INEVITABLE POLICY RESPONSE

The US discovers its climate policy: A holistic assessment & implications

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Report prepared by Kaya for the Inevitable Policy Response (IPR)

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Kaya

Policy analysis by Kaya, foreword by IPR

This short paper by Brian Hensley, Valerie Fowles and Chris Schenker at Kaya, a specialist climate policy consultancy, has been commissioned by the Inevitable Policy Response (IPR). It assesses the current climate policy landscape in the United States, following the signing on the Inflation Reduction Act of 2022. The views in this report do not necessarily reflect the views of the IPR research consortium.

IPR is a climate transition forecasting consortium commissioned by the Principles for Responsible Investment (PRI) whose aim is to prepare investors for the portfolio risks and opportunities associated with accelerating policy responses to climate change. The key outputs of IPR consist of the Forecast Policy Scenario (FPS) and the 1.5°C Required Policy Scenario (RPS). Both the FPS and the RPS are intentionally designed to be long-term, running out to 2050 and beyond. Both scenarios assumed emissions rose slightly out to 2025/6 when published last October 2021.

PRI commissioned the Inevitable Policy Response in 2018 to advance the industry's knowledge of climate transition risk, and to support investors' efforts to incorporate climate risk into their portfolio assessments.

PRI Principles for Responsible Investment

This report is funded in part by the Gordon and Betty Moore Foundation through The Finance Hub, which was created to advance sustainable finance.

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A research partnership led by Energy Transition Advisers and Vivid Economics undertakes the initiative's policy research and scenario modelling and includes Kaya, 2Dii, Carbon Tracker Initiative, Climate Bonds Initiative and Planet Tracker.

The consortium was given the mandate to bring leading analytic tools and an independent perspective to assess the drivers of likely policy action, and the implications on the market.

Leading financial institutions joined the IPR since 2021 as Strategic Partners including BlackRock, Fitch Ratings, Nuveen, BNP Paribas Asset Management, Goldman Sachs Asset Management, Temasek and Quinbrook Infrastructure Partners.

IPR Foreword

IPR has previously forecast that the US NDC would be achieved by 2030 and additionally, that the US will reach net zero by 2050.

This extensive paper by Kaya unpacking the US climate policy process shows that following passage of the IRA, if the impact of that and other policies are added together, the consolidation reflects there is a 'US Clean $1Trillion' to flow into the system.

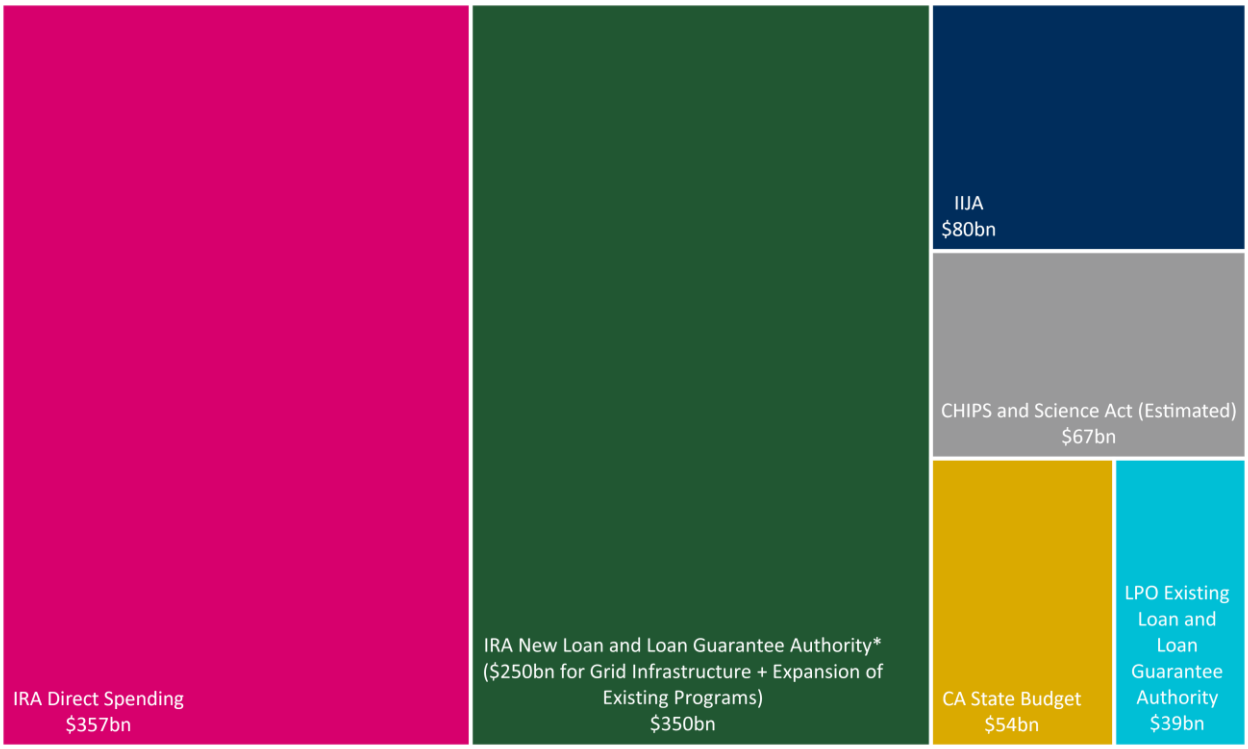
While further policies are still required to be certain that the NDC outcome is in place, we are confident these will emerge and have not changed our expectations that this will be achieved. The potential for a CBAM style border adjustment is welcome.

Mark Fulton, IPR Project Director

The United States discovers its climate policy: a holistic assessment and implications - Executive Summary

- The amount of public money now available in the United States for clean energy and climate is greater than most realise at nearly $1 trillion. From an innovation perspective this 'US Clean Trillion' could be a 'Ten Tesla Event'
- The *Inflation Reduction Act (IRA), Infrastructure and Investment Jobs Act (IIJA)* and the *CHIPS & Science Act* usher in a new US climate and industrial policy grounded in realpolitik
- The combination of these three legislative bills positions the United States at the epicentre of global clean energy innovation and production for the next decade
- The ramifications of this moment are seismic for the United States' own decarbonisation journey with implications for the global net zero odyssey
- In the *IRA*, the United States has found a formula that breaks the log jam for scaled federal action on climate. It is predominantly 'carrots' but has meaningful 'sticks'
- Attention turns to execution challenges and opportunities for the transition including permitting, money deployment, and demand creation
- We provide a simplified model of the US's climate policy 'tool kit'. It is a culmination of 75 years of ad hoc legislation, judicial rulings, and administrative state expansion
- The politics of climate trends positively ahead of November's mid-term elections. Long-term clean energy investment cycles have medium-term implications. Politics, in essence, are a lagging indicator
- One of the most underestimated yet consequential movements in the United States is the battle between coalitions of states. Divergent agendas on climate could make or break efforts to achieve the NDC, lead to a balkanisation of finance based off ESG, and may create legal liability risks for corporations and systemic risk for the financial system
- *West Virginia vs. EPA '22* signals a broader attack on the administrative state, with implications for decarbonisation
- Internationally, cooperation on global emissions under a Paris Agreement format is becoming more difficult. Strategic competition for clean energy assets will now dominate, something which may hold a silver lining
- While a price on carbon does not feature in the US' new federal climate and industrial policy agenda, we watch for this topic to resurface under the guise of a Carbon Border Adjustment Mechanism (CBAM) or a Climate Club, or both

Figure 1 United States' 'Clean Trillion'



Source: Kaya

* The $350bn referenced under "IRA New Loan and Loan Guarantee Authority" is the approximate additional funding that the IRA authorises various US federal agencies to extend to the private sector through loans and loan guarantees. The IRA provisions roughly $12bn in funding to support this lending, which we subtract from the bill's headline amount of $369bn to arrive at "IRA Direct Spending". We follow this approach to show the aggregate amount of money that the bill makes available to the real economy, rather than focusing solely on its direct appropriations which neglects leverage.

