

Climate Policy: What Every MBA Needs to Know

Executive Summary

Climate policies are likely to affect businesses in nearly every sector in the future. As the effects of climate change become more urgent, governments around the world are issuing stronger regulations and incentives in an effort to limit emissions and transition to a low-carbon economy.

Major climate policies like the U.S. Inflation Reduction Act (IRA) and the EU Green Deal have impacts that can dramatically transform industries and supply chains. In just one year after the passage of the IRA, for instance, companies announced more than \$110 billion in new clean-energy manufacturing investments, including \$70 billion in the electric vehicle (EV) supply chain and \$10 billion in solar manufacturing.¹

Companies that understand and engage proactively with climate policy will be poised to win in the green transition.

“Climate change is the challenge of our age. Charting a sustainable path forward requires a global commitment characterized by strategic partnerships among public and private entities, communities, and individuals.”

- Mike Corbat, CEO, Citi
in Citi's 2020 TCFD Report

<https://www.citigroup.com/citi/sustainability/data/finance-for-a-climate-resilient-future-2.pdf>

The Issue

The effects of [climate change](#) are increasingly urgent and costly to both society and business. In 2023, the global temperature of the Earth was 1.18°C warmer than pre-industrial levels.² That year, in the U.S. alone, climate disasters (including floods, droughts, cyclones and wildfires) exceeded \$93 billion in damage.³ Climate change is a global problem that requires collective action. Climate policy, while challenging to enact and administer, is largely seen as the most important tool in driving the scale of action needed to mitigate the effects of climate change.

Over the past several decades, many governments (state, regional, federal, and supra-national) have proposed a range of climate policies—with mixed success. Some policies offer incentives for investments in lower-emitting technologies (for instance, tax credits for renewable energy projects), while others focus on limiting emissions and taxing polluters. Policy incentives and tax implications dramatically affect risk and investment calculations for businesses.

Between 2021 and 2024, the U.S. has advanced major policies like the IRA, Infrastructure Investment and Jobs Act, and CHIPS and Science Act—for a total impact of over \$2 trillion⁴—and the EU has passed the EU Green Deal, committing an estimated €1 trillion in spending through the next decade.⁵ China has built the world's largest emissions trading market, covering an estimated 4 billion tons of CO₂ emissions/year, or 40% of the country's annual emissions.⁶

Business leaders must be prepared to understand the complex landscape of climate policies. Companies doing business globally have to interact with a patchwork of climate policies and engage multiple actors at different levels. For example, the state of California has introduced stricter-than-federal climate policies and is collaborating with other states to advance regional climate initiatives. In the EU, member countries advocate for policies on a country-by-country basis as they balance their national interests with EU goals.

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Types of climate policy

Policymakers have explored both "carrot" (incentives) and "stick" (penalties) approaches to climate policy. Some policies offer the "carrot" of tax credits or other financial incentives to induce companies to shift to lower-emitting technologies. Others aim to limit and penalize carbon pollution by fining polluters (the "stick" approach).

Carbon taxes

A carbon tax requires emitters to pay for their greenhouse gas (GHG) emissions. Its effectiveness in reducing emissions depends on whether the tax is substantial enough to inspire action, or whether, for instance, businesses will simply pay the tax as a cost of doing business and/or pass the added costs on to consumers. Taxes can be set by state or provincial governments (such as the Canadian province of [British Columbia](#), which introduced a carbon tax in 2008⁷) or by national or supra-national governments. Governments might use carbon tax funds to subsidize R&D for new technologies or pay for low-carbon investments.

One unintended consequence of carbon taxes is that companies may decide to relocate operations to geographies where emissions are not taxed (or taxed at a lower rate). Some governments are working to close these loopholes. For example, the [EU Carbon Border Adjustment Mechanism](#) will price embedded carbon in imported products to match the tax a product manufactured in the EU would incur.

