused the pragmatic middle remains. This is an ineffective approach and, in most cases, overcomplicates matters. For example, as outlined later in this paper, the management fees for ESG funds are typically 15 to 30 basis points higher than conventional “non-ESG” funds³.

In a recent Journal of Finance paper, University of Chicago researchers analyzed the Morningstar sustainability ratings of more than 20,000 mutual funds representing over \$8 trillion of investor savings and found that the highest-rated funds in terms of sustainability certainly attracted more capital than the lowest-rated funds, but none of the high sustainability funds outperformed any of the lowest rated funds⁴.

² <https://www.institutionalinvestor.com/article/b1zhqxxd0mpwts/Investors-Are-Dumping-High-Rated-ESG-Funds-for-Cheaper-Strategies>

³ <https://get.ycharts.com/resources/blog/esg-mutual-funds-etfs-fees-expense-ratios/>

⁴ <https://hbr.org/2022/03/an-inconvenient-truth-about-esg-investing>

“Winning” the ESG War Is Impossible Unless the Industry Provides Data

This is a critical dynamic to consider when blueprinting corporate ESG strategy. ESG-related inputs and variables do not guarantee performance. Instead, they assist in maintaining broader eligibility for capital. Investor capital is delicately finite, and the days of free money are behind us. As the cost of capital systemically rises, the market must recalibrate in a manner that focuses on responsible, consistent, and lasting returns. We simply cannot afford to allow a disproportionate amount of idealism to creep into conventional market practices or portfolio management. Material ESG-related variables and alpha generation are not necessarily mutually exclusive, but a higher ESG rating does not guarantee any type of outperformance. It does, however, improve the odds of attracting quality capital throughout the globe. The market should not confuse ESG ratings with enhanced performance, but we should collectively understand that ESG-related transparency is increasingly a proxy for management’s perceived reputation.

There remains a disconnect between how the energy sector perceives its credibility and what it actually is. This commonly results in an overreliance on subjective reasoning to counter the embedded detractor ideology or false exception regarding non-fundamental data disclosure. The hard reality is the energy sector must simultaneously offer attractive alpha and reacquire the reputational equity lost over the prior decade stemming from financial underperformance. As cynical as it sounds, all sectors, including technology, have experienced run-ins with ESG-related controversies. A key difference was the explosion of the technology sector’s performance during the 2010s while the same period for energy is referred to as “The Lost Decade”⁶. Regaining the trust of the sector’s stakeholders is critical, and it will not occur without offering both consistent performance and continual quantitative evidence validating the anticipated duration of the performance.

Just because fossil fuels will remain an economic necessity for the foreseeable future does not imply immunity from reporting material, bottom-up ESG-related data points. Right or wrong, the market inherently feels the need for this information, and underplaying its influence only widens the door for energy detractors to promote their case. The market maintains a growing insatiable need for data, and we feel the only way to counter embedded ideologies is to reverse course and consistently attack with collective objective quantitative data. By changing course in this fashion, the sector will not win over everyone, but they will be playing to win the battle for the pragmatic middle instead of playing not to lose ground with the unreasonable extremes of the idealistic spectrum.



⁵ <https://fortune.com/2022/12/23/facebook-parent-meta-pays-record-725-million-to-settle-cambridge-analytica-scandal/>

⁶ <https://www.reuters.com/article/us-global-markets-decade-energy/u-s-energy-shareholders-seek-to-leave-behind-a-lost-decade-idUSKBNTYV0CM>



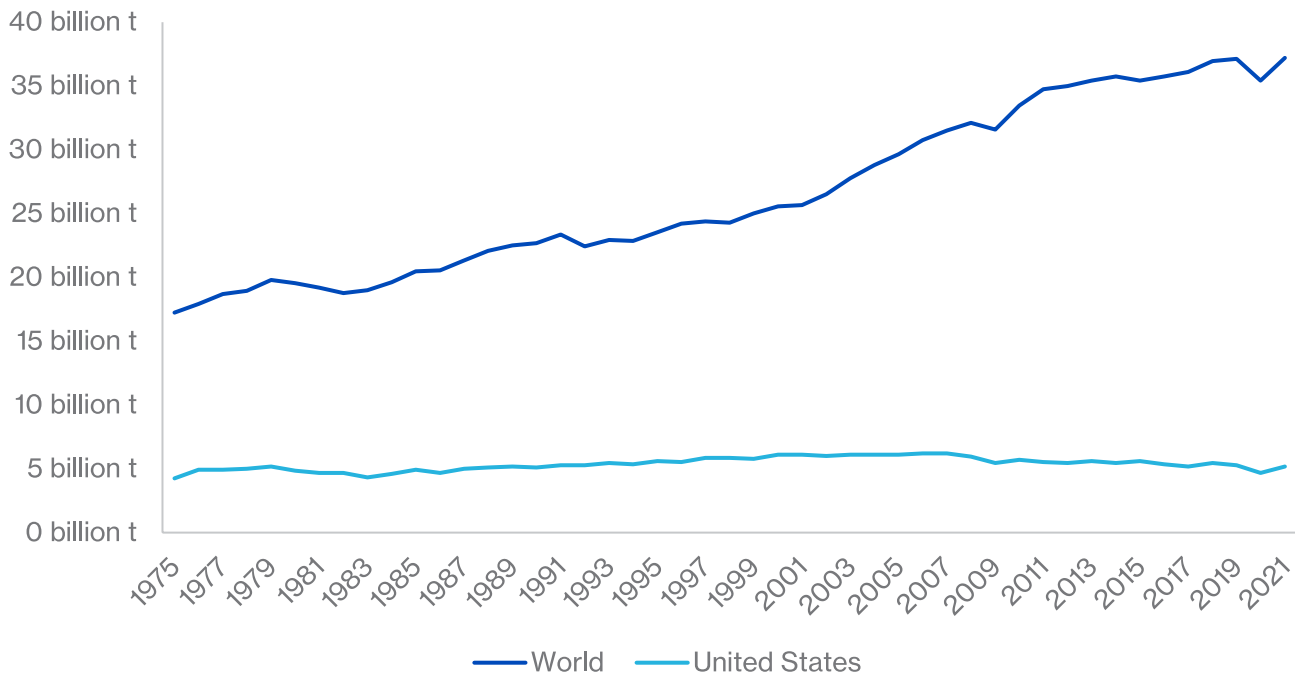
Empirically, the ESG Realities of U.S. Energy Are Global Best-In-Class

Since 1975, the United States’ proportional share of global cumulative CO2 emissions has decreased from roughly 35% to 25%⁷. This decrease is even more impressive considering the annual average GDP growth rate between 1975 and 2021 for the United States is 2.7%⁸. If we baselined the U.S. economy at 100 in 1975, then GDP hit 346.5 in 2021 while simultaneously decreasing our global cumulative share of CO2 emissions by approximately ten percentage points from over one-third to one-quarter. This also took place with gas, oil, and coal remaining at least 82% of the energy mix within the United States⁹.

This feat showcases the innovative capabilities of the United States economy and energy sector. Global GDP baselined over the same time frame increased to 402.4 while global annual carbon emissions from fossil fuels more than doubled, i.e., 17B tons to 37B tons¹⁰. Simply put, over the last forty-five years, the world required annual carbon emissions to double to generate a 4.0x increase in GDP while the United States increased GDP by 3.5x while keeping annual carbon emissions flat. This is nothing short of amazing.

ANNUAL CO₂ EMISSIONS

Carbon dioxide (CO₂) emissions from fossil fuels and industry. Land use change is not included.