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1 Introduction

On August 16th, President Joe Biden signed the Inflation Reduction Act of 2022 into law, paving the way for action on climate which could reduce U.S. greenhouse gas emissions nearly 40% by 2030 against a 2005 baseline.[1] Suddenly, the United States is on track to be just 10% (less than one billion tonnes of annual CO2 emissions) away from President Biden's Nationally Determined Contribution (NDC) of 50-52% economy-wide emissions reduction by 2030. This policy development puts net zero by 2050 for the US within reach.

It is hard to understate the significance of this event, but it is not the whole story.

The combination of the *IRA*, two other pieces of legislation - *The Infrastructure and Investment Jobs Act (IIJA)* and *The CHIPS and Science Act* - and several other pockets of money make nearly $1 trillion available for the clean energy transition and climate in the United States.

This 'US Clean Trillion' is more than many appreciate, at 10x the size of the United States' last legislated funding for clean energy, *The United States Recovery and Reinvestment Act '09.*

The US Clean Trillion will re-orient the global orbit of clean technology and energy investment around the US. Spending it will present a challenge.

The three bills also incorporate heavy support for the build out of domestic clean energy and digital industries along with associated supply chains. The materials for both industries are currently dominated by China, something recognized by both US political parties and now accounted for.

Thus, the United States has not only a decarbonisation path but also a fully-fledged industrial policy which incorporates national security concerns. Expect trade disputes to arise as a direct result but we already see evidence of US allowance for 'friendshoring' in its industrial-climate agenda.

The US' new climate policy is notable in that it comes not because of federal legislation on emissions reduction, i.e., a climate law. Rather, it is a result of what is possible given US available policies and unique mix of competing interests. We look at a 75-year journey of the US's important climate moments and offer a model 'toolkit' of climate policies.

Proving once again the power of policy to climate, the *IRA* has caused a step change in emissions expectations. Before the *IRA*, Rhodium forecast emissions to decline ~30% by 2030.[2] Post *IRA*, the forecast is for a decline of 38%.[3]

If achieved this would leave a 'mere' gigaton to then reduce to meet the NDC.

We discuss some of the opportunities and challenges which could help or hinder this ambition gap, including permitting and finding demand for green energy.

[1] Based on an average of results from A Congressional Climate Breakthrough (Rhodium Group, 2022) and The Climate and Energy Impacts of the Inflation Reduction Act of 2022 (REPEAT, 2022). Available at: Link and Link
[2] Rhodium Group (2022). A Congressional Climate Breakthrough. Available at: Link
[3] Based on an average of results from A Congressional Climate Breakthrough (Rhodium Group, 2022) and The Climate and Energy Impacts of the Inflation Reduction Act of 2022 (REPEAT, 2022). Available at: Link and Link

One of the most consequential arenas of competition on climate in the US is the battle of State actions.

States have widely varying emissions profiles and control budgets which can impact the direction of these emissions. Additionally, states can (and now do) allocate public pension money and business based upon support for different types of energy.

This represents a reverse 'weaponisation' of ESG, a topic which has become a live tool for ideology and politicisation by some State policymakers. It also introduces a 'balkanisation' risk for climate finance and paves the road for potential legal liability as well as systemic financial risk.

State and Federal judicial rulings have proven consequential in the US' journey to develop a climate policy. The Supreme Court ruling in *West Virginia vs. EPA '22* elevates this factor. It does so in the form of a conservative majority bench announcing its intention to use a newly created doctrine as a tool to deconstruct the administrative state broadly, thus hindering decarbonization efforts.

National carbon pricing has historically been a heavily partisan issue in the US, as shown by the disastrous attempt by Democrats to pass a cap-and-trade law in 2009. Carbon pricing is absent from the recent legislation. Nevertheless, there is a nexus for carbon prices, Carbon Border Adjustment Mechanisms (CBAM), 'climate clubs', national security and 'friendshoring' which we discuss.

Lastly, we offer views on what the new US industrial + climate policy could mean for global decarbonisation efforts.

Instead of the solidarity and sacrifice called for in the Paris Agreement, we see a shift to strategic competition for the assets of the transition. The US has a chance to be a climate leader in this regard.

2 The United States' Clean Trillion

The *IRA* is a $739bn top-line package. Typical reporting cites that half of this, $369bn, is allocated to clean energy and transportation. However, a deeper and broader inspection reveals the total amount is closer to $1 trillion. (Figure 1)

Deeper: around $12bn of the *IRA* appropriation is used as a credit reserve for an additional $250bn of loan guarantee authority. Additionally, there are various top-ups to existing loan programs amounting to another $100bn. These hundreds of billions sit in various buckets such as Title 17, ATVM, a 'green bank', and more.

Broader: *IIJA* already allocated $80 billion to the grid and Zero Emission Vehicle (ZEV) infrastructure. The Department of Energy (DoE) loan program still has the bulk of $39bn in loans to allocate for clean energy. Additionally, $67bn from the *CHIPS* is for climate action and substantial state level budgets provide further funding.[4] California alone just passed legislation allocating $54bn to climate programs.[5]

Putting the US Clean Trillion in context, the previous largest chunk of funds allocated to clean energy was $90bn under Obama's 2009 *American Recovery and Reinvestment Act (ARRA).* At that time, *ARRA* was the largest federal package in history for clean energy measures. The eventual fund distribution equated to around $60bn for states and $30bn retained at the federal level. Massive hiring of exceptional people was required, and eventually achieved, but it was a mammoth task.

A Ten Tesla Event? Conservatives tout that the *ARRA* gave taxpayer money to some investments which never paid back. This misses the point that the purpose of this money was (and is) to act as risk capital, funding ventures which the private sector sees as un-investible. Accordingly, losses are expected. An infamous example of a loss under this program was the $570mm loan to solar panel manufacturer Solyndra, which went bankrupt. But *ARRA* also gave a $465mm loan to Tesla, which was repaid 5 years later. Tesla took full advantage of another $2.5bn in subsidies to now employ 100,000 people and has a market capitalisation now worth $860bn, a figure nearly equivalent to the US Clean Trillion.[6,7]

Leaving aside assumptions on default ratios, loans vs. subsides, etc., we think it entirely plausible that funding 10x greater than the ARRA could create ten new Teslas. The Teslas in 10-15 years could be in a variety of industries in addition to batteries and transportation, such as biofuels, sustainable aviation, and nuclear. We are sceptical that carbon capture will compete even with enhanced 45Q tax credits, and we harbour doubts on green hydrogen as well.

Before the *IRA,* there was concern that higher interest rates would stall the US energy transition given renewable build out is front loaded and capital intensive. Post *IRA,* this looks unlikely, especially when considering the amount of private investment which can be crowded in by the early-stage investment in new technologies.

Timing matters when it comes to these funds. Some of the money is available now, like the DoE loans. Some extends for 20 years, such as the tax credits.

[4] The Atlantic (2022). Why the CHIPS and Science Act is a climate bill. Available at: Link
[5] E&T Magazine (2022). California passes 'aggressive' $54bn net-zero plan. Available at: Link
[6] Forbes (2022). Remembering "Solyndra" – How Many $570M Green Energy Failures Are Hidden Inside Biden's Infrastructure Proposal? Available at: Link
[7] Clean Technica (2020). Just How Much Does Tesla Get In Subsidies Anyways? Available at: Link

Most *IRA* money will be available from Jan 1, 2023. Within that bloc is a large portion which needs to be used quickly. Notably, the additional $250bn of loan authority needs to be committed by 2026. This incentivises a furious pace for stakeholders to get their heads around how to spend the money quickly. The time limit on these significant portions acts as a call-to-arms to global stakeholders in the transition.

For clarification, an underappreciated element of the long-dated nature of tax credits under *IRA* is that they last longer than 10 years. As long as a project is deemed to be in service in the ninth year and 11th month, it is eligible for a further 10 years of tax credits. This extends the duration of stable policy incentives to over 20 years.