Emissions trading schemes ("cap-and-trade")

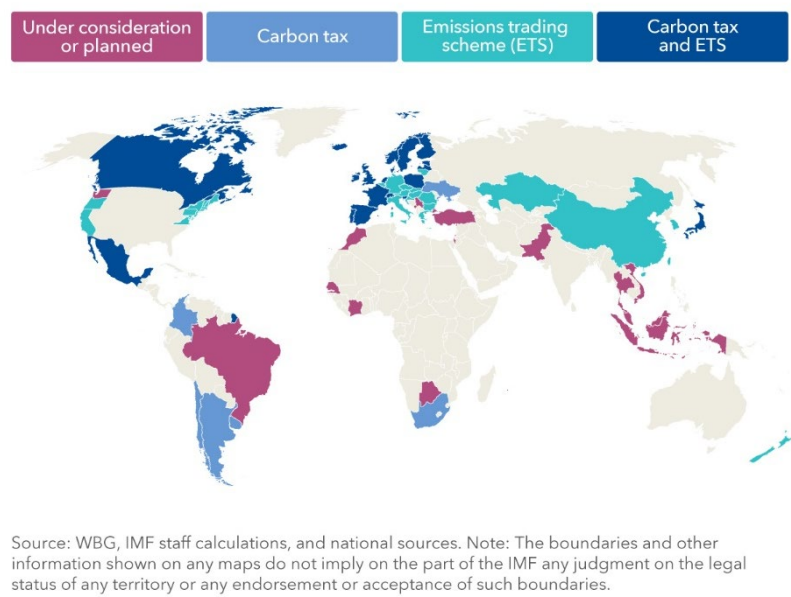
A cap-and-trade system refers to a government policy where a maximum level of allowable emissions is defined (the "cap") and tradeable credits are issued up to that cap. Companies can then choose to either reduce their own emissions or purchase credits from other companies through carbon markets if it is more cost-efficient for them to do so. Similar policies have successfully reduced emissions of other pollutants; for instance, a cap-and-trade system significantly reduced acid rain-causing sulfur emissions in the 1990s.⁸

Emissions caps can vary in characteristics, covering different greenhouse gases, economic sectors, allocation of allowances (e.g., freely allocated vs. auctioned off) and strictness of maximum allowances. The [EU Emissions Trading Scheme \(ETS\)](#), launched in 2005, was the first international cap-and-trade program and is the most mature market. The EU ETS initially only covered power stations and heavy industry, and has gradually added aviation and chemicals manufacturing emissions under the cap. Since its introduction, the EU's emissions have decreased by 41% in the sectors covered.⁹ In 2022, China introduced the largest cap-and-trade zone in the world, after piloting various smaller carbon markets in its major cities.¹⁰ [China's ETS](#) currently only regulates the power sector but is expected to expand to other industrial sectors.

The U.S. and Canada have had less political support for national cap-and-trade systems, but state and provincial governments have put systems in place. In the U.S., 11 northeastern states formed the [Regional Greenhouse Gas Initiative](#), which focuses on power sector emissions.¹¹ [California](#) and [Quebec](#) have the most sophisticated cap-and-trade systems in North America, both of which cover over 70% of the emissions in their jurisdiction.¹² In 2023, the state of [Washington](#) added a "cap-and-invest" program.

Carbon price choices

Countries and states are choosing different approaches to carbon pricing based on their own circumstances and objectives.



Source: IMF Blog, International Monetary Fund, 2022.
<https://www.imf.org/en/Blogs/Articles/2022/07/21/blog-more-countries-are-pricing-carbon-but-emissions-are-still-too-cheap>

Incentives/credits for low-carbon industries

Rather than penalizing polluters, some climate policies focus on incentivizing low-carbon industries like renewable energy, energy storage, and EVs. For instance, the U.S. offers consumers a [\\$7,500 tax rebate](#) for the purchase of an EV (with certain domestic manufacturing concessions), while a federal Investment Tax Credit (ITC) and Production Tax Credit (PTC) incentivize the development of new solar and wind energy projects.

Prohibitions on carbon-polluting technologies

Instead of, or in addition to, incentivizing “green” technologies, some governments are implementing policies requiring the phase-out of fossil fuel technologies. The EU, for instance, passed a rule in 2023 that will ban the sale of internal combustion engine (ICE) vehicles by 2035.¹³ Similarly, California’s [Advanced Clean Cars \(ACC\) II rule](#) calls for all new passenger vehicle sales to be zero-emission by 2035. The State of New York passed a mandate in 2023 that will ban fossil fuel technologies in all new buildings beginning in 2026.¹⁴

Conservation policies

Several small countries have already achieved carbon neutrality, primarily by mandating the preservation of forests and wetlands, which offset CO₂ emissions naturally. For instance, the tiny country of Bhutan has a constitutional mandate to maintain a minimum of 60% of the country’s total land under forest cover.¹⁵ Future policies in other nations may mandate or incentivize investment in [nature-based solutions \(NBS\)](#)—eg, projects that use nature to sequester carbon, preserve biodiversity, and deliver ecosystem services like coastal resilience.

