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Economic recessions and decarbonisation: analysing green stimulus spending in Canada and the US

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ABSTRACT

Existing research has demonstrated that government policies often prioritise growth over climate during economic downturns. Yet government stimulus spending during economic downturns also offers an opportunity for decarbonisation through long-term investments in infrastructure, transportation electrification, building efficiency, and clean energy technologies able to reduce emissions and sustainably shift the economy away from fossil fuels. We study the size and distribution of green stimulus spending in response to two recent economic downturns – the 2008 financial crisis and the 2020 Covid-19 pandemic. Focusing on Canada and the US – two major economies with strong incumbent fossil fuel interests – we explore the determinants of green stimulus spending. Counter to conventional wisdom, our findings provide little evidence to support the notion that institutional permeability to industry lobbying influenced the share of green stimulus spending. Instead, drawing on a novel dataset on green recovery spending and lobbying, we show that the strength of liberal parties in the legislatures shapes the distribution of stimulus funds. Our analysis suggests that liberal parties committed to decarbonisation can leverage economic crises to align economic and climate policy making, even in the face of strong lobbying efforts by the fossil fuel sector.

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Climate policy; economic recessions; green industrial policy; lobbying; stimulus spending

Introduction

The economic downturns caused by the 2008 Global Financial Crisis and the 2020 Covid-19 pandemic triggered large stimulus spending packages in most G20 economies. While aimed primarily at preventing widespread bankruptcies and mass unemployment, these packages in principle also offered governments an opportunity to invest in decarbonisation through structural changes in the economy. Indeed, economic downturns constitute critical junctures for influencing countries' industrial composition and hence serve as opportunities for reducing greenhouse gas (GHG) emissions by allocating a share of the recovery packages for investments in green industries that yield both economic growth and decarbonisation.

These opportunities have not been exploited in full. Despite the Covid-19 pandemic causing the largest annual decrease in global GHG emissions since World War II, global emissions had almost returned to pre-pandemic levels by 2021. Although many governments pledged to pursue a low-carbon recovery, recent research on recovery spending in 16 major emitters revealed that only

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about one-fifth of their stimulus spending was directed towards low-carbon measures (Hans *et al.* 2022). Moreover, the share of green spending in recovery packages varied significantly among these major emitters (Hans *et al.* 2022, Nahm *et al.* 2022). What might explain such variation?

This paper examines this question by investigating green stimulus spending in Canada and the US – two countries with strong fossil-fuel interests. We investigate the extent and distribution of these countries' green spending in response to the Global Financial Crisis and the Covid-19 pandemic. Our analysis focuses on the role of political representation and the political system's permeability to influence from interest groups, as well as the scale of such lobbying efforts.

Drawing on a novel dataset on green recovery spending and lobbying, we argue that pro-climate political parties can leverage economic crises to align economic and climate policymaking, even in the face of intense fossil fuel lobbying. Our empirical analysis demonstrates that liberal political parties in Canada and the US were able to incorporate climate agendas into recovery packages despite considerable lobbying by fossil fuel coalitions. Yet, although our findings indicate limited influence of lobbying efforts on climate policy outcomes in our four cases, even pro-climate political parties allocate relatively modest portions of economic recovery packages toward GHG-reducing measures. Overall, our findings suggest that economic crises in principle offer a political window to advance climate goals, but only if pro-climate political parties can seize the opportunities presented by a green economic recovery.

Contrary to literatures that have emphasised the primacy of institutional factors in determining interest group battles, our research indicates that political factors greatly shape the goals governments pursue through economic stimulus investments. Thus, we contribute to debates about the trade-offs between economic growth and climate policy, highlighting the circumstances under which economic crises can indeed be used to advance environmental goals. Our work also adds to an emerging literature on strategic state capacity, highlighting when policymakers can advance political goals against external opposition.

The paper is organised as follows. In section 2, we review previous research on stimulus spending in the wake of crises. In section 3, we theorise why and how political representation and the political system's permeability to lobbying might influence green stimulus spending. Section 4 explains our selection of cases. In section 5, we present our four case studies of green stimulus spending in Canada and the US. Finally, section 6 offers a discussion and conclusion.

Literature review

Both the Global Financial Crisis and the Covid-19 crisis caused severe global economic recessions, which in turn led numerous countries to adopt economic stimulus packages aimed at salvaging jobs and reviving economic growth. Under what conditions do such stimulus packages emphasise investments that facilitate climate and other environmental objectives?

Previous research has frequently pitted environmental and climate policy against concerns about economic growth, particularly in the presence of externalities and market failures (Jackson 2019, Kostka and Nahm 2017, Pizer 2014, Porter and Van der Linde 1995, Tiba and Omri 2017). Yet government stimulus spending during crises also offers an opportunity for decarbonisation through investments that can reduce emissions and sustainably shift the global economy away from fossil fuels (Tienhaara 2014, Burns and Tobin 2016).

