

Momentum around sustainability has been building from consumers, policymakers, corporations, investors, and regulators. When all of the major actors in the global economy coalesce around one dynamic, that can drive change, which can in turn create opportunities for portfolios. ESG investing is one facet of sustainability that has been garnering significant attention in recent years.

ESG investing, or using environmental, social, and governance data to inform investment decisions, has evolved rapidly over the past few years. While it has meant many things to many investors, ESG data can be used as a

tool to identify opportunities that arise from environmental or social change, and to aid in mitigating risks not captured by traditional financial analysis.

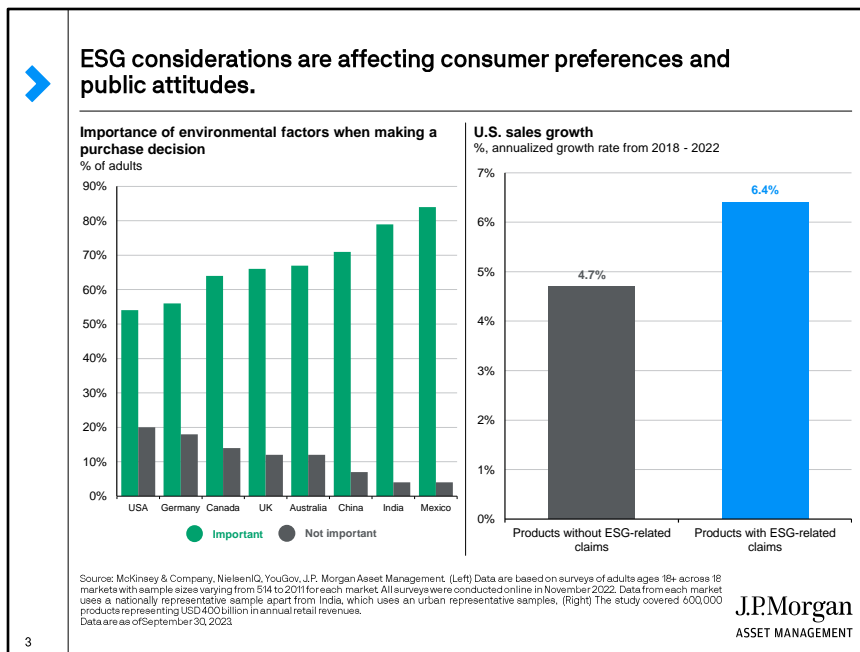


7 Essentials of ESG

1. ESG considerations are affecting consumer preferences and public attitudes
2. Policymakers are setting ESG goals
3. For some companies this may be a headwind...
4. ...but it also creates significant opportunities for those at the forefront of change
5. It's not just climate, G matters and focus on S is growing
6. ESG factors are affecting the investment landscape...
7. ...and changing the nature of investment flows

ESG is Environmental, Social, and Governance

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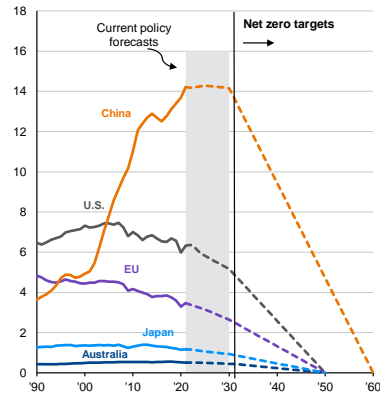
Increasingly, consumers are making more environmentally conscious decisions. The chart on the left highlights a survey of adults across the globe who consider environmental factors when making purchases. Although shoppers may answer surveys with the best of intentions, it is important to see that translate to sales. On the right, sales growth of products with ESG-related claims outpaced products without them 6.4% to 4.7%. Consumer preferences and public attitudes can influence corporate strategy and policymaking.



Policymakers are setting ESG goals.