Notable climate policy developments

Climate policy is evolving rapidly. A few notable climate policy developments are summarized here; note that new legislation is emerging all the time.

The Paris Agreement

Since 1995, the United Nations has been convening an annual summit called the “Conference of Parties (COP)”, to negotiate cooperative global action on climate. The most notable achievement came in COP21 in 2015, when 195 nations signed the [Paris Agreement](#) to limit global warming to “well below” 2°C above pre-industrial levels.¹⁶ To achieve this, global carbon emissions will need to be reduced almost by half (from 2005 baseline levels) by 2030 and be completely zero by 2050.¹⁷ Under the Paris Agreement, individual countries are required to set and commit to targets called [Nationally Determined Contributions \(NDCs\)](#). COP agreements are important public commitments and are used as tools to encourage policy at the national level, but, notably, the agreements have few tools for enforcement.

U.S. Infrastructure Investment and Jobs Act

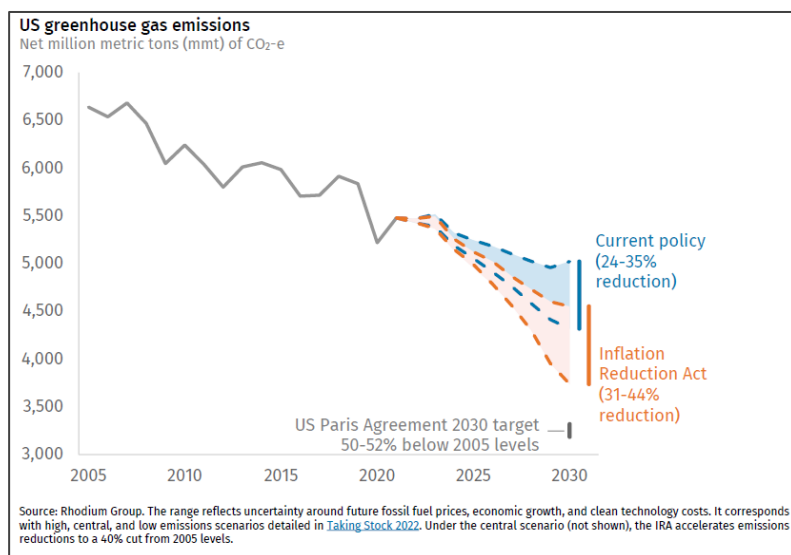
The 2021 passage of the \$1.2 trillion [Infrastructure Investment and Jobs Act \(IIJA\)](#) (sometimes referred to as the Bipartisan Infrastructure Law, or BIL) represented the largest U.S. infrastructure investment in generations.¹⁸ Infrastructure is relevant to climate policy because the majority of CO₂ emissions come from energy production and transportation. The bill included funding for modernizing and building new infrastructure, including climate-related projects such as: \$65 billion for electric grid and transmission upgrades; \$50 billion for climate resiliency projects including protection against “droughts, extreme heat, flooding, and wildfires”; \$12 billion to carbon management solutions, including direct air capture; \$9.5 billion to hydrogen hubs and clean hydrogen manufacturing; and \$7.5 billion to build a nationwide network of 500,000 EV charging stations.^{19, 20, 21}

U.S. CHIPS (Creating Helpful Incentives to Produce Semiconductors) and Science Act

The \$280 billion [CHIPS and Science Act](#), passed in 2022, supports the U.S. climate transition in two key ways: investing in the domestic semiconductor industry (which boosts the manufacturing of key components for solar panels, wind turbines, and zero-emission vehicles) and accelerating innovation in climate technologies.²² The CHIPS Act also increases funding to various Dept. of Energy research initiatives, including expanding the capacity of ARPA-E, the agency that develops advanced research for early-stage energy technologies. Other line items will be allocated directly to research in nuclear fusion, next-gen nuclear reactors, advanced materials, low-carbon manufacturing technologies, and carbon removal technologies.

U.S. Inflation Reduction Act

The 2022 [Inflation Reduction Act \(IRA\)](#) is a package of policies that includes \$393 billion (potentially leveraging impact to an estimated \$1 trillion) over 10 years for initiatives aimed at four of the highest carbon-emitting sectors: buildings, electricity generation, transportation, and manufacturing.²³ The IRA is the most significant climate policy passed in the U.S. to date, and is expected to reduce up to 1 billion tons of GHG emissions per year by 2030.²⁴



Source: "Taking Stock 2022," Rhodium Group, 2022.
<https://rhg.com/research/inflation-reduction-act/>

to subsidize the removal of carbon from the atmosphere; and other tax credits and direct funding for industries including low-carbon building materials, hydrogen production, nuclear energy, methane reduction, and environmental justice initiatives (among other provisions).