To explain when interest groups supporting clean-energy investments (and climate policies more broadly) prevail, one strand of research has examined the structural composition of the domestic economy. The relative balance of fossil-fuel versus green-technology interests determines the size and political clout of vested-interest opposition to green measures (Meckling *et al.* 2015, Stefes 2020). A domestic economy dominated by actors invested in fossil fuels should lead to substantial opposition to green stimulus packages and strong demand to use economic recovery funds to bolster the competitiveness of incumbents in high-emitting industries (Aklin and Urpelainen 2013, Tvinnereim and Ivarsflaten 2016). In contrast, economies that have already built sizeable industries

likely to benefit from green recovery measures should face less interest-group opposition to investments in green sources of economic growth (Meckling *et al.* 2017).

A second strand has looked to institutional factors to explain why policymakers in some countries are subject to more interest group influences than others. Existing work in this strand has shown how institutional drivers of state autonomy have allowed some policymakers to design and implement climate policy priorities without paying heed to domestic business interests while others have been more responsive to lobbying pressure (Meckling and Nahm 2021). Other scholars in this strand have distinguished between more permeable pluralist economies defined by competitive relations between governments and outside interests and more autonomous corporatist systems characterised by coordination and consensus between the government and the private sectors. Pluralist economies tend to be more permeable to lobby pressure, but policies can be more easily reversed, while the more durable policy environments of more autonomous corporatist systems can also lock in regulatory capture (Schmitter 1977, Howell and Givan 2011; Meckling and Nahm 2021).

Finally, a third strand of research has focused on political elite ideology to understand when green industrial spending can be implemented against interest-group opposition (Aklin and Urpelainen 2018). From this perspective, the ability of states to act on elite preferences is not necessarily vested in institutional features of the state (Carpenter 2001), but can rest in the ability of policymakers to build coalitions, mobilise, and demobilise external interest groups in order to advance state goals (Meckling and Nahm 2018). Economic crises, like those examined in this article, can open new opportunities for policymakers to advance their preferences, either by bypassing external interest-group opposition or by building outside support. Such windows of opportunity are often exploited most effectively by governments in countries with an elite ideology that favours clean energy (Aklin and Urpelainen 2018). Where the political conditions of green industrial stimulus are unfavourable, by contrast, economic stimulus packages might lead to further carbon 'lock-in' by prioritising emissions-heavy sectors. Stimulus capture by vested emissions-heavy sectors of the economy is particularly likely in countries with strong fossil-fuel industry coalitions that are permeable to interest-group influence.

We build on the three strands of research described above by analysing stimulus spending in the wake of two economic crises in Canada and the US. While previous research has focused heavily on the role of lobbying by vested interests, we find that political representation is more important for green stimulus spending than lobbying is, at least in the four cases studied here.

What determines whether governments engage in green stimulus efforts?

Despite fundamental contextual differences between the Global Financial Crisis and the Covid-19 crisis (e.g. their effects on the world economy; international and domestic climate policy progress; and the reduced costs of renewable energy over time) the overall share of green spending in G20 countries' recovery packages remained at comparable levels between the two crises (Nahm *et al.* 2022). While acknowledging that the structural constraints imposed on politicians differed between the two crises, we examine how political representation and the political system's permeability to lobbying shape green and fossil stimulus spending in two highly fossil-fuel-dependent economies.

We define *political representation* as the political composition of legislative bodies in the two countries, notably the Parliament of Canada and the US Congress. Green stimulus spending requires a 'policy-making elite that is cognizant and favourable to considering it' (Aklin and Urpelainen 2018, p. 59). The political composition of executive and legislative branches should shape whether countries engage in green stimulus spending or not. More specifically, liberal political parties such as the Canadian Liberal Party and the US Democratic Party should be more positively inclined towards green stimulus spending than conservative parties in these two countries.

We define *institutional permeability* as the responsiveness of a state to lobbying by outside interest groups. Lobbying is a form of advocacy ‘directed at government/legislators and carried out by actors with or on behalf of a group or organization’ (Somerville and Ramsey 2012, p. 47). Institutional permeability is determined by legislative procedures, bureaucratic autonomy, lobbying rules and regulations. It is low when opportunities for interest-group influence on decision-making are restricted, and high when institutional arrangements offer many – or few but efficient – options for interest-group influence. In fossil-fuel-dependent economies such as Canada and the US, we expect that the more permeable the political process and decision-making system is to lobbying activities, the stronger the influence of fossil-fuel interests on policymaking.

The many similarities between Canada and the US notwithstanding, we argue that the US political system is (even) more permeable to lobbying than the Canadian system. First, Canada has a parliamentary system, where a vote of no confidence causes the government to fall. In addition to its stricter campaign financing rules, this difference is likely also a major reason why party discipline is stronger in Canada than in the US, where even a single legislator can sometimes block, delay, or dilute a bill proposed by the executive administration. Bennedsen and Feldman (2002) show how the higher party discipline in parliamentary governments (such as Canada) reduces lobbyists’ incentives to lean on politicians for their preferred policy outcomes.¹ Relatedly, Canada conducts federal elections every four years, while US Congressional elections occur every two years. More frequent Congressional elections in the US mean that at any given time at least some lawmakers need to focus heavily on re-election, making them vulnerable to lobbying and campaign financing.