The United States has been able to maintain a stable release of carbon emissions per year over the last forty-five years¹¹

⁷ Our World in Data – CO2 Emissions. <https://ourworldindata.org/co2-emissions#:~:text=China%20is%2C%20by%20a%20significant,closely%20by%20Europe%20with%2017%25.>

⁸ World Bank IBRD Database - <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2021&locations=US&start=1975>

⁹ <https://ourworldindata.org/energy-mix>

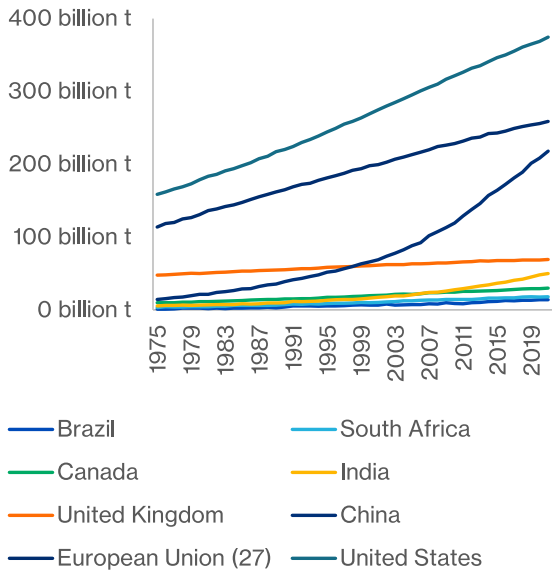
¹⁰ Macrotrends World GDP growth - <https://www.macrotrends.net/countries/WLD/world/gdp-growth-rate>

¹¹ <https://ourworldindata.org/co2-emissions#:~:text=China%20is%2C%20by%20a%20significant,closely%20by%20Europe%20with%2017%25.>

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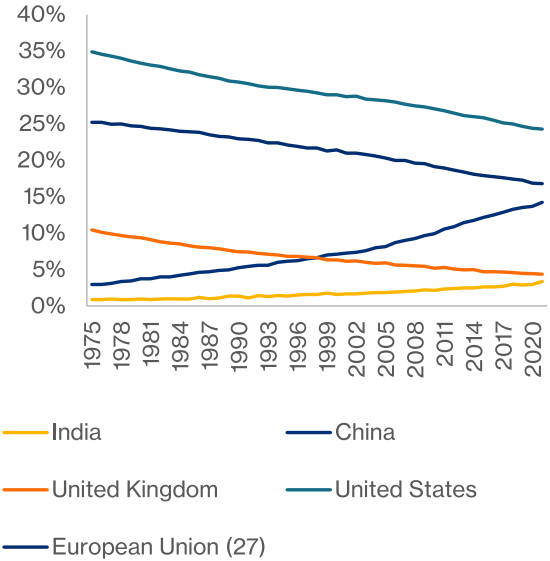
CUMULATIVE CO₂ EMISSIONS

Cumulative emissions are the running sum of CO₂ emissions produced from fossil fuels and industry since 1975. Land use change is not included.



SHARE OF GLOBAL CUMULATIVE CO₂ EMISSIONS

Cumulative emissions are calculated as the sum of annual emissions from 1975 to a given year. This measures fossil fuel and industry emissions. Land use change is not included.



China displays exponential growth in cumulative CO₂ emissions whereas the pattern for the United States is linear

For additional context, the cumulative emissions released by the United States display a linear growth model relative to China's exponential pattern. Linear growth is a function of a consistently similar rate while exponential growth increases in speed over time. Both countries have substantially grown GDP over the last quarter century, but, unlike China, the U.S. has not achieved this at the expense of exponentially emitting carbon. This vital distinction is a critical attribute that further highlights the innovation and decarbonizing capabilities of the United States. Growing our economic prowess has not come at the expense of generating higher relative carbon emissions – quite the contrary.

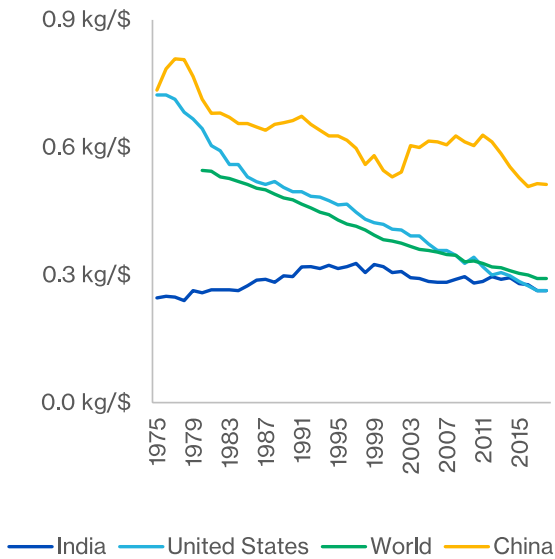
Empirically speaking, the United States has successfully grown its economy while simultaneously decreasing the amount of carbon emitted per dollar of GDP. As indicated in the graph below, the world economy has also been able to achieve this as well since 1975, just not at the same scale as the U.S. However, the global trend is largely due to the United States' impressive performance. Intuitively, this makes sense given the immense influence and impact of the U.S. economy on the global stage. It also highlights that the United States displays the **greatest decrease in carbon emission generation** in the pursuit of GDP creation.

¹² Our World in Data - <https://ourworldindata.org/grapher/cumulative-co-emissions>

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CARBON EMISSIONS INTENSITY ECONOMICS

This is measured as the kilograms of CO₂ emitted per dollar of GDP. Emissions include fossil fuel and industry emissions. Land use change is not included.

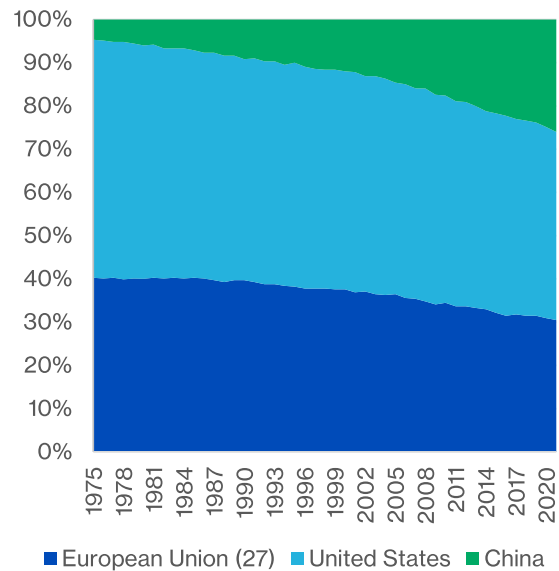


Source: Our World in Data based on the Global Carbon Project (2022).
 OurWorldinData.org/co2-and-greenhouse-gas-emissions
 •CC BY

Carbon emissions per dollar of GDP for the United States have dramatically over the last 45 years¹³

CUMULATIVE CO₂ EMISSIONS BY WORLD REGIONS

Cumulative carbon dioxide (CO₂) emission by region from the year 1975 onwards. This measures CO₂ emissions from fossil fuels and industry only – land use change is not included.



Source: Our World in Data based on the Global Carbon Project (2022).
 OurWorldinData.org/co2-and-greenhouse-gas-emissions
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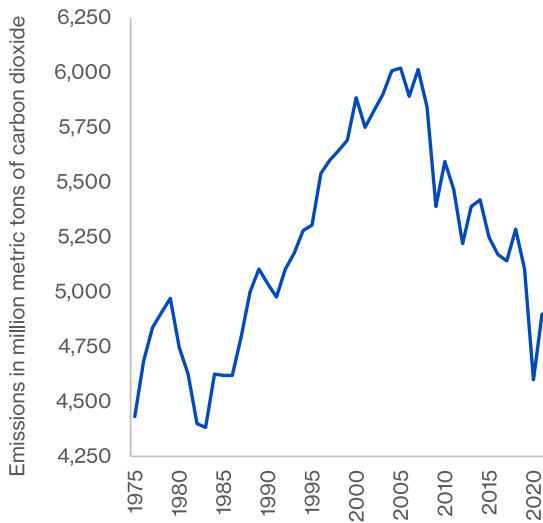
The United States' share of cumulative emissions has dramatically decreased over the last 20 years¹⁴

¹³ <https://ourworldindata.org/chinese-turbulence-how-periods-of-political-reform-affect-the-carbon-intensity-of-economies>
¹⁴ <https://ourworldindata.org/co2-emissions#:~:text=China%20is%2C%20by%20a%20significant,closely%20by%20Europe%20with%2017%25>

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CARBON DIOXIDE EMISSIONS FROM ENERGY CONSUMPTION IN THE UNITED STATES FROM 1975 TO 2021

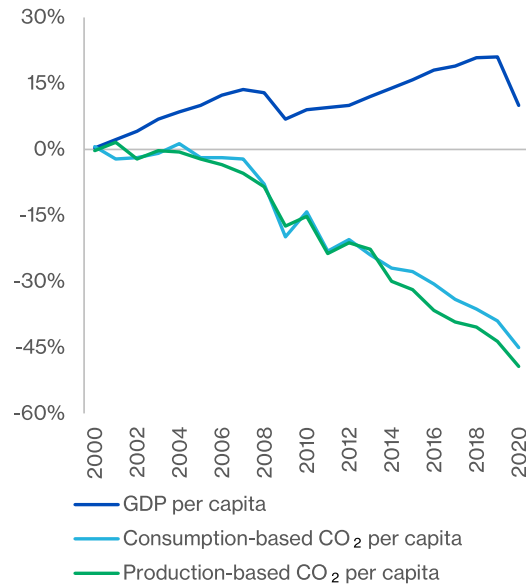
(in million metric tons of carbon dioxide)



CO2 emissions from energy consumption have fallen off a cliff¹⁵

CHANGE IN PER CAPITA CO₂ EMISSION AND GDP, UNITED STATES

Consumption-based emissions are national emissions that have been adjusted for trade. This measures fossil fuel and industry emissions. Land use change is not included.