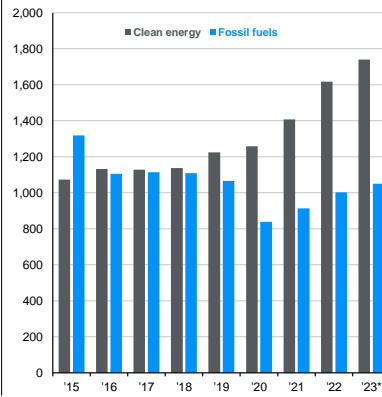
Greenhouse gas emissions targets

Billions of tons per year, CO2 equivalent



Global investment in clean energy and fossil fuels

2015 – 2023, USD billions



Source: J.P. Morgan Asset Management; (Left) Climate Action Tracker; (Right) IEA

(Right) Investment data and projections reflect actual spending across the life cycle of a project. The capital spent is assigned to the year in which it was incurred. Clean energy includes renewable power, nuclear, grids, storage, low-emission fuels, efficiency improvements and end-use renewables and electrification. Fossil fuels include coal, oil and natural gas. *2023 values are IEA estimates, last updated on May 22, 2023. Data are as of September 30, 2023.

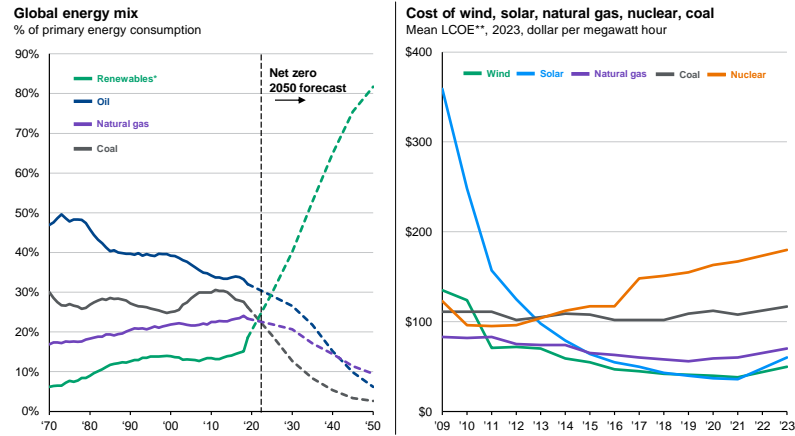
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Policymakers have set targets and invested billions in environmental sustainability. On the left, the U.S. and Europe have committed to net zero carbon emissions by 2050, and even China has agreed it'll hit peak emissions by 2030 and then move towards net zero by 2060. However, it is not just about setting goals, but putting forth investment towards these ambitions. The chart on the right shows that global investment in clean energy is now outpacing global investment in fossil fuels. Still, to reach net zero targets, governments will need to invest trillions over the next several decades in infrastructure, R&D, subsidies, and regulation to make net zero emissions possible. That investment will lay the foundation on which the private sector can innovate, new industries will emerge, and existing industries will adapt.



For some companies this may be a headwind...



Source: J.P. Morgan Asset Management; (Left) BP Energy Outlook 2023 (Right) Lazard's Levelized Cost of Energy Analysis as of April 2023. *Renewables include wind, solar, hydro, geothermal, nuclear, biomass, biomethane and biofuels. **LCOE is levelized cost of energy, the net present value of the unit-cost of electricity over the lifetime of a generating asset. It is often taken as a proxy for the average price that the generating asset must receive in a market to break-even over its lifetime. LCOE data not available for 2022. Data are as of September 30, 2023.

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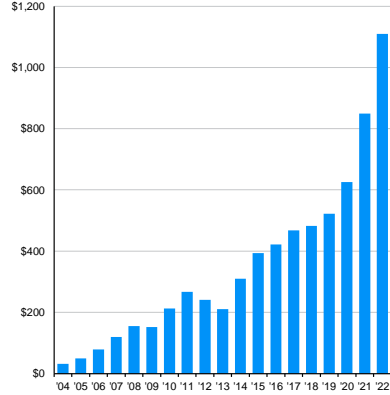
Fossil fuels still dominate the global energy mix, but that is set to shift over the coming decades as renewable energy grows. As policymakers set targets and deploy investments, the economics of energy gradually shifts. The right chart shows the levelized cost of energy, which is essentially a breakeven rate for various energy sources. For years, subsidies have helped reduce the cost of fossil fuels, and in recent years they've helped reduce the cost of solar and wind, making renewable energy not just a sustainability consideration, but also increasingly an economic one.



...but it also creates significant opportunities for those at the forefront of change.