Third, Gold (2020) argues that the bureaucracy is more insulated from outside pressure in Canada than in the US. While measuring bureaucratic insulation is not straightforward, US administrations comprise more political appointees than Canadian administrations do. Political appointees are generally more likely to be influenced by lobbying than professional, rule-oriented bureaucrats are. Relatedly, Canada enforces considerably stronger revolving-door rules on bureaucrats and legislators than the US, including a five-year lobbying restriction period on public office holders. Finally, Canada’s commissioner of lobbying is stronger and more autonomous than the corresponding US positions – the secretary of the Senate and the clerk of the House of Representatives (see Holman and Luneburg 2012).

Contrary to the notion that the US is more permeable to policy capture by outside interests, we do not find systematic evidence that stimulus spending is more affected by the fossil-fuel lobby in the US than in Canada. Since the balance between fossil fuel and clean energy interest groups is relatively constant across our four cases, we infer that the elite ideology (Aklın and Urpelainen 2018, Schulze 2021, Carmack *et al.* 2022) of the political constellation in power is a more important explanation for green stimulus spending than lobbying by outside interest groups.

Case selection

To examine the relative importance of political representation and institutional permeability for green recovery spending outcomes, we selected four cases of recovery packages that were enacted in Canada and the US in response to the Global Financial Crisis of 2009 and the Covid-19 crisis between 2020 and 2022, from a broader dataset that we collected on G20 stimulus spending during those periods. To isolate the impact of the economic crisis itself, we focus on stimulus policies that are direct responses to the two recessions, and exclude policies, like the U.S. Inflation Reduction Act, which were not primarily intended to soften the impact of a sharp economic downturn. Our case selection allows variation in political representation within the two countries over time, and variation in institutional permeability to external lobbying efforts across the two economies, while giving us access to similar data on lobbying efforts by external groups to influence policy outcomes.

We investigate the ability of green and fossil interest groups to secure recovery support in two countries with strong fossil-fuel industry coalitions but varying levels of institutional permeability between interest groups and politicians. Canada and the US share several features that make

them rich laboratories for examining the factors driving green recovery investments. First, both countries have very large fossil-fuel industries and are major emitters of greenhouse gases (both nominally and per capita). Second, both countries' fossil-fuel industries have actively engaged in extensive lobbying endeavours to impede the advancement of ambitious climate policies, far surpassing the lobbying efforts of environmental NGOs. Finally, while the two countries are liberal democracies with a federal structure, a written constitution, and a bicameral legislature, their political systems differ on some important institutional features that allow us to examine whether and how lobbyists are able to influence government spending during recessions. As discussed in Section 3, we argue that the US political system is more permeable to lobbying than the Canadian system owing to factors such as the frequency with which elections are held, campaign financing rules, the vote of no confidence, bureaucratic insulation, and stricter lobbying oversight.

Green spending during economic recessions

In this section, we present our four case studies on Canada's and the US's economic stimulus packages during the Global Financial Crisis and the COVID-19 crisis. Throughout these case studies, we draw on three different data sources. First, we compile a novel dataset on stimulus measures adopted during the Global Financial Crisis and the COVID-19 pandemic. Our dataset provides comprehensive information on (announced) stimulus spending in G20 economies, including the likely greenhouse gas emissions impact of all spending measures passed during the two recessions. We label spending measures that likely generated decreased greenhouse gas emissions as 'green' spending and measures that likely increased greenhouse gas emissions as 'fossil' spending. Our measure of green/fossil spending is relatively narrow in the sense that it is focused on climate impacts rather than the broader environmental footprint of stimulus spending. Moreover, our analysis is limited to governments' *announced* spending amounts: it does not evaluate the actual implementation trajectories of spending measures nor attempt to quantify the amount of greenhouse gases these lead to. Supplementary Material I provides more information about our procedure for evaluating the greenhouse gas impact of the spending measures.

Second, to gauge the relative strength of interest groups associated with fossil fuels and clean energy, we create a new dataset based on federal lobbying records in Canada and the US. For each case, we cull data on which companies and advocacy groups lobby in the months preceding a given stimulus package. We then assess whether each of the individual lobbying actors have clear fossil-fuels or clean energy exposure. Supplementary Material II contains detailed information about the classification. Overall, we classify 3903 lobbying registrations in Canada and 4000 registrations in the US. Finally – to confirm our information about the context, formation, and content of the stimulus packages gleaned from government documents and secondary sources – we also conducted semi-structured interviews with politicians, political advisors, environmental lobbyists, and policy experts in both countries. Supplementary Material III provides further information about the interviews.

The 2009 American Recovery and Reinvestment Act

In 2007, numerous subprime mortgage originators failed, and prices of subprime-related securities fell sharply. Yet markets for financial intermediaries had become so large over the decades preceding the financial crisis that banks were now unable to honour claims for cash. Thus, institutional investors sought to cash out of sale and repurchase agreements and of asset-backed commercial papers. Resultingly, 12 of the 13 largest financial institutions in the US faced insolvency (Gorton and Metrick 2013). The US economy began contracting in December 2007 and continued to do so the following quarters. Following the election of Barack Obama in November 2008, the economy plummeted, experiencing quarterly declines in economic activity unparalleled since World War II (Aldy 2013).