Outside the U.S.

Though not the largest source of carbon emissions, the EU has been particularly active in passing climate policies that will likely affect many U.S. multinational companies. The EU Green Deal, launched in December 2019, aims to achieve EU climate neutrality by 2050.²⁵ Total spending through 2030 is expected to reach €1 trillion.²⁶ In 2023, the EU finalized the "[Fit for 55](#)" Package, a sweeping set of policies including a Carbon Border Adjustment Mechanism (to price emissions embedded in imported products), an Energy Efficiency Directive, a Renewable Energy Directive (aimed at increasing the share of renewables in the EU energy market to 42.5% by 2030), and new Carbon Emission Standards for Vehicles (requiring all new cars sold in the EU to be zero-emission by 2035). The package also includes incentives and mandates for alternative fuels infrastructure, EV charging, hydrogen refueling, sustainable aviation fuels, shipping fuels, and green hydrogen, as well as €250 billion in financing to companies investing in transition projects through [REPowerEU](#)—among other policies.

Many other countries have passed climate policies, though few are currently sufficient to meet the goals of the Paris Agreement. China, the world's largest emitter of CO₂, pledged in its most recent five-year plan, [14FYP](#), to aim to have CO₂ emissions peak before 2030 and achieve carbon neutrality before 2060.²⁷

Business Risks

As governments unveil new climate policies each year—often with little warning—companies face dramatic changes in industry dynamics, sometimes with costly consequences.

Policy risk

Companies face financial risk from regulations that add direct costs (such as carbon taxes), add operating costs (such as increased input prices), or reduce market demand for their products. One [IMF study](#) found that climate policies "led to a global decline of 6.5% in investment among publicly traded oil and gas companies between 2015 and 2019."²⁸ A [PwC report](#) pointed to another example: China's announcement of a national carbon pricing program reduced its coal demand by 3.7% in 2015, driving down coal prices globally.²⁹

Stranded assets

As policies drive investment away from fossil fuels, companies in the energy sector face significant risk of "stranded assets," such as oil & gas reserves that can no longer be exploited or coal-fired power plants that can no longer be used. In Q4 2023, for example, [Exxon](#) and [Chevron](#) wrote down the value of California oil & gas assets by \$5 billion in response to state policies.³⁰ As the globe weans itself off fossil fuels, the International Renewable Energy Agency projects at least \$11.8 trillion worth of assets worldwide risk being stranded through 2050 in a policy scenario consistent with the Paris Agreement.³¹

Access to capital/credit risk

In the wake of recommendations from the [Task Force on Climate-Related Financial Disclosures \(TCFD\)](#), expected [SEC recommendations](#), and new [State of California climate disclosure rules](#), shareholders are now expecting far more transparency in corporate disclosure on climate risks. Failure to disclose climate risks can affect a company's access to capital, as can its activities related to climate policy lobbying. In 2023, for instance, institutional investors in England successfully pressured [National Grid](#) to disclose its climate lobbying activities.³²

Reputation risk

As consumers, investors, and governments put increasing pressure on companies to act on climate, companies that lobby against climate policy, fail to disclose their lobbying activities, or are perceived as climate laggards run the risk of reputation damage. In a [2020 RepTrak survey](#), climate change was listed as one of the top 5 trends affecting corporate reputation.³³

Business Opportunities

Climate policies can have an outsized impact on market dynamics. Taxes and incentives have the potential to make projects and startups that were once un-fundable attractive, and vice versa.

Clean energy production, energy storage, & transmission projects

Climate policy, generally speaking, has the biggest impact on the energy sector, and recent climate legislation such as the IRA is driving growth in clean energy projects. [Wood Mackenzie](#) estimates IRA tailwinds will drive the annual renewable energy capacity in the U.S. to triple in 10 years to 110 gigawatts (GW). In the first year after the passage of the IRA, companies announced more than \$110 billion in new clean-energy manufacturing investments, including about \$10 billion in solar manufacturing.³⁴