And yes, it is feasible that a future administration could orchestrate an end to these tax credits, but we see this as a technical possibility rather than a politically likely one. For one, it is very hard to repeal tax cuts once they are implemented given voters do not want to give up access to cheap credit.

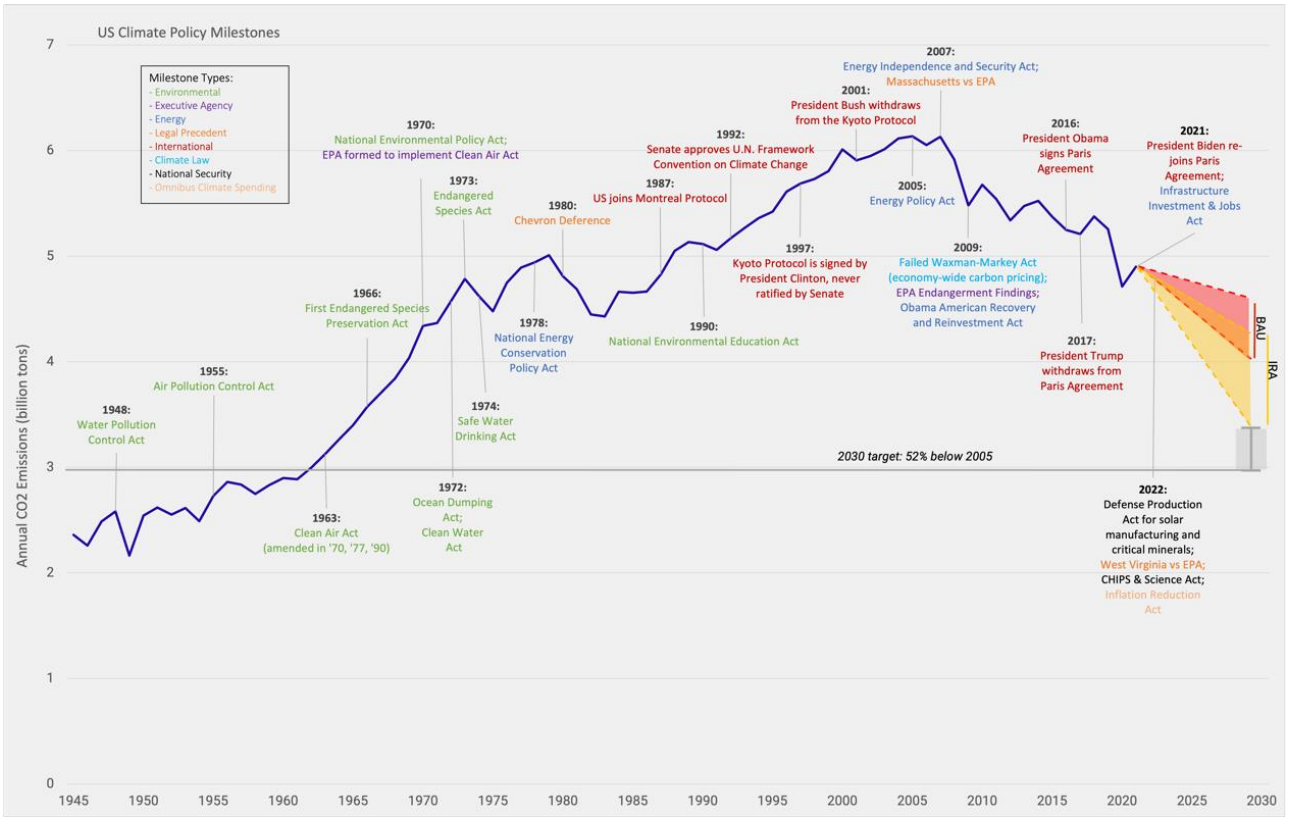
Secondly, a repeal of this legislation would require bipartisan support of sixty votes in the Senate, or even sixty-seven votes if the President is a Democrat given a veto requires a super-majority to overturn.

It is important to realize that all these funds have yet to be allocated to specific companies and ventures. Applying for the loans and competition for the funds will be an active endeavour requiring detailed expertise for many years.

3 Evolution of climate policy in the United States

The significance of recent congressional legislation requires some historical context. In Figure 2, we list a few of the most consequential US climate developments in the last 75 years, graphed on a line of annual CO_2 emissions.

Figure 2 Significant climate events and annual historical annual emissions



Note: Emissions shown as CO_2 rather than CO_2e for longer data horizon. Additional CO_2e emissions would add more than 1 gigaton at the peak

Source: Kaya

With no Congressional law on climate, the formulation of regulation and policy designed to enable CO_2 emission reductions followed a convoluted path.

Our timeline of the US' emergent climate policy begins in mid-century with Congress passing a multitude of laws to address the quality of air, water, and wildlife. These were passed in response to growing public concern about pollution and conservation. This era, peaking in the 1970s, can be thought of as the Age of Environment.

The bellwether piece of legislation in this period, the Clean Air Act (CAA), led to the establishment the Environmental Protection Agency (EPA) which eventually went on to regulate air pollutants. The 2000s witnessed the birth of the Age of Energy, coinciding with an increase in legislation designed to promote national energy independence.

A partisan view of climate as a political issue resulted in the US' volatile presence on the international stage. Democratic presidents opting into UNFCCC agreements only to be undone by Republican administrations has blunted the US' ability to lead on climate issues.

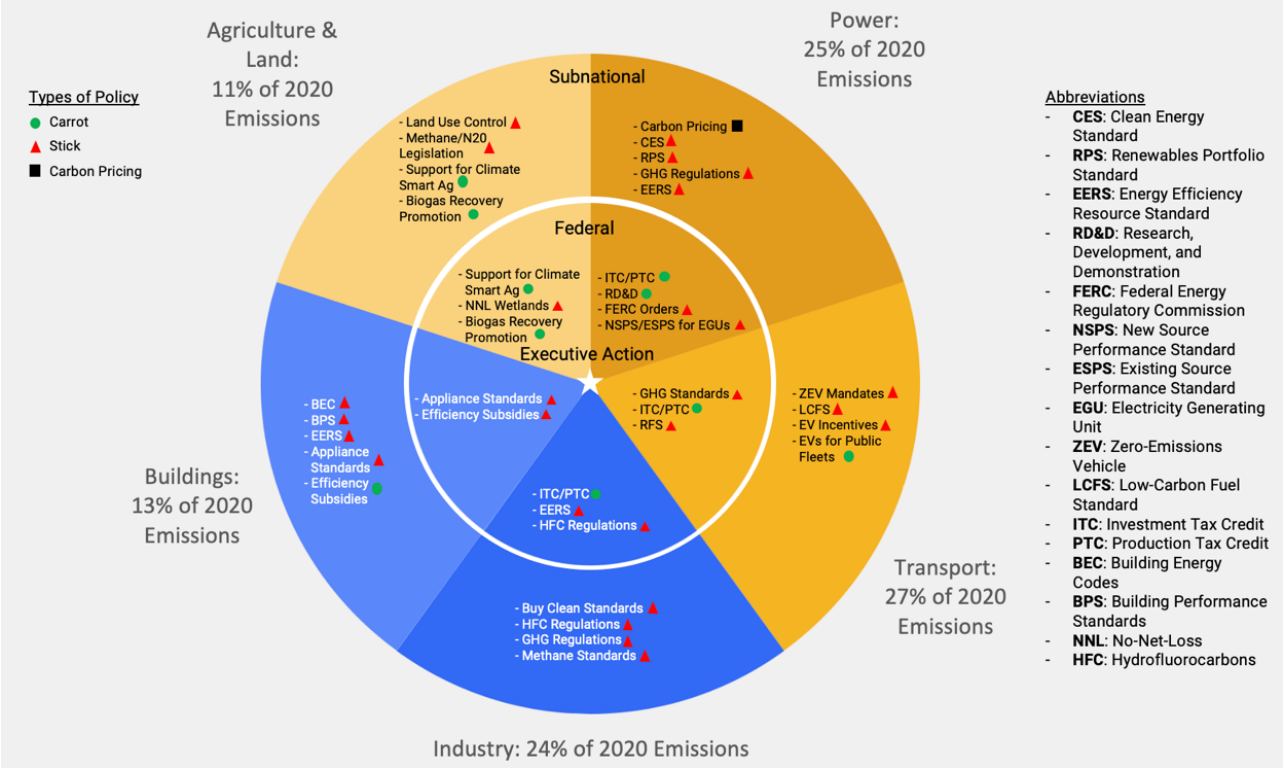
The judicial branch of government has been a key actor on climate progress at pivotal moments. The Supreme Court's rulings in *Chevron vs NRDC '84, Massachusetts vs. EPA '07,* and now *West* Virginia *vs. EPA '22* remain consequential. On carbon pricing, Democrats attempted, and famously failed at considerable political expense, to legislate a national cap-and-trade market for greenhouse gases in 2009.