The United States has successfully displayed "decoupling" capabilities over the last twenty years¹⁶

Analyzing the relationship between carbon emissions and GDP over the last twenty years paints a distinctly different picture than what several of the conventional detractor narratives currently convey. The general public is consistently bombarded with critiques and criticisms of the hydrocarbon space. Granted, not all detractor narrative is rhetoric. There also exists a variety of industry criticisms that are fully warranted. **However, if the focus centers on the United States' contribution to the global emissions profile, then the detractor narrative is littered with inaccuracies, unfounded exaggerations, and baseless pretense.** The data for the U.S. indicates an incredibly large drop in emissions concurrent with an impressive and consistent rise in GDP, not to mention an overall increase in the standard of living. Relatively speaking, this trend spans over a short amount of time, i.e., twenty-five years or so. But, if we are to anticipate the future by analyzing the current trend over the last quarter century, the United States is leading the decarbonization charge – and it isn't even close.

It is understandable but incorrect to judge environmental impact using nominal or absolute emissions metrics. It is also analytically misleading to surmise lasting emissions-related conclusions based on data that has not been appropriately normalized. In other words, if the data is reviewed from an absolute perspective, then yes, the United States economy emits a tremendous amount of carbon. However, the U.S. is the largest economy on the planet, so it is critical to account for the efficiency of size. When normalized for efficiency, i.e., global carbon emissions relative to the size of an economy, the data indicates that the United States falls below the world average in terms of carbon emitted per dollar of GDP. We feel this dynamic is primarily driven by innovative technologies the United States' energy space has introduced to the market over the last quarter century.

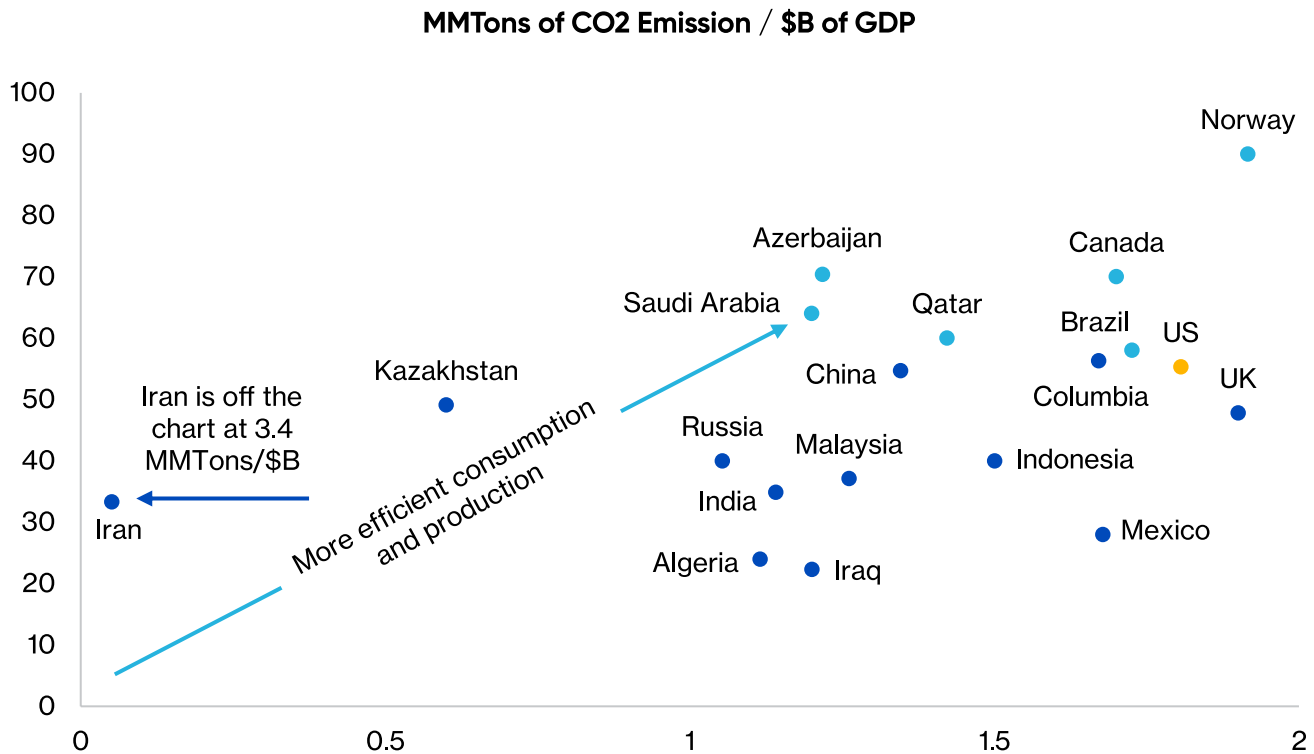
¹⁵ <https://www.statista.com/statistics/183943/us-carbon-dioxide-emissions-from-1999/>

¹⁶ <https://ourworldindata.org/co2emissions#:~:text=China%20is%2C%20by%20a%20significant,closely%20by%20Europe%20with%2017%25.>

Empirically, the ESG Realities of U.S. Energy Are Global Best-In-Class

The math implies the United States has figured out how to decouple energy use and economic growth. U.S. GDP has increased steadily while total energy use has remained flat. Intuitively, we attribute this to material developments in functional “green” technologies that increasingly place the United States as one of the world’s cleanest and safest producers. This perspective is validated empirically since the energy and power space, as highlighted in the chart below, are responsible for a higher proportion of green patents than any other industry¹⁷. In fact, according to Pitchbook, more than one-fifth of all VC dollars (\$6.79 billion out of a total of \$36.47 billion) invested that flowed into climate-tech startups in 2022 was in deals with participation from “Big Oil”¹⁸. We feel this evidence supports the lasting relative efficiency, i.e., “cleanliness,” of the United States since, next to Norway

EMISSIONS RELATIVE TO GDP VS. FLARING EFFICIENCY



Fossil fuel detractors tend to separate renewables and fossil fuels in a mutually exclusive, as opposed to complementary, fashion. This is both incorrect and misleading – the renewables percentage of the overall global energy mix has only experienced a fractional increase over the last twenty years. Oil, gas, and coal have consistently accounted for approximately 85% of the global energy mix over the same period¹⁹. The cynic would inherently counter this dynamic by accusing the energy space of stymying renewable efforts. That allegation, however, would be inherently false and misleading since, as previously highlighted, the energy and power space lead the charge on creating and investing in renewable technology (as proxied by green patents and VC funding).