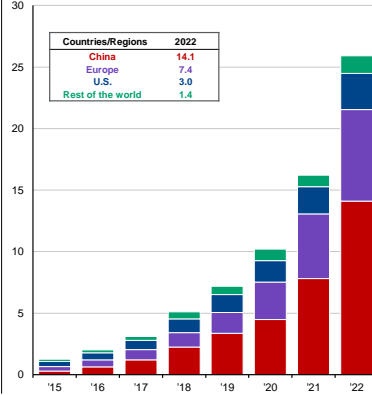
Global investment in energy transition

Billions USD, nominal



New energy vehicles (BEV* and PHEV) in use**

Millions



Source: BloombergNEF, IEA, J.P. Morgan Asset Management. (Right) "Global EV Outlook 2022: Catching up with climate ambitions." IEA. *BEV stands for battery electric vehicles. **PHEV stands for plug-in hybrid electric vehicles. According to the IEA, EV sales made up 14% of total car sales in 2022, up from 1.4% in 2017. Data as of September 30, 2023.

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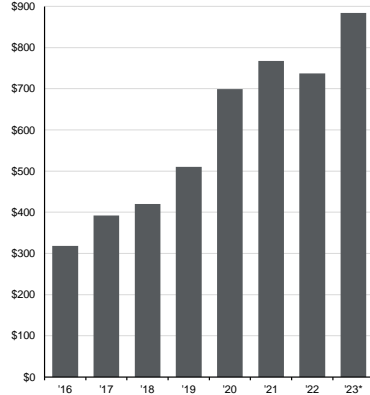
This transition can create lucrative opportunities and even strategic advantages for countries and companies that can innovate in the space. The chart on the left looks at the vertiginous rise in energy transition investment, which includes renewables, energy storage and transport, and electrification. The chart on the right shows a similarly steep rise in the stock of electric vehicles (EVs) globally. China accounts for the majority of EVs on the road, and sales are growing sharply. Globally, EV sales made up 1.4% of total car sales in 2017; now that share has grown to 14% in 2022.



It's not just climate, G matters and the focus on S is growing.

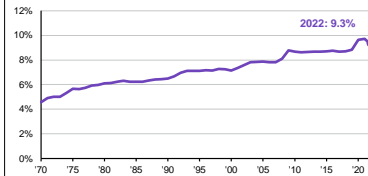
Market cap of public cybersecurity companies

Billions USD



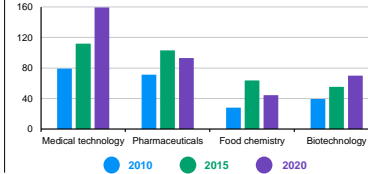
OECD average current expenditure on health

% of GDP



Published patent applications

Number, thousands



Source: Bloomberg, FactSet, MSCI, OECD, World Intellectual Property Organization, J.P. Morgan Asset Management. (Left) Market capitalization data for the MSCI ACWI IMI Cyber Security Index prior to 2021 is estimated using a bottom-up calculation. Each constituent's market cap is calculated by multiplying stock price by free float and then summed to derive an aggregate market cap for the index. Index constituent data is as of September 30, 2023. (Top Right) OECD Health Statistics 2023. Simple average, not GDP-weighted. (Bottom Right) World Intellectual Property Indicators September 2022. Data as of September 30, 2023.

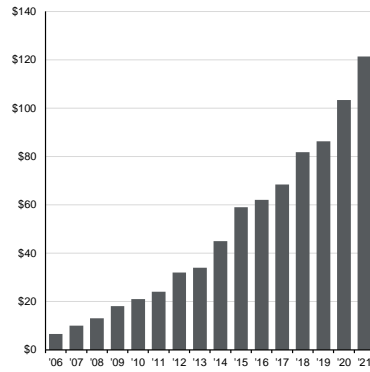
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Environmental considerations have taken the spotlight, but governance and social themes also underpin investment opportunities. For example, cybersecurity is a growing concern of global companies as the proliferation of data grows exponentially and privacy concerns abound. That has given rise to cybersecurity services and spending. On the social side, the global population is set to grow to 10 billion by the 2050s, and providing adequate health care to citizens is becoming increasingly expensive. Advances in science and technology to scale and democratize health solutions will be critical.