Our timeline then projects three scenarios. Business-as-usual is pre-*IRA* and projects a central case of emissions declining by ~30% to 4.3 gigatons from the 2005 peak. The *IRA* scenario is an average range of several studies by the likes of REPEAT and Rhodium.[8] These have a central case of a ~38% decline to 3.8 gigatons. This leaves an ambition gap to the NDC of less than a gigaton.

The *IRA* has put the US within a reaching distance of an emissions level present when the CAA was first passed in 1963. The more salient point being that this achievement would make net zero possible as models predict net zero is only achievable if emissions halve by 2030.

The journey, till now, has produced a complex climate policy landscape in the US. (Figure 3)

Figure 3 The US' climate tool kit and sectoral share of emissions



Source: Kaya

[8] REPEAT (2022). Preliminary Report: The Climate and Energy Impacts of the Inflation Reduction Act of 2022. Available at: Link, Rhodium Group (2022). A Congressional Climate Breakthrough. Available at: Link

This climate policy toolkit is divided into three dimensions: sector, type, and domain. Sectors are delineated in line with the US NDC: power, transport, industry, buildings, and agriculture and land. The traditional three types of policies are represented: carrots, sticks, and carbon pricing. Carrots, or incentives, include tax breaks and cheap loans. Sticks are comprised of regulations or emission standards. Carbon pricing can either be a tax or, more often, a cap-and-trade market. Domain refers to who holds the power and can be at Federal or State level.

US action on emissions is a non-systematic combination of all three dimensions. Federal action consists of executive orders from the president, such as declaring a Climate Emergency or utilising the Defence Production Act on critical minerals, as well as regulations deployed by federal agencies and congressional legislation.

On the subnational level, the US political system is a federalist structure endowing states with wide-ranging abilities to make (or hinder) progress on climate which we shall investigate.

Not evident in this chart is the impact of the policy tools. For example, in the power sector, well established regulations enable impactful progress on combatting emissions whereas in the agriculture sector this is not the case.

4 Clean energy in the US is now both industrial and national policy - Trade disputes will result

From a climate policy perspective, the US has now transitioned into the Age of Energy, National Security, and Industrial Policy. The *IRA* is one of the largest industrial policy actions in US history, with specific provisions for clean energy and transportation. This leverages the already sizeable *IIJA*, which devotes billions to grid and zero emission vehicle (ZEV) charging infrastructure.

US industrial policy now distinctly supports the clean energy and digital sectors (*CHIPS* provides support for building out a domestic semiconductor industry). This has significant ramifications on global competition for the raw materials required by both e.g., rare earth metals. These are also sectors globally dominated by China, something clearly not lost on legislators from both congressional parties and one of the few areas of bipartisan support.

National security considerations abound in the *IRA*, such as requirements for domestic content for ZEV and batteries. This means clean energy, and, by extension, climate considerations have become conclusively intertwined with security and industrial policy.

The industrial policy element is achieved via two types of climate policy, a heavy usage of 'carrots' in the form of tax incentives and loans and a sprinkling of significant 'sticks.'

One notable 'stick' involves a deliberate amendment of the CAA which denotes carbon dioxide as an air pollutant. This clarifies the congressional viewpoint on the matter, allowing the EPA to potentially regulate CO2 emissions more broadly than just for transportation. We return to this shortly.

Another 'stick' is the methane emissions charge which the EPA collects from oil and gas companies. Romany Webb at the Sabin Center for Climate Change Law at Columbia cites this *'inclusion in the IRA is...a big deal. It represents the first time the federal government has levied a fee on the emission of any greenhouse gas'.*[9]

Domestic content and labour requirements for ZEV tax credits represent a contentious trade issue already challenged by the EU and Japan. Politically popular support for build out of domestic industry represents 'onshoring' and is a further challenge to the embattled WTO order.

It may be that this move is a steppingstone towards yet more strengthening of a sector specific 'friendshoring' evolution whereby like-minded nations find common ground on some of these historically 'black and white' protectionist measures. The emerging climate club discussion points to why it may be no surprise the G7 might align on the incorporation. Australia's historic implementation of a climate law positions it in the club now as well.[10]

In the *IRA*, there is a potential nod to this evolution from 'onshoring' to 'friendshoring', whereby trade and supply chains becoming increasingly confined to alliances of like-minded nations (read this broadly as G7 and Australia vs. China and Russia). *IRA* includes a $7,500 tax credit for new electric vehicles, but to win the full credit EV makers must source at least two-fifths of battery materials in 2023 from the United States or Free Trade Agreement (FTA) partners such as Canada, Chile, and Australia, or recycle it in North America.

[9] Climate Law Blog (2022). The new methane emissions charge: one (limited but important) stick in the inflation reduction act. Available at: Link
[10] Parliament of Australia (2022). Climate Change Bill 2022. Available at: Link

ZEV production may stumble near term given the abovementioned hurdles. It takes ~7 years to build a mine and ~24 months to build a battery plant. Mining companies will struggle to meet the deadline imposed by IRA. This exemplifies a broader issue whereby the support of domestic industry build-out comes at the expense of using the cheapest available inputs into renewables from abroad, at least in the short term.

In summary, the US has finally learned from its past. No longer will it willingly develop an important technology only to acquiesce its benefits to another nation, as it did with solar technology and Japan. And certainly not when it is clearly recognized that national security depends on alignment with decarbonization and energy goals.

As a result, the US will now be the focal point for global clean technology innovation and commercialisation for the foreseeable future. The sheer volume of domestic investment will act as a beacon to actors both domestic and foreign, kickstarting a new era of investment in climate and the green transition.

When combined with the fact that the US also offers cheaper and less volatile fossil fuel peaking power relative to other places in the world, one can see how global manufacturers will see the US as a favourable investment destination.

5 State alliance battlegrounds

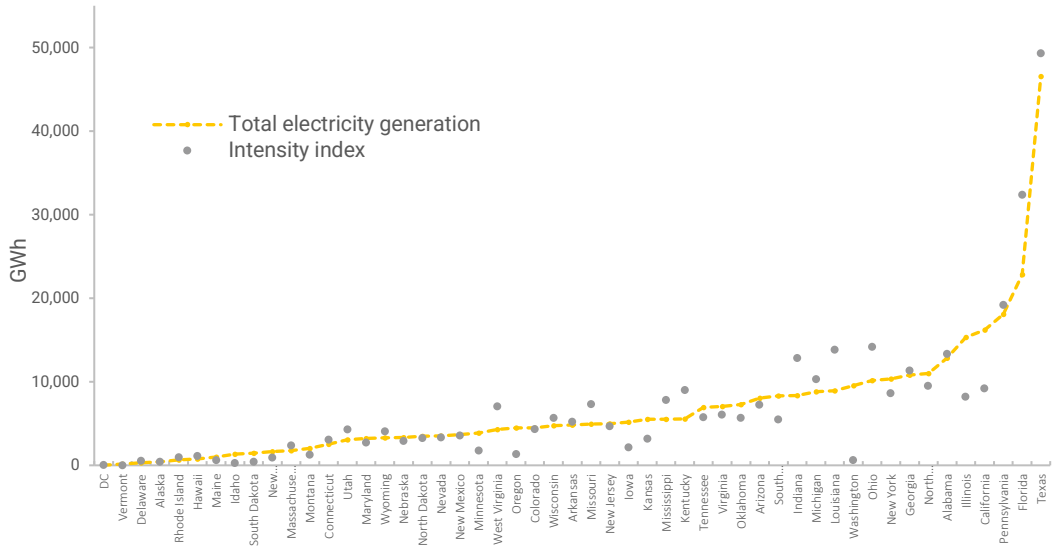
States have substantial formal, and informal, policy power when it comes to emissions reduction. The question is: how will they use it? Some will, and are, pursuing climate-forward agendas while others are actively working to hinder decarbonisation.