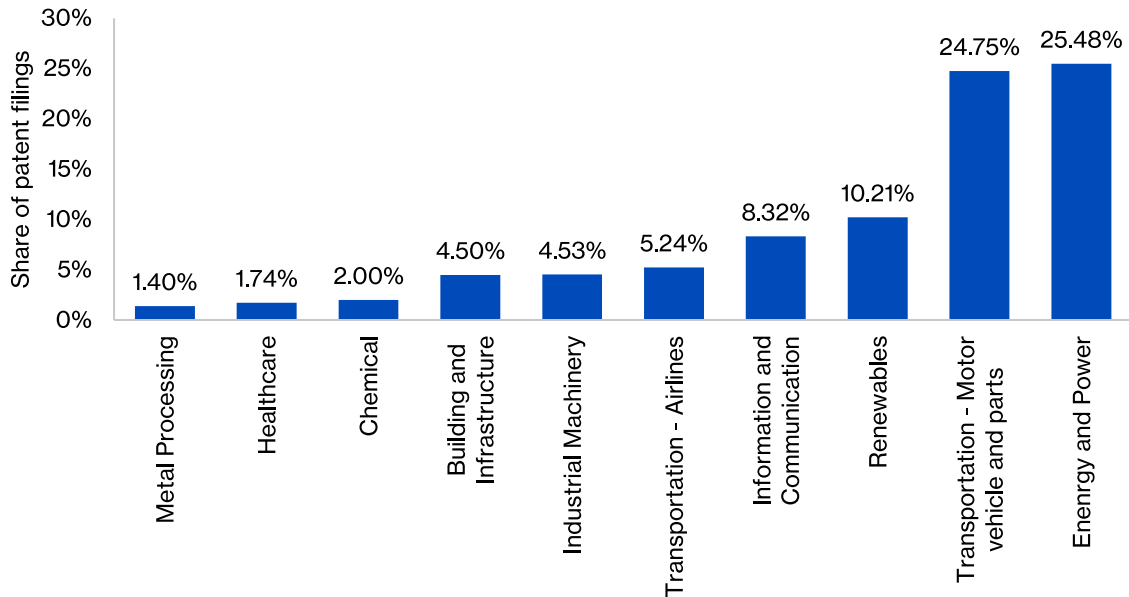
¹⁷ <https://www.hbs.edu/faculty/Pages/item.aspx?num=59272>

¹⁸ <https://pitchbook.com/news/articles/big-oil-climate-tech-cvc-amogy-aramco>

¹⁹ <https://ourworldindata.org/energy-mix>

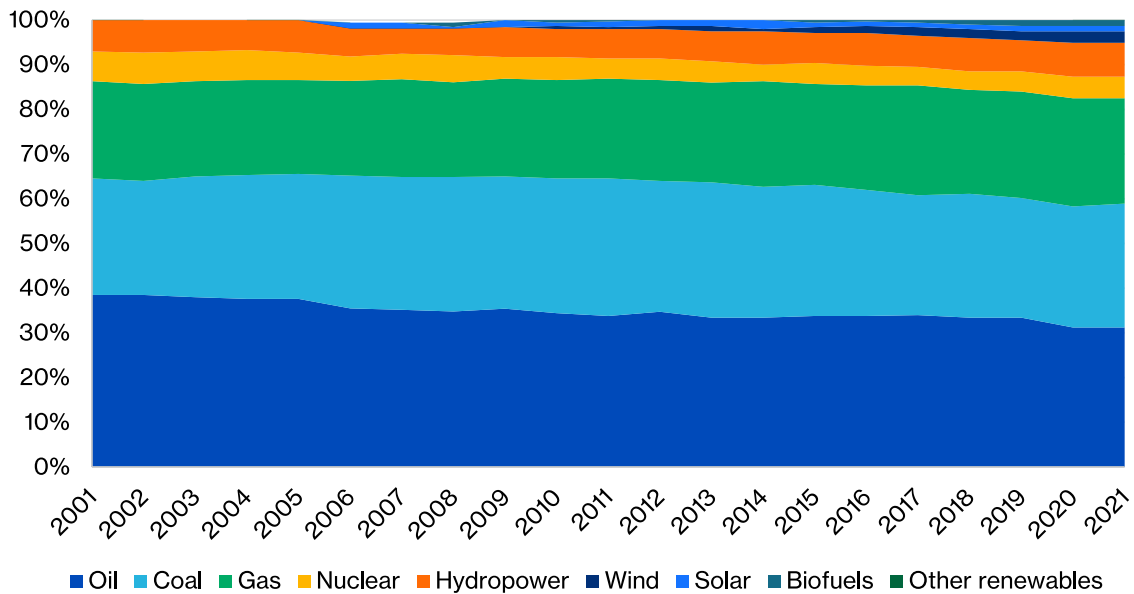
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DISTRIBUTION OF GREEN PATENT FILINGS WORLDWIDE AS OF 2020, BY INDUSTRY



ENERGY CONSUMPTION BY SOURCE, WORLD

Primary energy consumption is measured in terawatt-hours (TWh). Here an inefficiency factor (the 'substitution' method) has been applied for fossil fuels, meaning the shares by each energy source give a better approximation of final energy consumption.



Source: BP Statistical Review of World Energy

OurWorldInData.org/energy •CC BY

Note: "Other renewables" includes geothermal, biomass, and waste energy.

Oil, coal, and gas have accounted for the vast majority of the global energy mix for the last twenty years

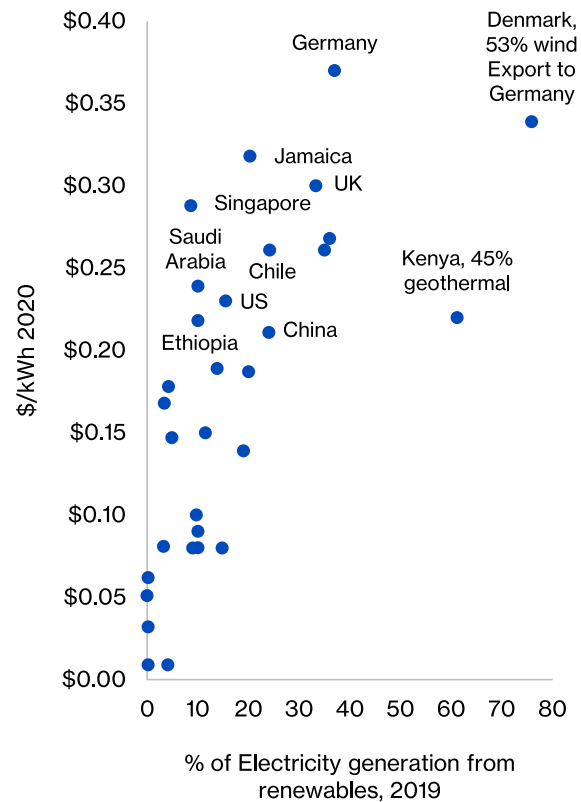
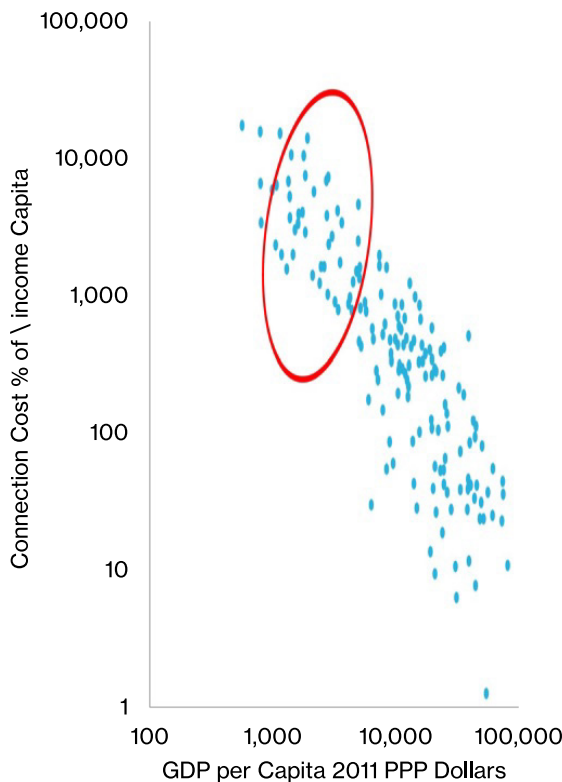
Empirically, the ESG Realities of U.S. Energy Are Global Best-In-Class

Our analysis indicates that renewables' relative lack of adoption primarily derives from a distinct lack of reliability and affordability. A perpetual problem with renewable energy generation is that its supply is far more variable than other means of energy generation. Fluctuations in sunlight levels and wind mean that supply is less consistent than those derived from fossil fuel plants²⁰. Further, as energy variability increases, the incremental burden on society represents a variety of indirect costs and consequences as well. The market should foster renewable technology, but we cannot rely solely on it. The infancy of renewable technology and the complex logistics required for mass conversion restricts any hope of a swift adoption. For the time being, two distinct mathematical, i.e., concretely objective, relationships highlight why renewables will remain complementary for the foreseeable future.