Besides the broader economic crisis, energy and climate issues played a greater role in 2008 than in any previous US election. While both candidates focused on energy security and US energy independence – not least because of record oil prices in the summer of 2008 – they offered diverging proposals for how to achieve these goals. Obama advocated increased government support for bio-fuels, investments in renewables, and ambitious changes to fuel economy standards to increase the efficiency of the US transportation sectors.

Following the election, majorities in both the Senate and the House promised the Democratic Party some leeway over implementing such campaign promises, including on initiatives to save the economy while also investing in new, more climate-friendly energy policies. At the time, there was some bipartisan consensus on the utility of market-based approaches to decarbonisation and energy efficiency. However, climate change polarisation accelerated during the Obama administration, with the rise of the Tea Party movement and an increase in corporate funding for climate-change deniers and fake research contradicting climate science.

In late 2008, Obama’s transition team had already begun working on an economic stimulus package to be adopted as soon as Obama would be inaugurated in early 2009. Our interview with a special advisor in the transition team confirmed that the administration viewed the economic stimulus as an opportunity to invest in the clean-energy transition. After evaluating a range of climate-policy stimulus proposals, the transition team eventually decided to concentrate their efforts on energy efficiency, electrical grid enhancements, clean energy, and improvements in transportation systems (Aldy 2013).

Following several rounds of negotiations, the American Recovery and Reinvestment Act (ARRA) was signed into law by President Obama on February 17, 2009. The largest economic stimulus in US history at the time, ARRA contained USD800 billion worth of spending measures, including tax incentives for individuals and companies, low-income aid, healthcare support, and funding for education, infrastructure, research, and energy.

Specifically, ARRA contained 158 individual spending measures intended to stimulate the economy. Some 86 per cent of the stimulus was channelled to causes that did not have a

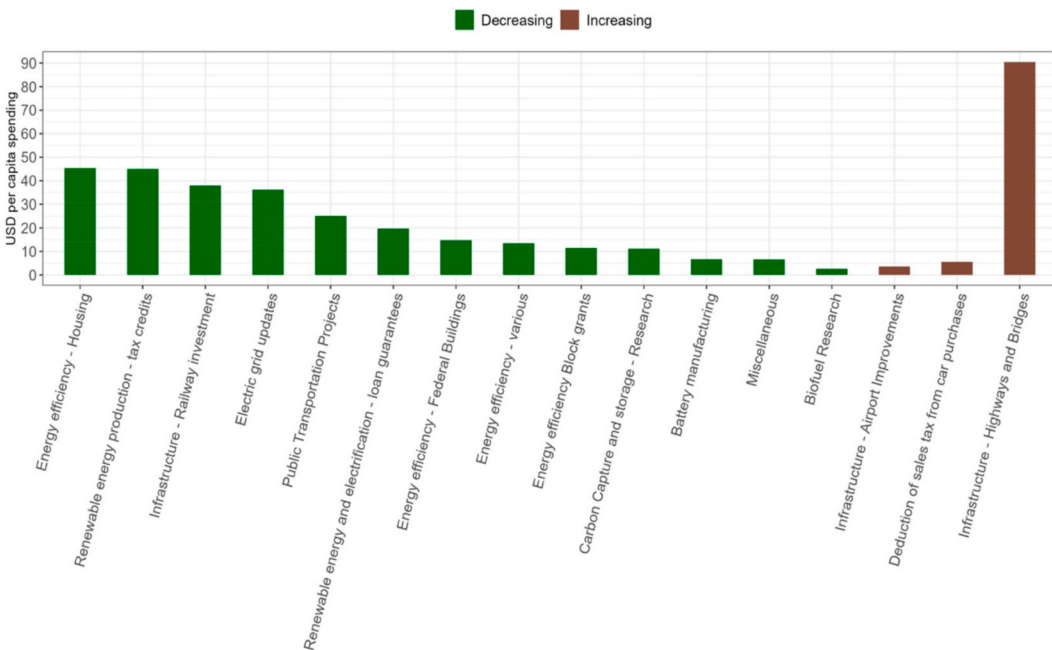


Figure 1. Emissions impact of the American Recovery and Reinvestment Act.

straightforward emissions effect, such as general tax incentives for companies and individuals, health-care support, housing, and job-training programmes. 10 per cent of the total stimulus amount likely contributed to decrease GHG emissions, while 4 per cent of the funds likely increased long-term emissions. [Figure 1](#) breaks down the spending that we evaluate as either emissions-increasing or emissions-decreasing.

ARRA's emissions-decreasing measures were primarily geared towards energy-efficiency measures, public transportation, and renewable-energy industry support. The largest of these categories was the latter, with renewable-energy power-generation support exceeding USD25 billion (Aldy 2013).