The carbon intensity of the power sector is a useful starting point in an analysis of State action -and intentions- on emissions.

Figure 4 scales the 50 states by their power sectors' average carbon intensity, defined as carbon emissions per unit of electricity. This is weighed against each State's electricity generation, normalised to allow observations on which states are above or below average carbon intensity proportional to their total power generation.

Texas, Florida, and Pennsylvania are large power generators but also produce this power in a disproportionately carbon intense fashion.

Figure 4 Normalised average carbon intensity of electricity generation by state

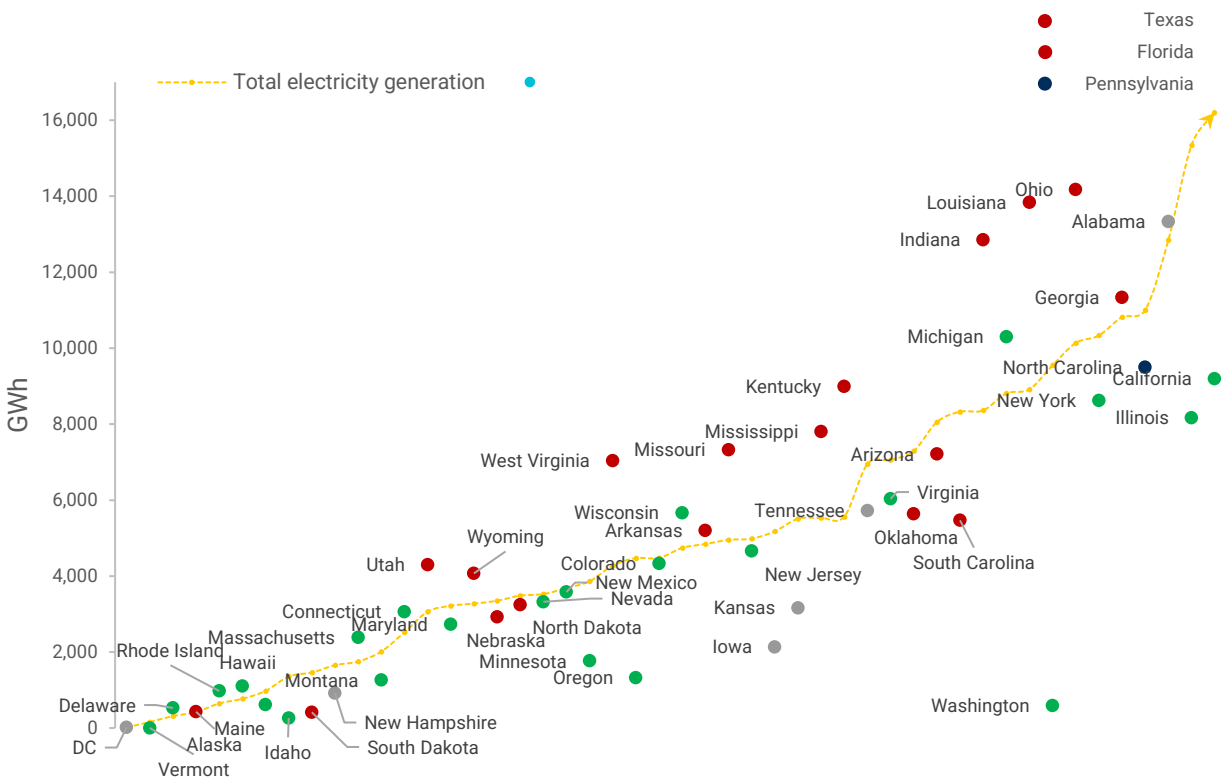


Source: Kaya

We zoom in on the results at a more granular level in Figure 5. The likes of Alabama, Louisiana, and West Virginia have above average emissions intensity. We might think of them as 'fossil-fuel-invested'. Oregon, Iowa, Washington, and California are examples of below average intensity and can be thought of as 'climate-aligned'.

Something else becomes apparent. Fossil-fuel-invested states overlap neatly with membership in organisations like The State Financial Officers Foundation (SFOF), an NGO composed of Republican State financial officers. The climate-aligned states correlate with membership in The US Climate Alliance (USCA) which was formed to accelerate decarbonisation in the absence of federal action after President Trump's 2017 withdrawal from the Paris Agreement. Although it is bipartisan, USCA membership skews heavily in favour of Democrats.

Figure 5 Normalised average carbon intensity of electricity generation by state indicating state alliances



Note: Notably, USCA members trend below whereas SFOF members trend above the average line.
Source: Kaya

Using these two organizations (SFOF and USCA) as our benchmarks, we can explain how the battle between State alliances is shaping up to be a one of the most underestimated yet crucial climate variables in the US.

Not only will the outcome of this relationship play a large part in in the US' ability to reach its NDC (Texas and Florida addressing their emissions would be hugely helpful to decarbonization) but it also has direct implications for transition financing, corporate legal liability, and systemic financial risk.

The USCA pursues a climate agenda, with members committing to emission reductions in line with the national NDC. The principals of the SFOF include more ideological objectives such as limiting the powers of federal government, enhancing those of states, and allowing private markets to function unhindered by government.[11] While climate isn't listed as a principal, SFOF's agenda and actions support the fossil fuel industry, not surprising given the vested interests of oil & gas in those states.

A NY Times article *How Republicans Are 'Weaponizing' Public Office Against Climate Action* provides evidence of formal, and informal, methods used by the SFOF and its members.[12] These include:

- Refusing to do business with banks who do not support coal
- Pulling public state money from asset managers deemed overly supportive of environmental issues

[11] State Financial Officers Foundation (2022). About. Available at: Link
[12] NYT (2022). How Republicans are 'Weaponizing' Public Office Against Climate Action. Available at: Link

- Campaigning against nominations of candidates to federal agencies who support climate-related corporate disclosure
- Establishing laws preventing state agencies from investing in businesses which cut business with fossil fuel interests

This is not to say that USCA members do not implement measures which seek to do the opposite, but rather to illustrate the point that both camps are not limiting themselves in their choice of weapons.

For SFOF members in particular, this development interweaves tightly with conservative criticism on the ESG movement. The financial industry has been quick to embrace the ESG agenda but some inherent contradictions within the ESG philosophy are being increasingly exploited by conservative State policy makers. This has real implications for financial investment flows from the public and private sector. A group of fourteen state officials, all from USCA member states, are pushing back against the SFOF anti-ESG criticism, condemning the use of "blacklists to obstruct the free market."[13]

The prospect for a 'balkanisation' of finance is now real. This involves asset managers and banks (both domestic and international) being asked to choose between 'ESG' or 'fossil fuel energy' strategies, or risk losing money from either California Public Employees' Retirement System or the Texas Municipal Retirement System.

The subject of fiduciary duty and material impacts could also introduce legal liability risks for, say, banks and pension funds who control assets in a state which changes a law relating to investments.

From a systemic perspective, a bubble of risk may grow. States who refuse to take climate risk into account will incur greater physical and transition risk which will, and already is, impacting financial returns. These states may choose to go this path (if indeed it is even legal) but either State or Federal regulators may eventually introduce capital charges for that risk.