There is a distinct correlation between energy cost and per capita GDP – developed countries experiencing consistent annual GDP growth all have access to affordable and reliable energy sources. A less reliable grid directly correlates to greater economic uncertainty, drastically impacting global competitive positioning and social prosperity. Secondly, electricity prices are correlated with renewable penetration, i.e., as renewable penetration increases, so does the inherent cost of electricity. In practice, Germany's energy dynamic is illustrative of this example.

RELATIONSHIPS BETWEEN ENERGY COST AND PER CAPITA ENERGY COST DECREASE AS GDP PER CAPITA INCREASES ²¹

AS RENEWABLE PENETRATION INCREASES, SO DOES THE COST OF ELECTRICITY ²²



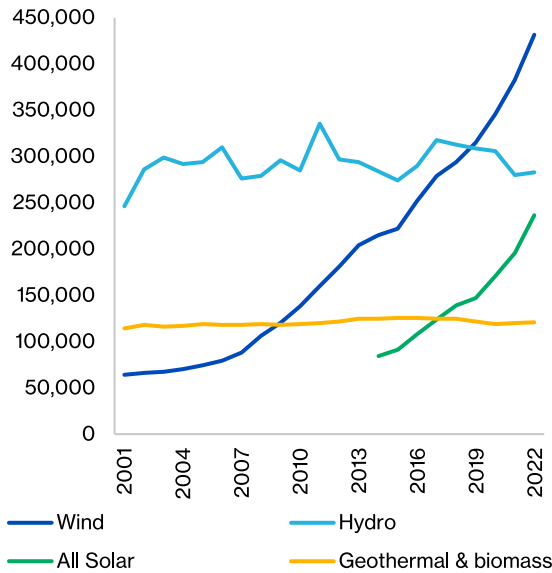
²⁰ <https://www.trvst.world/renewable-energy/challenges-for-renewable-energy/#:~:text=Historically%2C%20one%20of%20the%20major,derived%20from%20fossil%20fuel%20plants>.

²¹ Stern, D.I, Burke, P.J, & Bruns, S.B. (2019). *The Impact of Electricity on Economic Development: A Macroeconomic Perspective*, UC Berkeley: Center for Effective, Global Action. Retrieved from <http://scholarship.org/uc/ite/7jb0015q>

²² BNEF, Thunder Said Energy. *SailingStoneCapital Partners*, <https://ourworldindata.org/grapher/share-elec-by-source?time=latest>, <https://www.statista.com/statistics/263492/electricity-prices-in-selected-countries>

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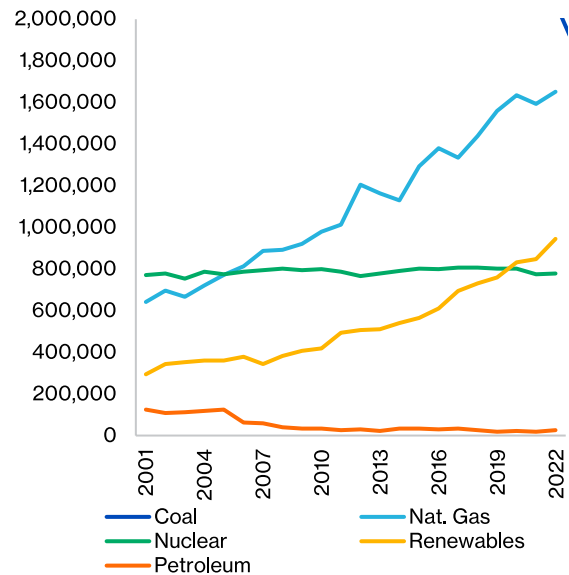
ELECTRICITY GENERATED BY RENEWABLE SOURCE GIGAWATT HOURS, ANNUAL



Source: EIA

Electricity generated by renewables is dominated by wind, which we cannot accurately forecast ²³

ELECTRICITY GENERATED BY SOURCE GIGAWATT HOURS, ANNUAL



Source: EIA

Natural gas increasingly generates the most electricity

The pursuit of renewables is exciting, and we should always foster innovation and challenge our economy to develop new functional technologies. Incremental quality capital will reward attractive consistent returns earned over the long run, implying that management teams must continually introduce new functional technologies and competitive advantages (namely price) to their client base. However, a distinct set of indirect consequences and adverse societal implications must be weighed when evaluating the overhauling adoption of renewable technology.

Adopting renewable technology cannot come at the expense of hemorrhaging consumers' ability to afford or depend on them. The investment community should also not waver on alpha generation. Particularly in today's inflationary environment, the incremental economic burden for consumers is something we should strive to alleviate, not enhance. According to Pew Research, home affordability and the cost of living are increasingly more difficult for many Americans²⁴. More importantly, general affordability, or the lack thereof, has been a trending concern for quite some time. The price elasticity of energy demand is also distinctly unique – an increase in fuel prices causes consumers to use less of that fuel, but you simply cannot tell the weather not to be cold or yell at the sky for more sunshine. It simply does not make sense to pay more for something less reliable, especially when the overall affordability of living within the United States is incrementally constrained and increasingly difficult.

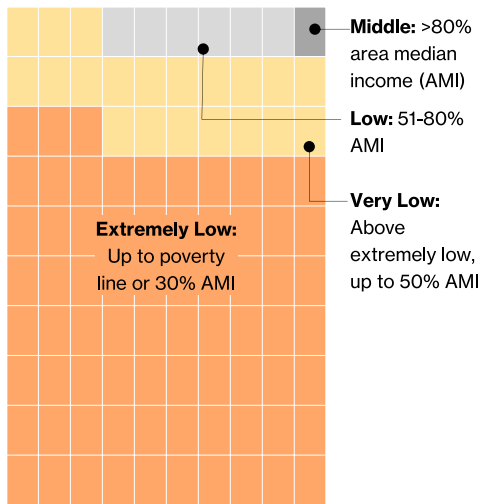
²³ <https://wolfstreet.com/2023/02/28/u-s-electricity-generation-by-source-in-2022-natural-gas-coal-nuclear-wind-hydro-solar-geothermal-biomass-petroleum/>

²⁴ <https://www.pewresearch.org/fact-tank/2022/03/23/key-facts-about-housing-affordability-in-the-u-s/>

Empirically, the ESG Realities of U.S. Energy Are Global Best-In-Class

THE UNITED STATES MUST BALANCE RENEWABLE PENETRATION WITH AFFORDABILITY ²⁵

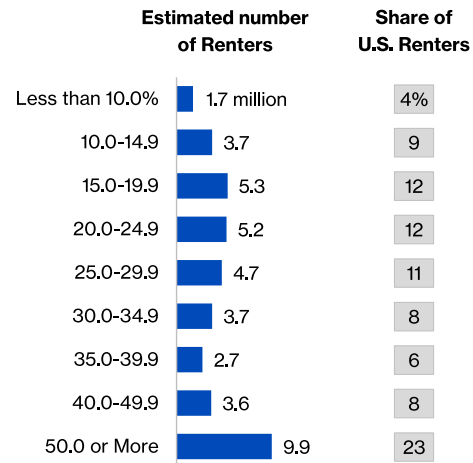
Share of renter households paying more than half their income for housing, by HUD income category; 1 box = 1%



Source: CBPP analysis of the 2015-2019 American Community Survey and 2019 HUD income limits