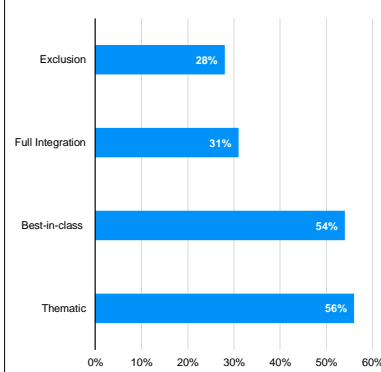


ESG factors are affecting the investment landscape...

Assets under management of Principles for Responsible Investment signatories
USD trillions



Investor interest in different sustainable investing approaches
% of survey respondents, 2023



Source: Principles for Responsible Investment, Trackinsight, J.P. Morgan Asset Management. (Left) Before 2015 some assets are double-counted. (Right) *Global ETF Survey 2023. Data was collected from a survey of 549 investment professionals. 42% of respondents are located in America, 51% are in Europe, the Middle East, or Africa, while the remaining 7% are in Asia Pacific. 63% of respondents are asset managers, independent financial advisers or registered sales/family offices. Full integration: the systematic and explicit inclusion by investment managers of environmental, social and governance factors into financial analysis. Exclusion: exclusion of certain sectors, companies, countries or other issues based on activities considered not investable (negative screening) or screening against minimum standards of business or issuer practice based on international norms such as those issued by the UN, ILO, OECD and NGOs (norm-based screening). Thematic: investing in themes or assets specifically contributing to sustainable solutions. Best-in-class: investing in sectors, companies or projects selected for positive ESG performance relative to industry peers, and that achieve a rating above a defined threshold. Data as of September 30, 2023.

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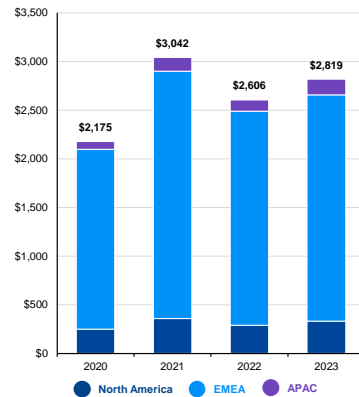
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As consumers, policymakers, and companies address ESG dynamics in decision-making, investors have followed suit. On the left, asset managers responsible for over \$120 trillion in AUM have signed on to the Principles for Responsible Investment, aimed at incorporating ESG principles in the investment process. As illustrated on the right, there is no single approach to incorporating ESG, but investors are moving away from simple exclusions to adopting best-in-class or thematic approaches.

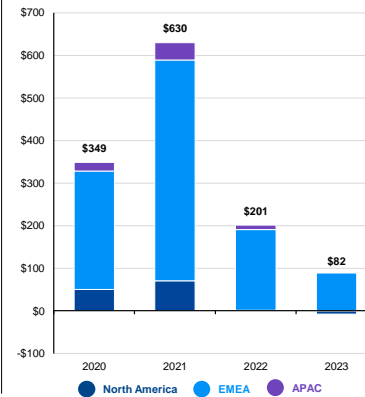


...and changing the nature of investment flows.

Global sustainable investing assets under management
USD billions, by region



Global sustainable investing net flows
USD billions, by region



Source: Morningstar, J.P. Morgan Asset Management. Flows and AUM are updated as of September 2023. "Sustainable" refers to funds tagged as "Sustainable Investment - Overall" in Morningstar. Morningstar classifies "sustainable investment" as a fund that explicitly indicates any kind of sustainability, impact or ESG strategy in its prospectus or offering documents. Universe for flows and assets under management (AUM) covers all mutual funds and ETFs domiciled in North America, APAC and EMEA in the Morningstar database, excluding money market funds and fund of funds. "ETF" refers to exchange-traded fund. Data are as of September 30, 2023.

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Growing interest in ESG investing is reflected in the rise in sustainable investing assets, which has risen to \$3 trillion in 2023. Europe dominates sustainable investing, but other parts of the world are increasing adoption. Flows into sustainable strategies grew substantially during the pandemic, but the recent challenges in the macro environment of higher interest rates and recessionary fears that have put pressure on risk assets have also impacted flows into sustainable investing over the last two years.



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