In summary, states' use of policies will have significant ramifications for emissions progress over issues ranging from primary power mix and allocation of public pension fund assets to the legality of investments and the administrative abilities of federal and state agencies.

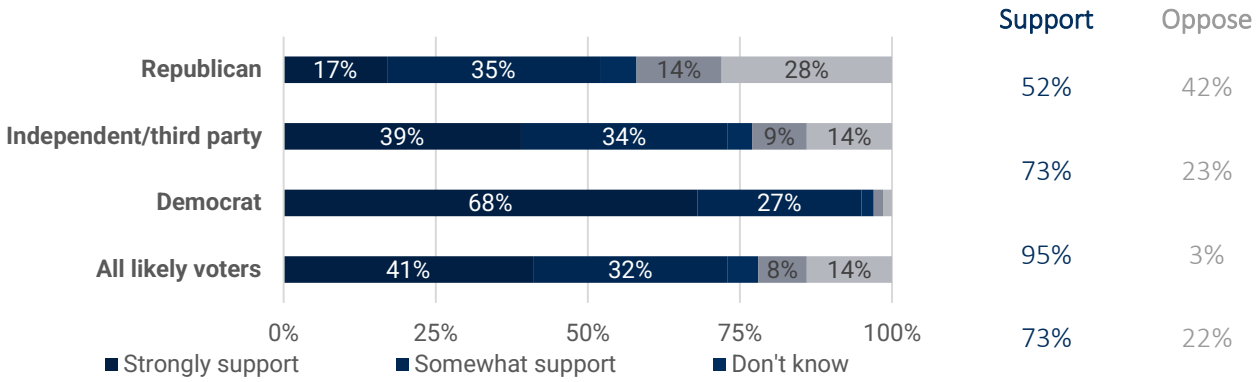
[13] POLITICO Pro (2022) Democratic officials join pushback on GOP war on ESG. Available at: Link

6 Climate is still a divisive issue but increasingly good politics

Politics will be a large determinant of the US' emissions pathway. Looking forward, we think the combination of clean energy job growth and the location of those jobs in traditionally conservative areas bodes well for the politics of climate.

Recent evidence points to satisfaction with the *IRA*. In August, Climate Power and Data for Progress surveyed likely voters on their impression of *IRA*. 73% of those surveyed approved of the *IRA* (either strongly or somewhat). Unsurprisingly, 95% of Democratic voters approved, but also 73% of independents and 52% of Republicans.[14]

Figure 6 Support or opposition for the Inflation Reduction Act within voter groups



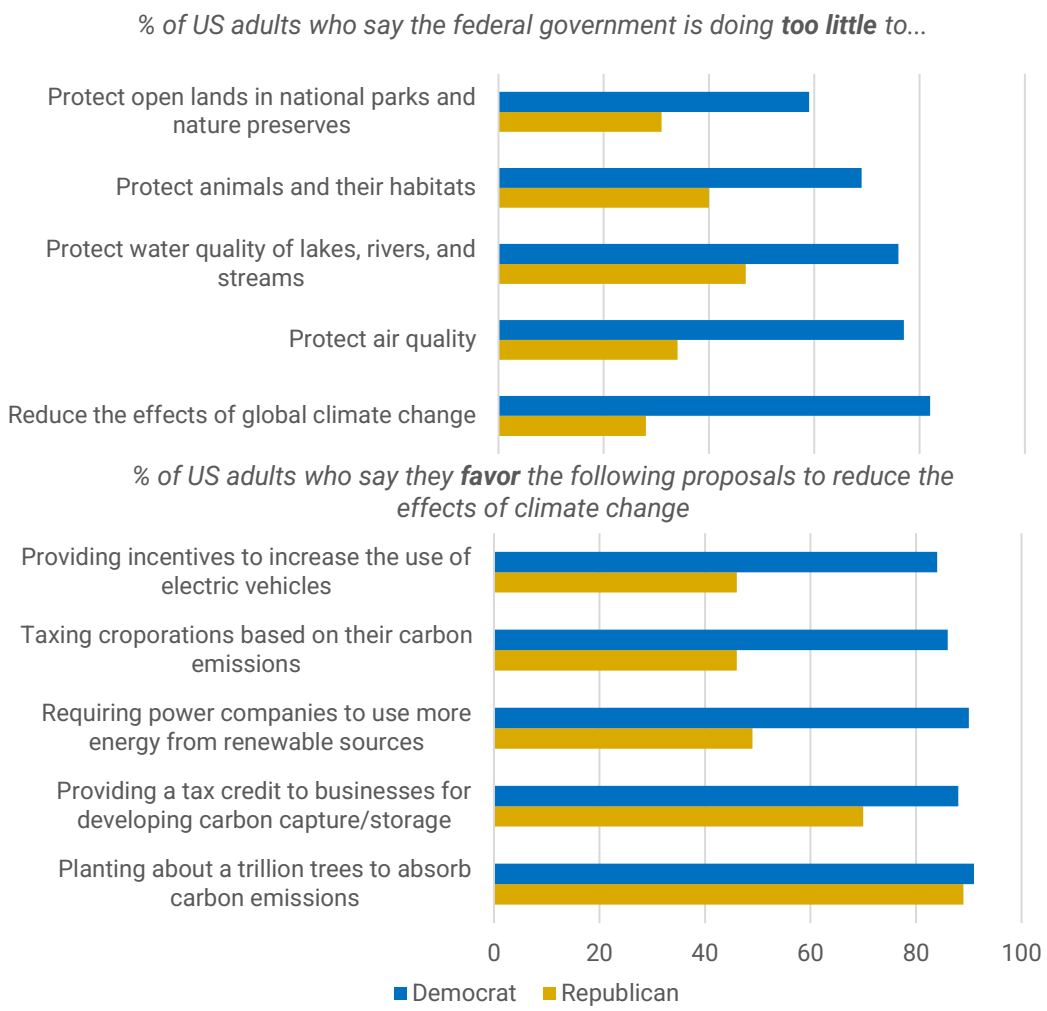
Source: A Progressive Case for the Inflation Reduction Act (dataforprogress.org)

Pew Research reveals the still massive gap between Republicans and Democrats on many, but not all, climate and environmental issues. (Figure 7)

The same work gauged support for specific measures and (aside from a willingness to plant trees) we can see how a 'carrot'-heavy package such as *IRA* represents a viable policy avenue when it comes to emissions reductions.

[14] Data For Progress (2022). A Progressive Case for the Inflation Reduction Act. Available at: Link

Figure 7 US adults divided over direction of Biden's climate change policies



Note: A large majority of democrats say the government isn't doing enough on climate change, but many proposals to address climate change are receiving bipartisan support