AMERICANS INCREASINGLY SPEND A HIGHER PERCENTAGE OF INCOME ON HOUSING-RELATED COSTS ²⁶

Share of renters spending ___ % of their income on housing costs in 2020

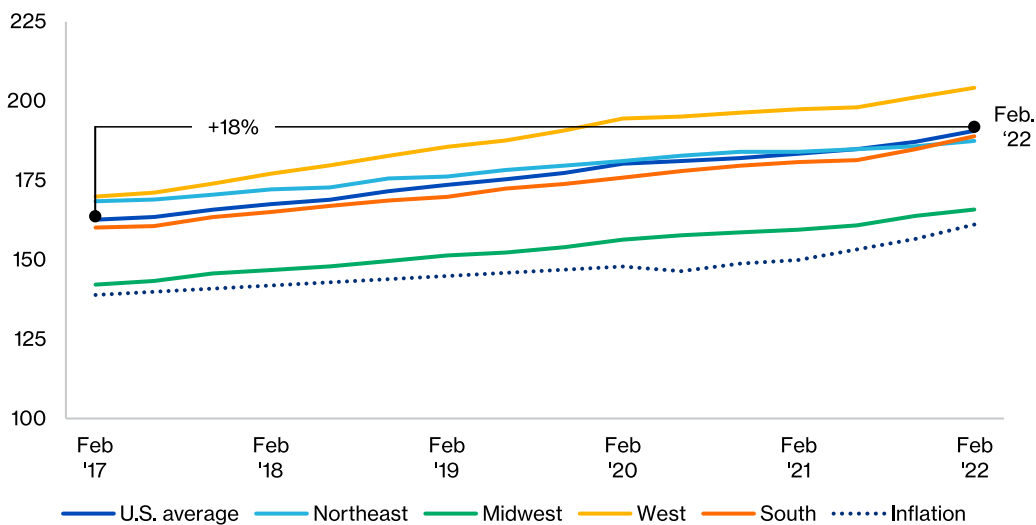


Source: U.S. Census Bureau, American Community Survey.

Note: AMI is determined by the Department of Housing and Urban Development (HUD) for families of various sizes in each metropolitan area and rural county.

THE AVERAGE U.S. RENT HAS RISEN BY 18% OVER THE LAST FIVE YEARS

Consumer price index for rent of primary residence in...



CPI for primary residence rent has drastically increased since 2017 ²⁷

Source: Federal Reserve Bank of St. Louis

²⁵ <https://www.cbpp.org/research/housing/priced-out-the-state-of-housing-in-america>

²⁶ <https://www.pewresearch.org/fact-tank/2022/03/23/key-facts-about-housing-affordability-in-the-u-s/>

²⁷ <https://www.bls.gov/cpi/factsheets/owners-equivalent-rent-and-rent.htm>

Why Are the Economic Realities of Energy Not Told?

The market for ESG data is exploding. Survey work showcases that nearly 90% of investment professionals use third-party ESG ratings in their respective investment processes. Whether or not the motivating benefit is “check-the-box” or “ESG gospel,” the fact remains that there exists a high demand for this information. It has been estimated that ESG market growth has averaged nearly 30% per year over the last five years and officially surpassed \$1B in 2021. When reviewing the “greenium” an asset manager can charge for an ESG fund, this trend cynically becomes more understandable.

In their 2020 U.S. Fund Fee Study, Morningstar found a higher asset-weighted average expense ratio for ESG funds (0.61%) compared with their traditional peers (0.41%). Although fees for all funds have been falling over the last five years, Morningstar’s 2021 U.S. Fund Fee Study also found ESG funds charged 55 bps compared to 39 bps for traditional funds. Management fees for ESG funds over the last three years are undergoing a degree of mean reversion, however, they still display roughly a thirty to forty percent premium relative to conventional fund management fees.

Asset managers currently have an economic incentive to implement ESG, not entirely because of the incremental perspective it may provide, but because of the fees that specific classification allows them to charge. Ironically, asset managers are partly responsible for enabling the ESG ecosystem to adversely evolve the way it has. ESG data remains in its relative infancy and is largely influenced by providers fixated on expanding market share as opposed to supplying empirically sound and objective evidence.

The drive to retain higher fees underscores the lasting dependency certain asset managers have on ESG ratings. Combined with the ESG demands of the larger index funds, namely BlackRock, State Street, and Vanguard, it also implies this relationship is unlikely to reverse course. In many cases, ESG data is in high demand since it validates substantially higher management fees, not necessarily better performance.

The calculus definitively correlating ESG performance to valuation is questionable at best while the math connecting ESG data to management fees is quite evident. This is not necessarily the sole utility of ESG data. There is supporting evidence that ESG conceptually enhances the understanding of risk, but it is equally as important to acknowledge the mounting evidence that questions the credibility (and motives for that matter) of existing ESG rating providers.

This relative lack of credibility also suggests the energy story is not being accurately depicted. Asset managers may require incremental ESG data points to better understand potential long-term perils, but ratings and scores could potentially skew that risk analysis given their variety of inaccuracies. The key distinction here is separating data versus scores and ratings. ESG data are not ratings and ESG ratings are not data. Incremental non-fundamental data points (ideally deriving from the corporate management teams) are inherently objective while ratings are subjective and biased. Scores are also increasingly, and incorrectly for that matter, marketed as data.

This ambiguity is the foundational premise for the wide variety of “greenwashing” occurring within the capital markets, which has caught the attention of global regulators. The Securities and Exchange Commission signaled in March 2022 that “greenwashing would be a top priority for the agency.”³³ The Sustainable Finance Disclosure Regulation (“SFDR”) out of Europe has also presented legislation aimed at curbing greenwashing attempts. SFDR separates the investable universe into three distinct categories – funds that do not integrate any kind of sustainability into the investment process (Article 6); funds that promote certain environmental or social characteristics (Article 8); and a sustainable investment or a reduction in carbon emissions as its objective (Article 9). Article eligibility is determined by self-reporting the quantitative material ESG-related data points necessary to justify and validate a respective designation. To the earlier point on eligibility, Article 8 funds have been dominating capital flows over the last two years³⁴. In other words, investors are seeking investments that empirically prove the implementation of social or environmental characteristics.

²⁸ <https://corpgov.law.harvard.edu/2022/08/24/esg-ratings-a-compass-without-direction/>

²⁹ <https://www.opimas.com/research/742/detail/>

³⁰ <https://www.morningstar.com/content/dam/marketing/shared/pdfs/Research/annual-us-fund-fee-study-updated.pdf>

³¹ https://assets.contentstack.io/v3/assets/blt4eb669caa7dc65b2/blt36de8b5594de0582/62c6e888181754349ea2fa66/U.S._Fund_Fee_Study_2021.pdf

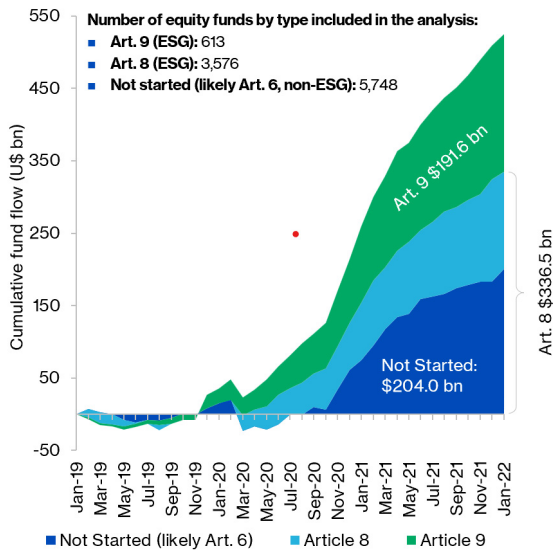
³² <https://www.forbes.com/sites/nuveen/2019/10/02/how-esg-data-may-help-enhance-long-term-value-and-manage-risk/?sh=437c4b171620>

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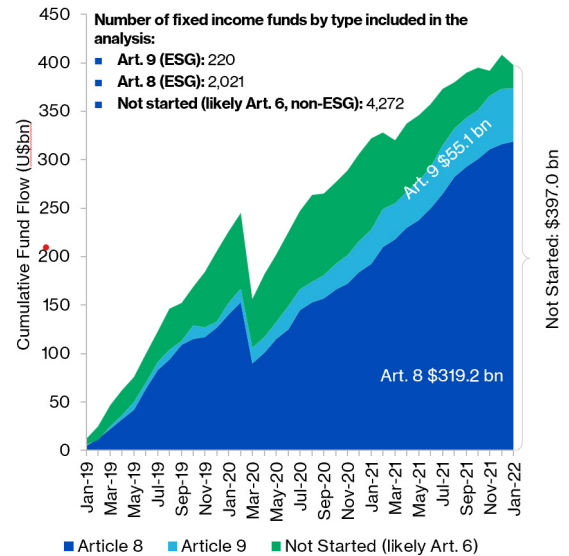
CUMULATIVE FUND FLOW OF ARTICLE 8 & 9 EQUITY FUNDS HAVE OUTGROWN NON-ESG COUNTERPARTS BY >2X