Our interviews suggest that ARRA's most significant emissions-reducing line items were tax credits and loan guarantees to renewable-energy producers. The 1603 grant programme, which offered converting an energy-investment tax credit equal to 30 per cent of a project's cost into a direct cash grant, was perceived as particularly effective (Aldy 2013). An external evaluation found that the 1603 programme boosted the installation of US wind power capacity by approximately 25 per cent in the short run and generated more than 50,000 job-years in construction and manufacturing of wind farms (Bolinger *et al.* 2010).

The bulk of the emissions-increasing stimulus measures were directed to construction of highways and bridges. In contrast to the 2009 Canadian stimulus package (second case study), ARRA did not contain direct support to the automotive industry although US automotive manufacturers were severely affected by the economic downturn. Already prior to ARRA, the US government had aided its financial and automotive industries through the so-called Troubled Assets Relief Program (TARP).² TARP committed approximately USD82 billion in loans to stabilise the automotive industry (US Treasury 2022). However, most of the TARP loans were eventually repaid to the government (with interest) as the respective industries recovered.

To examine which outside interest groups were able to secure ARRA support, we assess lobbying spending in Q4 2008 ([Figure 2](#)). We classify the top 2000 spenders based on their fossil-fuels or clean-energy exposure. The fossil-fuels coalition comprises the three biggest fossil-fuels extractive companies, the aviation industry, and the automotive industry; while the public transportation sector is the biggest spender in the clean-energy coalition, trailed by renewable-energy companies.

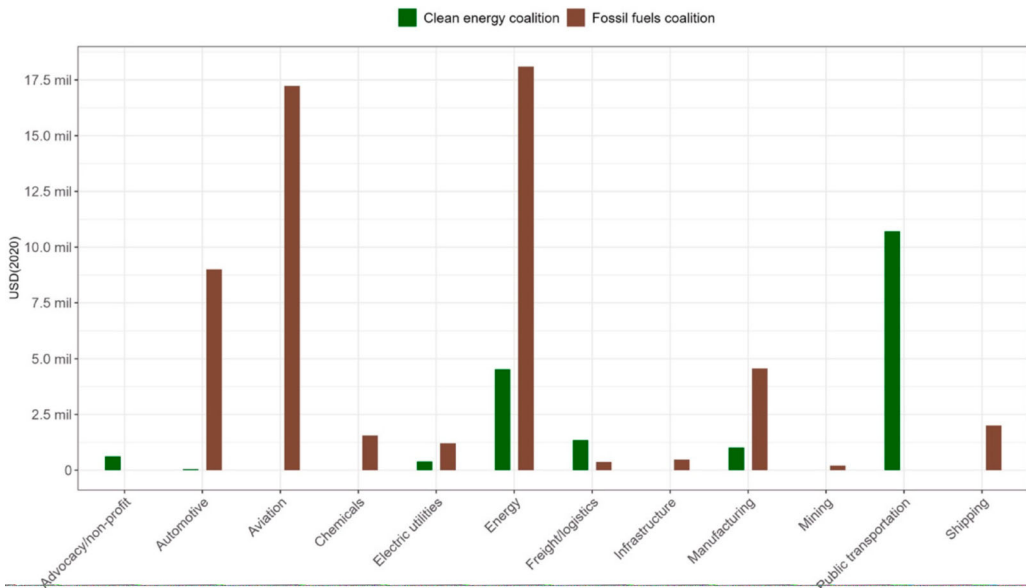


Figure 2. Industrial breakdown of US lobby spending, Q4 2008.

Since public transportation and renewable-energy companies received substantial ARRA funding, it appears that these industrial groups succeeded in lobbying efforts. Corroboratively, Joseph Aldy – a key advisor to President Obama who helped formulate ARRA’s energy provisions – recalls numerous meetings between the administration and stakeholders from the renewable-energy sector, in which they identified the areas most in need of stimulus (Aldy 2013).

Contrastingly, the environmental movement had limited influence. As evident in [Figure 2](#), advocacy groups only spent minor amounts on federal lobbying efforts. Interviews with two senior figures in a leading environmental advocacy group revealed that these groups were mostly focused on cap-and-trade legislation and did not view the economic stimulus package as a potentially strong vehicle for emissions reductions at the time.

Apart from the public-transportation and renewable-energy sectors, we do not find any strong relationship between lobbying and industrial stimulus support received. Based on the spending data, we would have expected significant government support for the aviation industry and extractive fossil fuels companies if the government were exposed to regulatory capture by the fossil-fuels coalition. The absence of fossil-fuels subsidies in ARRA indicates that the fossil-fuels coalition was unable to influence policymaking due to the Democrats’ control of both houses of Congress and the executive branch. To summarise, our analysis of ARRA suggests that:

- (1) Green stimulus spending outweighed fossil stimulus spending by a factor of about 2.5.
- (2) Overall, measures to advance a clean-energy transition constituted about 10 per cent of total spending. The most significant green categories included energy-efficiency measures, public transportation, and renewable-energy industry support.
- (3) Emissions-increasing measures amounted to about 4 per cent of the stimulus spending, with no direct support to fossil-fuels extractive industries, automotive manufacturers, or the aviation industry.
- (4) The only clear relationship between lobbying activities and sectoral support in ARRA is for the renewable energy industry, which was heavily consulted in the planning of ARRA.