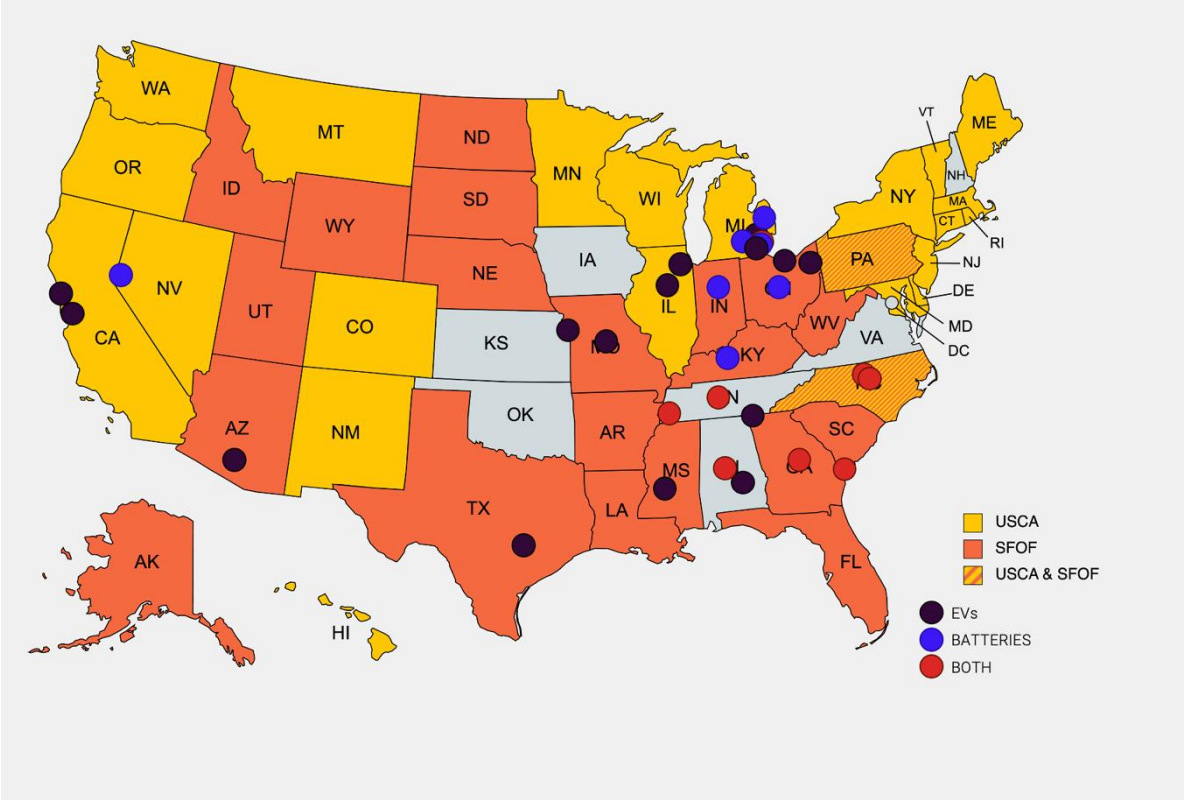
Source: Pew Research Center

How might this develop between now and 2030 or beyond? In the US, clean energy job growth is already outpacing fossil fuel job growth and 3.5x as many workers are employed in clean energy compared with fossil fuels.[15]

As important as the number of jobs in aggregate is where they are located. The major beneficiaries of the US' growing EV and battery industry are conservative states. In Figure 8 we show areas of battery and EV factories overlayed against SFOF and USCA states.

[15] Clean Jobs America (2022). A return to rapid growth, with clean vehicle jobs driving ahead. Available at: Link

Figure 8 US sites with major EV and battery investments as of 2022. Conservative states are beneficiaries



Source: Kaya

Midterm scenario snapshots:

- Divided Congress: recent polls suggest Democrats may hold the Senate but lose the House. This would be 'positive' gridlock in the sense that significant legislation has been passed and could percolate. Nominations by the President could still be confirmed by the Senate.
- Republican control of Senate and House: 'normal gridlock' in that Biden still has a veto but would not be able to confirm any nominations.
- Democratic control of Senate and House: gloves would be off in terms of the prospect of yet more ambitious climate legislation. This could take the form of a Clean Energy Standard which Senator Manchin jettisoned from the failed Build Back Better. National carbon price and CBAMs also come into the picture.

7 Challenges to achieving the ambition gap: permitting, spending a lot of money and finding demand

Normally, passing legislation in the Senate requires a majority of sixty votes. A special process called reconciliation allowed Democrats to pass the *IRA* with a just fifty votes (plus the tie breaker from Vice President Harris).

But a 'side deal' between Senators Manchin and Schumer carved out permitting of energy infrastructure, thus leaving it dependent upon normal congressional voting. Senate Republicans have threatened a government shutdown around the midterms unless permitting decisions are agreed state-by-state, effectively a blocking tactic. Equally, progressive democrats have also signalled they will bring the government to a halt if the provision is included on the deficit ceiling extension. This being due to the bill giving permitting concessions to oil and gas drilling, not just allowance for electrical transmission and renewable permitting.[16]

The role of Independent System Operators (ISO) and their ability to bridge divides between utilities from different states will also be critical to building out the electrical grid in a way which transmits more renewable power. Constructive coordination between ISOs is overseen by the Federal Energy Regulatory Commission (FERC). The FERC's mandate is not climate but energy security, so their actions for or against renewable or fossil fuel infrastructure will be a key factor in reaching climate goals.

Key stakeholders against grid integration include vertically integrated utilities, who fear their coal plants will become stranded assets, and anti-renewable political ideologists.

Notably, the hydrocarbon lobby has not come out against the *IRA* as a whole. Oil and gas companies received considerable allowance for more production thanks to concessions on public land and offshore drilling. These companies also see tax breaks and subsidies for blue and green hydrogen. One aspect that fossil fuel companies are complaining loudly about however is the methane charge.[17]

How fossil fuel companies decide to act on the funding available will have considerable implications on achieving the NDC.

A last challenge to the IRA specifically is subtle, yet important. Today, there is little demand for green or decarbonized hydrogen. No 'offtake', in the parlance of energy finance markets. Similarly, there is no demand for green steel or zero carbon fertiliser. The assumption is that this offtake will get strong once it's on the market for $2/kg. And maybe it will. But there is a tension here that could slow down investment.

The resolution of this may need to involve the use of the two other types of climate policy, sticks or carbon pricing. In essence, the impact on the NDC of a supply driven transition is ultimately uncertain in the absence of a meaningful price on carbon and/or strict emission level standards.

[16] The Hill (2022). Schumer in tough spot over Manchin promise. Available at: Link
[17] FT (2022). Oil industry condemns first US fee on greenhouse gases. Available at: Link

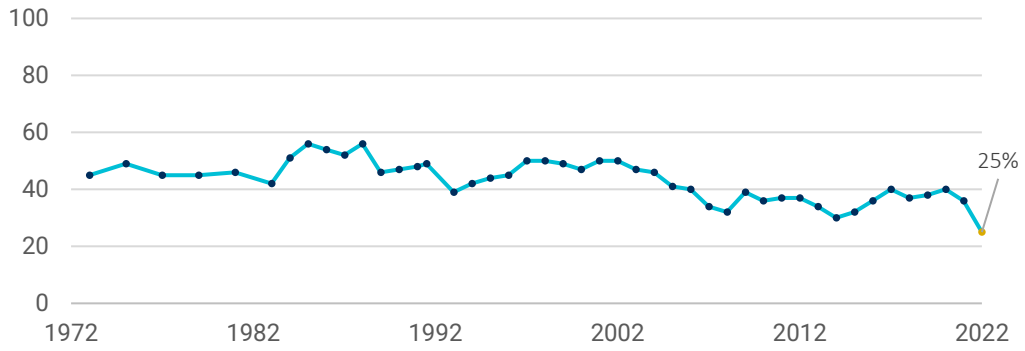
8 West Virginia vs. EPA and judicial influence

In its ruling in *West Virginia vs. EPA '22*, the conservative majority employed a doctrine called 'Major Questions' to limit the ability of the EPA to mandate a system-wide, generational shift in primary sources of energy at stationary utilities from coal to renewable sources. In doing so, they cited the overreach of the EPA, determining that Congress had not mandated these powers explicitly.

The Major Questions doctrine, in effect, acts as a method of overwriting the Chevron Deference ruling (1984, Figure 1), a 'trump card' as it were. The *Chevron* decision granted significant powers to agencies in areas of their expertise, astutely reasoning that Congress should not be expected to explicitly legislate on the countless items that agencies are asked to regulate.

Recent rulings on partisan issues ranging from abortion to automatic weapons has sunk confidence in the US Supreme Court to historic lows (Figure 9), which may be a rallying factor to liberal voters ahead of mid-terms. Evidence for this can be seen increased voter registrations among women.[18]

Figure 9 Only twenty-five percent of US adults say they have "a great deal" or "quite a lot" of confidence in the Supreme Court



Source: Kaya

Of concern for climate supporters, the *West Virginia vs. EPA '22* ruling can be interpreted as an effort by the Supreme Court's conservative bench to limit the reach of the administrative state and the ability of agencies to use all means at their disposal to limit emissions within the US.