ARTICLE 8 & 9 FIXED INCOME CUMULATIVE FLOWS HAVE GROWN SINCE '19, ALBEIT TO A LESSER DEGREE THAN NON-ESG PEERS

Cumulative fund flow of European Equity funds by type (U\$ bn), Jan 2019 - Jan 2022



Cumulative fund flow of European Income funds by type (U\$ bn), Jan 2019 - Jan 2022



Greenwashing has also been the focal point of a variety of recent research attempting to better understand the connection between ESG ratings and valuation premiums. Researchers at Stanford spent extensive time examining the reliability of ESG scores and concluded, "they [ESG scores] are a compass without direction since significant shortcomings exist in their objectives, methodologies, and incentives which detract from the informativeness of their assessments."³⁵ Asset managers will continue to request ESG data. However, as this paper argues, the respective foundational data source ultimately utilized should not be rating agencies or score aggregators. Instead, it must derive from the companies.

³³ <https://www.weil.com/-/media/files/pdfs/2022/june/sec-targets-greenwashing-by-investment-funds--more-proposals-on-the-sec-esg-agenda.pdf>
³⁴ Morningstar, Goldman Sachs Global Investment Research
³⁵ https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4179647

Why Are the Economic Realities of Energy Not Told?

The flawed incentive structure influencing the existing ESG data ecosystem currently prioritizes competitive differentiation and market share over empirical integrity. As a result, the entire rating space is littered with ambiguity, inaccuracy, and low correlation. In another extensive analysis spearheaded by MIT, researchers found the correlation among six prominent rating agencies (KLD/MSCI Stats, Sustainalytics, Vigeo Eiris/Moody's, RobecoSAM/S&P Global, Asset4/Refinitiv, and MSCI) was on average 0.61. This essentially implies that a company may display a best-in-class rating with one provider and a bottom-quartile rating with another. For context, mainstream credit ratings from Moody's and Standard & Poor's are correlated at 0.99 ³⁶.



Rankers & Raters						
World Benchmarking Alliance	MSCI	S&P Dow Jones Indices <small>A Division of S&P Global</small>	Fitch Ratings	S&P Global	MORNINGSTAR	
Environmental Performance Index	REFINITIV	FTSE Russell	ISS	RepRisk <small>Due diligence on ESG and business conduct</small>	ecovadis	GGEI
Alliance for Corporate Transparency	Calvert <small>An Eaton Vance Company</small>	MOODY'S	GLOBAL100	G R E S B	CSRHUB®	

The current ESG data ecosystem is vast, competitive, uncorrelated, and unfortunately, biased ³⁷

The findings, in conjunction with a variety of other similar analyses, suggest that ESG ratings do not properly reflect ESG profiles, financial performance, or economic reality. As a result, identifying outperformers and laggards is a subjective exercise. Perhaps one of the most egregious examples lies with FTX Trading's higher governance scores than Exxon Mobil (as of November 2022)³⁸. Instead of purely evaluating company trends and risk, market participants inefficiently spend a disproportionate amount of time attempting to better understand and navigate the complex web of scoring methodologies.

³⁶ https://mitsloan.mit.edu/ideas-made-to-matter/why-sustainable-business-needs-better-esg-ratings?utm_medium=email&_hsmi=202228887&_hsenc=p2ANqtz--q8d9VFRF5Nd-58PQ6E34-JaLm8DRcEKjsTgj7qL86qt3aKIA-DZrh6iiM941OTJ9P7T9YMHg4dhCAM2JSJoy_U7J1kq7WKJogF0rDQ9c3HcDBRg8Q&utm_content=202228887&utm_source=hs_email

³⁷ <https://www.globalreporting.org/media/jxkgggd/gri-perspective-esg-standards-frameworks.pdf>

³⁸ <https://www.fnlonon.com/articles/esg-firm-raises-eyebrows-for-ranking-collapsed-crypto-giant-ftx-higher-on-governance-than-exxon-mobil-20221117>

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Sector Comparison					
	Energy	Utilities	Industrials	Materials	Tech
Top 5 “E” Topics for Energy					
Carbon Emissions	18%	12%	5%	12%	2%
Biodiversity	13%	5%	1%	4%	0%
Toxic Emissions & Waste	10%	9%	6%	13%	0%
Opportunities in Clean Tech	2%	0%	10%	4%	12%
Water Stress	1%	10%	0%	11%	2%
Top 5 “S” Topics for Energy					
Health & Safety	13%	3%	10%	7%	0%
Community Relations	9%	1%	1%	3%	0%
Labour Management	1%	0%	15%	7%	5%
Human Capital Development	0%	12%	1%	0%	20%
Privacy & Data Security	0%	1%	2%	0%	10%
Weight of “G”					
Governance	34%	35%	46%	33%	40%

The weightings employed by MSCI to score energy companies are skewed and inaccurate ³⁹

Our internal analysis indicates two primary reasons are driving the inaccuracy of ESG scores and data. Scores are generally inaccurate because the respective weighting employed does not reflect the economic realities of the evaluated business or the competitive drivers responsible for valuation premiums. For example, human capital management, water stress, and opportunities in clean technology account for less than three percent of MSCI’s overall ESG evaluation for an energy company. This is categorically wrong, misleading, and irresponsible. In fairness, our analysis did not take the time to mathematically counter what the specific weights should be, but anyone familiar with conventional oil and gas understands the importance of those three catalysts, specifically as it relates to the impact on long-term valuation. Moreover, we feel weighting methodologies in general create more confusion since the focus is diverted to the proposed weights instead of evaluating the actual performance. In other words, let the investor decide how to weigh.

Since there exists approximately \$1.4T of ETFs linked to MSCI Equity Indices⁴⁰, this problem is vastly spread across the capital markets. At the height of equity research, equity analysts would spend a lifetime learning an industry, and at best, would be able to adequately cover maybe twenty or so companies at any given time. This underscores the second shortcoming of ratings – available expertise and coverage. The ESG ecosystem displays an immense overreliance on machine intelligence given the vast coverage constraints existing among rating providers. ESG rating providers cannot function without the assistance of machine learning – in fact, most providers ironically highlight the utility of machine learning as a competitive differentiator.

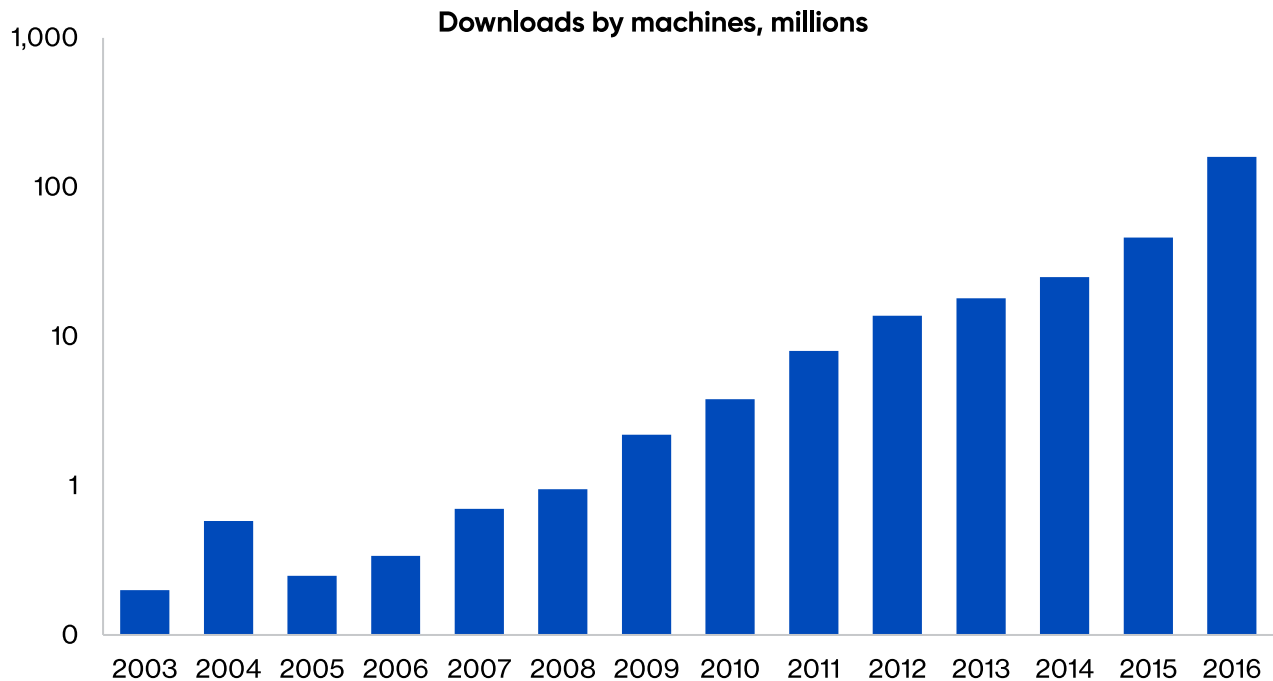
³⁹ <https://www.msci.com/esg-and-climate-methodologies>
⁴⁰ <https://ir.msci.com/aum-etfs-linked-msci-indices>