Canada’s Economic Action Plan 2008–2011

While the Global Financial Crisis quickly spread from the US to other parts of the world, Canada was one of the last industrialised countries to enter economic recession. Its GDP began contracting in December 2008 (Canadian Press 2008), coinciding with the Canadian federal election that year. Since 2006, the Conservatives had maintained a slim plurality in the House of Commons. The election resulted in a continued minority government by the Conservatives, who increased their number of seats albeit not enough to obtain a majority.

Although the financial crisis was not a central topic in the 2008 election, economic stimulus discussions emerged shortly after. The politics of such economic intervention were divisive: While the Liberals and the New Democratic Party sought substantial stimulus measures, the Conservative government emphasised fiscal prudence. In November, Finance Minister Jim Flaherty provided a fiscal update lacking a response to the economic downturn, resulting in its rejection by the House of Commons (Toronto Star 2008). In December, the Bank of Canada officially declared the onset of recession, leading Prime Minister Stephen Harper to acknowledge the need for economic stimulus (Canadian Press 2008).

Following the lack of stimulus in the fiscal update, the opposition began contemplating ways to remove the government, alleging mishandling of the recession. The Liberals and the New Democratic Party, along with the Greens and the Bloc Québécois, threatened to form a coalition and topple the government by voting against the fiscal update. While the idea of a coalition quickly faded,³ pressure mounted on the Conservative government to deliver a comprehensive stimulus package to salvage Canadian jobs and businesses. The opposition’s prevailing stance was that the

Conservatives had to present a new budget with adequate economic stimulus by January, or else they would face a no-confidence vote.

The threat of a no-confidence vote provided the Liberals substantial leverage. The Liberals communicated to the government that their support for the budget was contingent on substantial stimulus. Our interview with a politician deeply involved in the negotiations suggested that the Liberals had two demands. First, they requested that the government spend as much as possible – preferably CAD60 billion – on ‘shovel-ready’ infrastructure projects. Second, they demanded a quarterly reporting mechanism to track stimulus funds. The Harper government eventually devised the *Canadian Economic Action Plan*, which contained CAD50 billion in stimulus. With the Liberals’ support, the budget passed on February 3, 2009.

At the time, neither the Conservatives nor the Liberals had committed to ambitious climate policy. Our interview with a prominent Canadian politician involved in the negotiations confirms that the primary focus was on salvaging jobs and industry rather than seizing the opportunity for climate-policy initiatives. Examining the attempts of interest groups to influence prior to the budget’s approval, we observe a landscape that strongly favoured organisations economically invested in fossil fuels. Out of the 248 lobbying registrations with a clear energy interest or exposure, 202 were made by entities that would likely benefit from the continued extraction or usage of fossil fuels, while only 46 would benefit from a clean-energy transition (Figure 3). The most active lobbying industries included oil and gas, aviation, automotive, and mining. Hence, neither the two main parties’ political platforms nor the balance of power between green and fossil industrial interests suggested a strong climate-policy intervention within the economic stimulus package.

We assess the emissions effects of all individual line items in *Canada’s Economic Action Plan 2008–2011*. The plan contains 72 individual spending measures intended to stimulate the economy. Approximately 70 per cent of the stimulus was channelled to causes without a straightforward emissions effect, such as tax incentives for companies, individuals, housing projects, and work training programmes. 27 per cent of the total stimulus amount likely generated increased GHG emissions, while only 3 per cent likely helped reduce emissions.

Nearly all the emissions-increasing stimulus measures were directed to the automotive sector (Figure 4). The main line items in this category are federal support to the auto sector in general,