The amendment to the CAA in which CO2 is labelled as air pollution is significant given it could be interpreted by the EPA as an avenue to regulate emissions from stationary sources, i.e., utilities, more aggressively. And meaningfully, it acts to codify *Massachusetts vs. EPA '07* (the ruling that gave the EPA the ability to regulate pollutants). But this amendment does not overturn *West Virginia vs. EPA '22* nor is it sufficient to prevent years of legal manoeuvrings leveraging the decision.

Another potential development in the judicial arena relates to the states. Texas has already signalled its intent to use the Major Questions doctrine as precedent in its efforts to prevent another federal agency, the Nuclear Regulatory Commission, from licensing a private company to store nuclear waste within the state.[19]

[18] Bloomberg (2022). Women's Voter Sign-Ups Surge After Roe Ruling, Buoying Democrats. Available at: Link
[19] Martin Heinrich (2022). Bipartisan, bicameral legislation prohibits federal funding for private interim nuclear waste storage. Available at: Link

And the West Virginia Attorney General who organised the successful case in the EPA ruling has signalled his intent to challenge the Securities and Exchange Commission's (SEC) ruling requiring climate disclosure by companies.[20]

The crucial point is that the judiciary is a live climate player. These legal proceedings related to climate in and around the administrative state will be a febrile arena for climate action in the years to come and will have enormous implications for the US' ability to lower its emission profile.

[20] Climate Wire (2022). Red states decry 'woke left' SEC proposal for ESG investing. Available at: Link

9 Carbon Border Adjustment Mechanism (CBAM) and Climate Clubs

Carbon pricing, the third type of climate policy from our model, does not feature explicitly in any of the three pieces of legislation. However, it is highly relevant in the present and future US policy environment.

Firstly, as mentioned above, supply driven incentives alone may not be enough to facilitate ultimate demand for products created with clean energy if it is not cheaper than alternatives. In this scenario, and in the absence of stick regulations, carbon pricing may be a solution, although that in itself does not increase its political viability.

Secondly, elements within the legislation are incentivising aspects of carbon capture and transport of CO_2 (e.g., 45Q tax incentives for carbon capture) which might lead to increased commercialisation, and hence more efficient pricing of a tonne of emissions. The attribution of a value to CO_2 which is grounded in something quantifiable is a necessary, but not sufficient, component to any carbon border adjustment mechanism so as not to fall afoul of the WTO.

Third, a scenario of a Democratic House and Senate (albeit not highly probable at the moment) would introduce the possibility of legislation being passed which enshrines a national carbon price and implements some form of CBAM. The FAIR Transition and Competition Act of 2021 was a law designed to do just this. It was inserted by U.S. Representative Scott Peters of California and U.S. Senator Chris Coons of Delaware into the *Build Back Better* law which failed to garner endorsement from Senator Manchin of West Virginia.

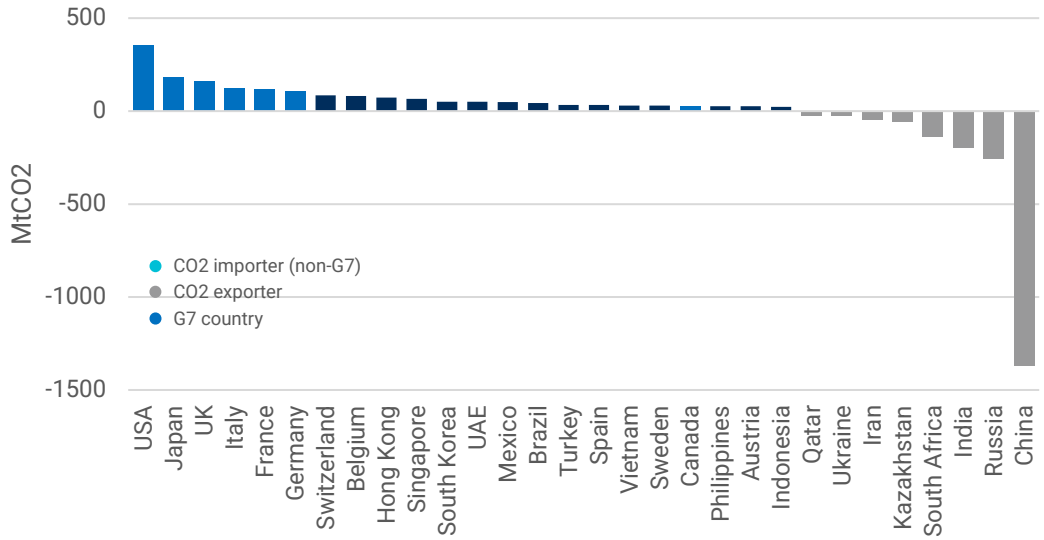
Fourth, a form of CBAM does have support from select Republicans even if the version they have in mind resembles a straight tariff, not backed by a national carbon price and likely to not include requirements for domestic industry to pay the equivalent tax required of foreign companies.

We have written extensively about CBAMs and Climate Clubs for the *Inevitable Policy Response* here. Our contention remains that a national price for carbon will always be politically difficult in the US, but some form of so-called Climate Club could be a viable option.

This idea is in its infancy but, as endorsed by German Chancellor Olaf Scholz, has many attractive features. These include a country's ability to use a broad suite of policies to impute a value to carbon rather than being required to adopt a formal CBAM. The loose plan as described by Scholz would offer clean technology to countries at early stages of decarbonisation in return for commitments to decarbonise.

Also, decarbonising its energy and manufacturing industries will make US companies even cleaner relative to countries with high embedded emissions. As these high emission countries tend to correlate with countries outside of the US' 'friendshoring' sphere, e.g., Iran, China, and Russia (Figure 10), this would serve to combine climate interests with hawkish conservative actors who want to gain geopolitical advantage and benefits for domestic US manufacturing.

Figure 10 Embodied carbon emission imports and exports by country, 2014 (latest data)



Source: Based on data from the Global Carbon Project

10 Implications for global net zero

Renewed geopolitical tensions are eroding cooperation on climate change. Russia invading Ukraine, weaponization of financial sanctions and energy markets, and Speaker Pelosi visiting Taiwan are having real consequences for international relations between large economies. China has moved closer to Russia diplomatically and has announced a cessation of climate dialogue with the US. It is hard to see these scenarios clearing up in time for the remaining carbon budget to still have value. The G20's inability to issue a joint statement on climate is symptomatic of this and bodes ill for COP 27.[21]

The fact that the US has enacted the IRA and other pieces of legislation will strengthen its credibility in climate negotiations with other countries, including in Paris Agreement discussions.

If the US is successful in its plan to build out a huge clean energy industry, it can then become an exporter of cheap clean technology. This scenario could allow for a mechanism that facilitates the global transition, particularly in emerging economies that cannot currently afford it, that does not primarily rely on transferring finance. This would represent an alternative avenue as opposed to, or in addition to, the solidarity and sacrifice which characterises the Paris Agreement.

[21] Reuters (2022). G20 climate talks in Indonesia fail to agree communique. Available at: Link

Conclusion

The US now has a climate policy, one credible enough to make President Bidens NDC goal possible. This climate policy addresses national and energy security concerns and is structured to support the clean energy and digital industries. Its toolkit is heavy on carrots, has a few sticks, but omits carbon pricing (at least for now).

The carrots are so extensive as to dwarf previous funding for clean energy, with the $1 trillion now on offer being widely underestimated.

Significant challenges to full achievement of the NDC remain including permitting reform, money deployment and execution, and solving for demand. The growing battle between states on climate grounds will also have implications for the NDC and introduces new legal, financing and systemic financial risk into the equation.

The politics of climate are positive and indications from long investment cycles point to medium term growth in voter support for clean energy. The judiciary, from state level all the way to the Supreme Court, is also a live and important actor which will impact decarbonization efforts.

This moment has implications for global decarbonization and marks a new avenue of strategic competition between nations.

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