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Research Process	Sustainalytics	MSCI	ISS ESG	V.E. (Moody's)	S&P ESG	Refinitiv	FTSE Russell	CDP	RepRisk	Arabesque
Team Size	200+	270+	180+	120+	100+	150+	-	150+	100+	35
Coverage	12,000+	14,000+	6,000+	5,000+	7,000+	9,000+	7,000+	9,000+	170,000+(2)	7,000+
Rating Cycle	Annual (1)	Annual (1)	Annual (1)	Annual (1)	Annual (1)	Weekly	Annual	Annual	Daily	Daily
Rating made Public	●	●	●	●	●	●	●	●	●	●
Indices Supplied	Solactive, STOXX, S&P	MSCI, Bloomberg	STOXX, Solactive	Euronext	S&P, DJSI	Refinitiv	FTSE	Euronext, STOXX	FTSE, Dow Jones, S&P	S\$P

● Yes ● No *Company coverage, i.e., the number of companies covered per analyst is incredibly high ⁴¹*

MACHINE DOWNLOADS OF FIRMS' 10-K AND 10-Q FILINGS, 2003-2016



⁴¹ SquareWell, <https://www.lexology.com/library/detail.aspx?g=06f16518-62a1-4239-a9c0-643818c46a5c>
⁴² <https://www.nber.org/digest/202012/corporate-reporting-era-artificial-intelligence>

Machine downloads are defined as downloads by an IP address downloading more than 50 unique firms' filings daily
 Source: Researchers' calculations using data from the Securities and Exchange Commission

Machine intelligence and AI are increasingly employed to aggregate and analyze financial information ⁴²

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The rise of artificial intelligence, particularly over the last half-decade is fascinating and increasingly becoming more mainstream. AI and machine learning can theoretically perform the work of ten analysts in a fraction of the time. Unfortunately, ESG data and ratings highlight a variety of shortcomings associated with the overreliance on AI. For example, it is estimated that MSCI has less than 300 analysts covering 14,000 companies. The likelihood of one analyst adequately covering fifty companies is low without the aid of machine intelligence. Unfortunately, AI capabilities also display a variety of shortcomings, including:

- **DATA ACQUISITION:**
 - Algorithms searching for very specific language in very specific locations
- **TIMING INCONSISTENCIES:**
 - Algorithms are typically programmed for systematic aggregation instead of instantaneous aggregation, i.e., if you release a data point the day after the algorithm searches for it, you have essentially missed "the window."
- **PROGRAMMING BIAS:**
 - Algorithms are still programmed by a human.
 - Given the methodology biases already outlined, there exists the possibility that material data is not collected
- **READABILITY:**
 - Algorithms can only read a certain type of text and typically struggle with infographics
- **LACK OF CONTEXT:**
 - Algorithms cannot interpret or provide the context of the specific data points

Inaccurate weighting methodologies combined with data aggregation shortcomings and lack of industry expertise among raters, leave corporate management teams in a precarious position. The spectrum of utility ranging between risk management enhancements and management fee justification is a moot point. One way or the other, the demand for ESG data will remain intact and will continue to expand.

Moving forward, the perpetual demand for ESG-related data will create competitive jockeying aimed at filling that void, and corporate management teams must strategically plan accordingly. Playing to lose means corporate energy teams continue to allow rating agencies to control their ESG profile. Consequentially, this also implies management teams are inherently allowing rating agencies to increasingly dictate an influential portion of their investment profile along with their overall eligibility for quality capital.

How to Combat the ESG Data Conundrum / Action Items

We define playing to win as incorporating a greater degree of autonomy and control over individual investment profiles. This is largely contingent upon retaking control of the existing ESG narrative currently flowing throughout the capital markets and outlining the pros and cons of expanded energy optionality. Realistically speaking, there is no energy “transition.” There is, however, broader energy optionality, implying the onus falls on corporates to detail how they plan to earn an attractive return in a decarbonizing world. It is critical to ensure all efforts aimed at recapturing the narrative remain objective and focused on educating the pragmatic middle. This underscores the necessity for corporates to implement reporting infrastructures that facilitate the ability to convey consistent quantitative evidence that focuses on the material drivers of the business and showcases how companies will remain competitively relevant over the foreseeable future. The capital markets ecosystem displays the incessant desire for quantitative data. While corporate management teams may understandably disagree with the rationale or motive driving the demand, the fact remains this data is now required.

By focusing on the symptoms of investor desire instead of the cause, energy management teams have essentially allowed external third parties to increasingly dictate a substantial fraction of their capital eligibility. Unfortunately, in most cases, these external third parties are either unfriendly to the hydrocarbon space or do not understand it to the extent they should. The opportunity costs associated with rating agency engagement are also incredibly high. In the end, you are disbursing time, money, and patience to a group that is continually attempting to fit a unique individual profile within a “top-down” template that is generally biased and/or inaccurate. Regardless, the evidence is clear that ESG-data demand is most likely not reversing course. More importantly, since eligibility spans equity, debt and insurance, both private and public companies are impacted. Privates should also place themselves in a position where they can seamlessly provide public partners with ESG data, and publics should position themselves where they understand how private partners impact their overall profile.

Moving forward, corporates must empirically pinpoint the specific non-fundamental data points which both complement and validate the economic drivers of the business. Next, corporates must construct an infrastructure that seamlessly facilitates the reporting and tracking of those data points. Understanding both trend and relative positioning not only proactively identifies risk, but also better positions the individual corporate to retake the narrative. Ideally, corporate management teams will position themselves in a manner that facilitates “off-the-shelf” reporting. In other words, instead of frantically searching for requested data points, all material ESG-related considerations are housed in a central repository that is systematically updated and generally aligns with external reporting terminology.

It would be foolish to think the energy sector is immune from controversies. However, if we remain intellectually honest when evaluating the directional trends over the last quarter century, the United States is displaying global best-in-class emissions efficiency. This story needs to be embraced and told, but it should be conveyed in the most objective and quantitative manner possible. Ironically, rhetoric and subjective idealism will only delay renewable technology innovation. Renewable technology requires a massive amount of capital, however, we must demand investors remain disciplined in their approach to portfolio management.

It is perfectly fine for an investor not to include hydrocarbons within a portfolio, but that decision should be the result of a fair and objective analysis, not an eligibility restriction based on an inaccurate score. In any case, the energy sector should embrace the reporting of material non-fundamental data points since it will deeply aid in retaking control of their respective investment narrative. It is clear there exists a biased agenda against U.S.-operated hydrocarbon businesses which tends to employ idealistic rhetoric to convey their perspective. **Objectively, the sector’s observed trend over the last quarter century is incredibly impressive, and the industry needs to come together to deliver the story and showcase just how mistaken the fossil fuel detractor community is.** The only way to counter those efforts is to play to win and to proactively utilize objective quantitative trends to drown out this counterproductive noise.