Electric vehicles (EVs), components, and charging infrastructure

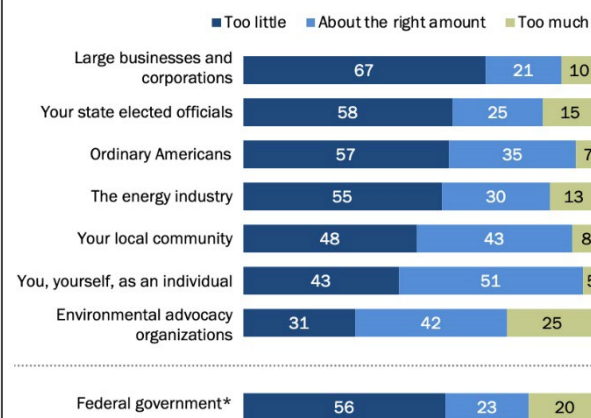
Climate policies—including consumer rebates for EVs, financial incentives for charging infrastructure, and impending restrictions on gas and diesel cars in some geographies—are significant drivers of a major transportation market shift towards EVs. After the passage of the IRA, for example, [BMW](#) announced an investment of \$1.7 billion to shift its South Carolina factory to EV production and build a battery factory nearby. Many auto manufacturers are following suit and investing heavily in EV and battery supply chains.³⁵

Sustainable aviation

Many recent climate policies aim to reduce emissions from aviation, which account for about 2% of global CO₂ emissions.³⁶ Decarbonizing aviation will require the development of new aircraft (such as those being developed by [RTX](#), [Odys Aviation](#), and [Eviation](#)) as well as the development of sustainable aviation fuels (SAF) such as those offered by [World Energy](#), [LanzaTech](#), and [Metafuels](#),

Two-thirds say large businesses and corporations are doing too little to reduce climate change effects

% of U.S. adults who say each group is doing ___ to help reduce the effects of global climate change



* Views on federal government role are from a separate question in a June 2023 survey measuring government efforts across a list of environmental areas.

Note: Respondents who did not give an answer are not shown.
Source: Survey conducted March 13-19, 2023.

PEW RESEARCH CENTER

Source: "What the data says about Americans' views of climate change," Pew Research Center, 2023.

<https://www.pewresearch.org/short-reads/2023/08/09/what-the-data-says-about-americans-views-of-climate-change/>

Clean hydrogen

"Green hydrogen" (produced using renewable energy-powered electrolysis) and "blue hydrogen" (produced from natural gas with carbon capture) have the potential to become low-carbon solutions for transportation, SAF, and industrial applications. However, more investment is needed before hydrogen is both truly clean and economically viable at scale. The U.S. hydrogen market will benefit from policies including the IIJA Act, which includes \$8 billion to build out [regional clean hydrogen hubs](#), and the IRA, which includes a [Clean Hydrogen Production Credit](#). Companies in this space include [Plug Power](#), [Air Products](#), and [Air Liquide](#) as well as oil & gas companies like [Shell](#) and [BP](#).

Carbon capture, carbon removal, and sequestration technologies

Technologies to remove CO₂ at the point of emission ([carbon capture](#)) or from the atmosphere ([direct air capture](#)) and sequester it or use it in new products are in early stages of economic viability, but will benefit now and in the future from policy incentives. Startups include [Climeworks](#), [Carbon Engineering](#), [Global Thermostat](#), and [Sustaera](#).

Other climate tech

Other [climate tech](#) investments and frontier technologies may become increasingly commercially attractive with additional climate policy incentives in the future. These could include, for instance, modular nuclear, regenerative agriculture, and geoeengineering technologies, among others.

Internal carbon pricing strategies

Finally, in anticipating policy implications, some businesses have begun accounting for the cost of carbon in their project financing to mitigate the impact of potential future taxes. Companies including [Microsoft](#) and [Ørsted](#), have set an [internal price on carbon](#) to better align business incentives in their operations and fund renewable energy or low-carbon investment projects.³⁷

Takeaways for MBAs

1. Limiting global warming to 2°C will require faster, bolder policy action. Businesses should expect to see more policy action at all levels in the future. The impacts of these policies will be far-reaching and will cause upheaval in many sectors.
2. Climate-forward companies are best positioned to seize opportunities created by government policies and to absorb the transition costs of carbon pricing and regulatory compliance.
3. Climate policy action happens quickly and unevenly across geographies. Business leaders must monitor ongoing developments and maintain flexibility to adjust as new regulations are introduced. Improving ESG monitoring skills will facilitate adjustments and reduce overall transition costs.