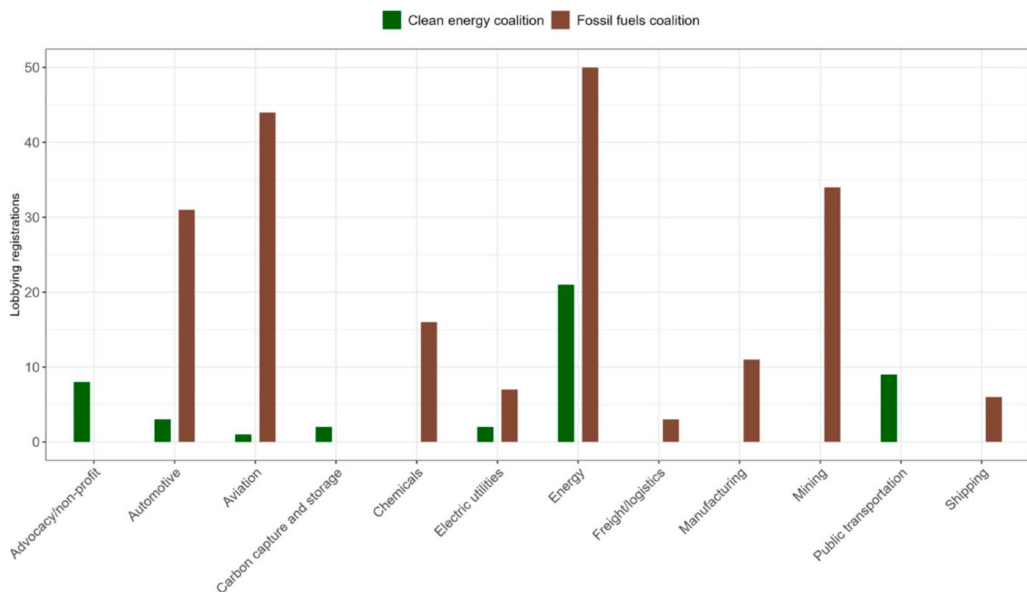


Figure 3. Number of lobbying registrations per industry, November 2008–January 2009.

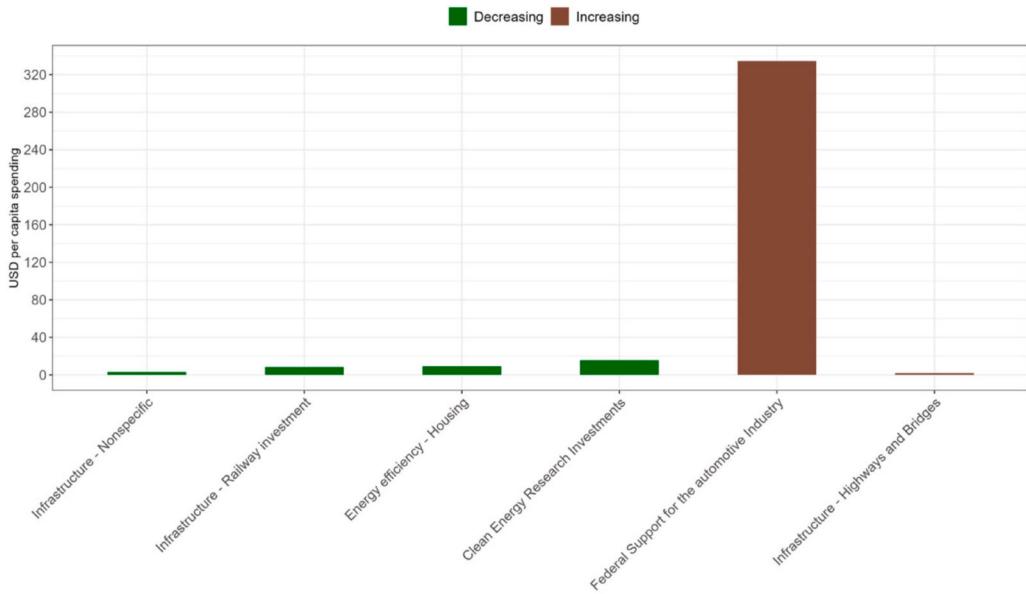


Figure 4. Emissions impact of the Canadian Economic Action Plan.

and specific support for the sector's Ontario component. The package also contained limited support to the TransCanada and Alaska highways. In contrast, the clean-energy-related stimulus efforts are more varied and include the establishment of a green infrastructure fund, investments into the railway system, energy efficiency in housing, and scientific research on clean energy and environmental programmes (including carbon capture and storage). Yet, the total emissions-reducing spending only amounts to approximately 10 per cent of the funds allocated to the automotive industry and highway infrastructure.

The Canadian government's strong economic support for the automotive industry was driven by a perception that the recession would affect this industry particularly adversely. A politician we interviewed recalls that his prime concern in late 2008 was salvaging Canadian auto jobs:

The car industry was the most obvious case. (...) Totally integrated supply chain with the US. (...) The word we were getting was that the US car companies were going belly up. (...) All warning lights were flashing red during November.

Its sheer size explains the auto industry's political importance. Including both manufacturing and sales, in 2008 this sector employed some 515,000 people in Canada,⁴ roughly 1 per cent of the population. Moreover, since the recession arrived later in Canada than in the US, Canadian politicians could observe the recession's devastating effect on the US automotive industry in advance. Given its tight integration with the US, one could reasonably expect severe consequences for the Canadian automotive industry as well. Finally, the Canadian auto sector had specifically asked the government for a bailout, and its US counterpart had already been bailed out prior to the 2009 economic stimulus package. In sum, it is unsurprising that the automotive sector received the lion's share of the economic stimulus.

The automotive sector also engaged heavily in lobbying efforts. Yet, comparing the industrial sectors engaged in lobbying with those that received stimulus funding, we find no clear correlation. In the months preceding the stimulus, fossil extractive industries, mining, and aviation lobbied extensively – and were important sources of employment in provinces such as Alberta and Saskatchewan (oil and gas), and Quebec and Ontario (mining and aviation). While some individual green spending measures indirectly supported fossil industries (e.g. through carbon capture and research

funding) and mining (e.g. through funding a transmission line for the mining industry⁵), these amount to a low share of overall green spending. None of the industries that lobbied most extensively received substantial direct economic support in the adopted stimulus package.