Further Reading

[Climate Change: Policy and Mitigation Factsheet](#), Center for Sustainable Systems, Univ. of Michigan, 2022

[Climate Action Tracker website](#)

[The Carbon Brief website](#)

[Database: Climate Change Laws around the World](#), Grantham Research Institute

[The Inflation Reduction Act: Here's What's in It](#), McKinsey & Co., 2022

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- ¹ <https://www.gsam.com/content/gsam/us/en/institutions/market-insights/gsam-insights/perspectives/2023/us-inflation-reduction-act-is-driving-clean-energy-investment-one-year-in.html>
 - ² <https://www.noaa.gov/news/2023-was-worlds-warmest-year-on-record-by-far>
 - ³ <https://www.noaa.gov/news/us-struck-with-historic-number-of-billion-dollar-disasters-in-2023>
 - ⁴ <https://www.deloitte.com/us/en/insights/industry/public-sector/infrastructure-bill-projects-agency-execution.html>
 - ⁵ <https://www.nortonrosefulbright.com/en/knowledge/publications/c50c4cd9/the-eu-green-deal-explained>
 - ⁶ <https://icapcarbonaction.com/en/ets/china-national-ets>
 - ⁷ <https://www2.gov.bc.ca/gov/content/environment/climate-change/clean-economy/carbon-tax>
 - ⁸ <https://www.edf.org/approach/markets/acid-rain>
 - ⁹ <https://www.consilium.europa.eu/en/infographics/fit-for-55-eu-emissions-trading-system/>
 - ¹⁰ <https://www.nature.com/articles/d41586-021-01989-7>
 - ¹¹ <https://www.rggi.org/program-overview-and-design/elements#:~:text=For%202021%2C%20the%20regional%20cap,%2C%20Vermont%2C%20and%20Virginia.>
 - ¹² <https://icapcarbonaction.com/en/ets>
 - ¹³ <https://www.autoweek.com/news/a45697251/europe-2035-ice-ban-holding/>
 - ¹⁴ <https://www.npr.org/2023/05/04/1173910706/new-york-passes-law-banning-fossil-fuel-equipment-in-most-new-buildings>
 - ¹⁵ <https://www.nasdaq.com/articles/which-countries-are-carbon-neutral>
 - ¹⁶ <https://web.archive.org/web/20160117141004/http://newsroom.unfccc.int/unfccc-newsroom/finale-cop21/>
 - ¹⁷ <https://www.un.org/en/climatechange/net-zero-coalition>
 - ¹⁸ <https://www2.deloitte.com/us/en/insights/industry/public-sector/infrastructure-bill-projects-agency-execution.html>
 - ¹⁹ <https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/06/fact-sheet-the-bipartisan-infrastructure-deal/>
 - ²⁰ <https://www.energy.gov/articles/doe-establishes-bipartisan-infrastructure-laws-95-billion-clean-hydrogen-initiatives>
 - ²¹ <https://www.energy.gov/fecm/interactive-diagram-carbon-management-provisions>
 - ²² <https://www.deloitte.com/us/en/insights/industry/public-sector/infrastructure-bill-projects-agency-execution.html>
 - ²³ <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/the-inflation-reduction-act-heres-whats-in-it>
 - ²⁴ https://repeatproject.org/docs/REPEAT_IRA_Preliminary_Report_2022-08-04.pdf
 - ²⁵ <https://www.consilium.europa.eu/en/policies/green-deal/>
 - ²⁶ <https://www.nortonrosefulbright.com/en/knowledge/publications/c50c4cd9/the-eu-green-deal-explained>
 - ²⁷ <https://climateactiontracker.org/countries/china/>
 - ²⁸ <https://www.elibrary.imf.org/view/journals/001/2023/140/article-A001-en.xml>
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 - ³⁰ <https://www.reuters.com/sustainability/climate-energy/california-big-oil-are-splitting-after-century-long-affair-2024-01-29/>
 - ³¹ <https://www.wsj.com/articles/trillions-in-assets-may-be-left-stranded-as-companies-address-climate-change-11637416980>
 - ³² <https://www.climateaction100.org/news/investors-welcome-climate-lobbying-review-from-national-grid-following-engagement/>
 - ³³ <https://www.reptrak.com/blog/not-acting-on-climate-change-can-be-a-real-risk-to-your-corporate-reputation-in-2020/>
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 - ³⁵ <https://www.cbsnews.com/news/bmw-investing-1-7b-in-south-carolina-electric-vehicle-ev/>
 - ³⁶ <https://www.iea.org/energy-system/transport/aviation>
 - ³⁷ <https://www.cdp.net/en/articles/media/nearly-half-of-worlds-biggest-companies-factoring-cost-of-carbon-into-business-plans>