Overall, our analysis of Canada's 2009 stimulus package shows that:

- (1) Fossil stimulus spending outweighed green stimulus spending by a factor of about 9.
- (2) Measures to advance a clean-energy transition constituted about 3 per cent of total spending, comprising support to clean-energy research (including carbon capture and storage), energy-efficiency measures, and public transportation.
- (3) Emissions-increasing measures amounted to about 27 per cent of the stimulus spending, of which almost all was allocated to the automotive industry.
- (4) There is no clear relationship between lobbying activities and sectoral stimulus support.

The 2020 US CARES Act

The first US case of Covid-19 was confirmed in February 2020. Travel bans and other virus-containing restrictions were imposed from the outset, and the first stay-at-home orders were effectuated on March 19. Although Covid-19 was primarily a public health crisis, the containment measures had significant economic consequences, leading to an unprecedented joint economic and public health crisis in the US (Bauer *et al.* 2020). In the second quarter of 2020, the US GDP experienced an unprecedented decline of 9.1 per cent, and the national unemployment rate surged from 3.5 per cent to 14.7 per cent between mid-March and late April 2020 (*ibid.*).

The leisure-and-hospitality sector was among the hardest-hit industries. As movement restrictions were imposed to contain the virus, the demand for transportation services plummeted, particularly affecting the aviation sector. Aviation, being a strategically important industry closely tied to economic growth, faced severe challenges. The high capital costs associated with airlines and airports meant that even a temporary decline in air travel posed a threat to their survival (Abate *et al.* 2020). Although the US experienced a relatively less drastic decline in aviation compared to countries heavily reliant on international travel, spring 2020 saw a 65 per cent drop in US air traffic compared to the previous year (FAA/EUROCONTROL 2021).

With divided government and strong political polarisation exacerbated by a controversial president, the Covid-19 crisis came at a difficult time in US politics. The US legislative process requires approval from both chambers of Congress and the President's signature. When Covid-19 hit, Republicans controlled the Presidency and the Senate (53-47), while Democrats held a majority in the House of Representatives (232-197). Therefore, any stimulus policies required bipartisan support and could not be achieved through budget reconciliation.

Upon adopting the main US stimulus package, the CARES Act, in March 2020, Democrats leveraged their pivotal position to shape the bill. They redirected funds away from large corporations and prioritised spending on hospitals, worker protection, and oversight measures, while also opposing a provision to allocate USD3 billion to the federal Strategic Petroleum Reserve (Koss 2020a; 2020b). By utilising their filibuster power, Democrats prevented an early vote for cloture, thwarting the Senate majority leader's attempt to expedite the bill's progress (Koss 2020a). Following further bipartisan negotiations, the Senate passed the USD2 trillion stimulus package on March 25.

Although Democrats ensured that some of their priorities were included in the package, they did not vigorously pursue green stimulus provisions advocated by some Democratic legislators, environmental groups, and renewables industries (Koss 2020b). According to one interviewee involved in environmental lobbying efforts, legislators were cautious about pursuing climate and environmental provisions at this stage due to political considerations. Given the deep polarisation on climate policy between Democrats and Republicans, insisting on green provisions could have hindered or even derailed the urgently needed emergency relief. Republicans, unsurprisingly, did not prioritise

green spending and mocked Democrats' attempts to include such provisions in the CARES Act (Congressional Record 2020).

In summary, neither Democrats nor Republicans viewed the Covid-19 crisis as an opportunity for major investments in developing a green US economy. While some green stimulus funding was included, mainly relating to public transportation infrastructure, the extraordinarily high share of the funds channelled to the aviation industry likely contributed to increasing US greenhouse gas emissions (Figure 5).

While it is somewhat surprising that the aviation industry acquired such a large share of the stimulus funds, aviation was hit particularly hard by the Covid pandemic, and a Democratic government may have prioritised similarly. The dominantly fossil-fuel focused profile of the US spending measures is as expected. Climate and environmental policies were not prioritised by Republican legislators, and certainly not by President Trump. Democrats' pivotal position in the legislative process likely contributed to the green funds invested in public transportation projects, but nonetheless amount to less than half the funds provided to the emissions-increasing aviation sector alone.

The impact of a climate-critical Republican government may also have been reinforced by the overwhelming dominance of fossil-fuels exposed sectors and industries in lobbying. To assess if the major lobbying spenders received CARES Act support, we analyse their spending in Q1 2020 when Congress discussed and adopted the act (Figure 6). We categorise the top 2000 spenders based on their fossil-fuels or clean-energy exposure. The fossil fuels coalition comprises fossil-fuels extractive companies and the aviation industry, while the clean-energy coalition includes the public transportation sector and renewable-energy companies.

Three findings stand out in the analysis of lobbying spenders. First, the aviation industry spent substantial resources on lobbying around the time of the CARES Act's passing and was also heavily supported in the final package. However, its spending was also very high in 2009, which suggests that the political party in power matters for the types of industries which can obtain support through lobbying. The type of crisis is also a likely driver of the differences in aviation industry spending: Due to lockdowns, the COVID-19 crisis posed a more substantial immediate threat to

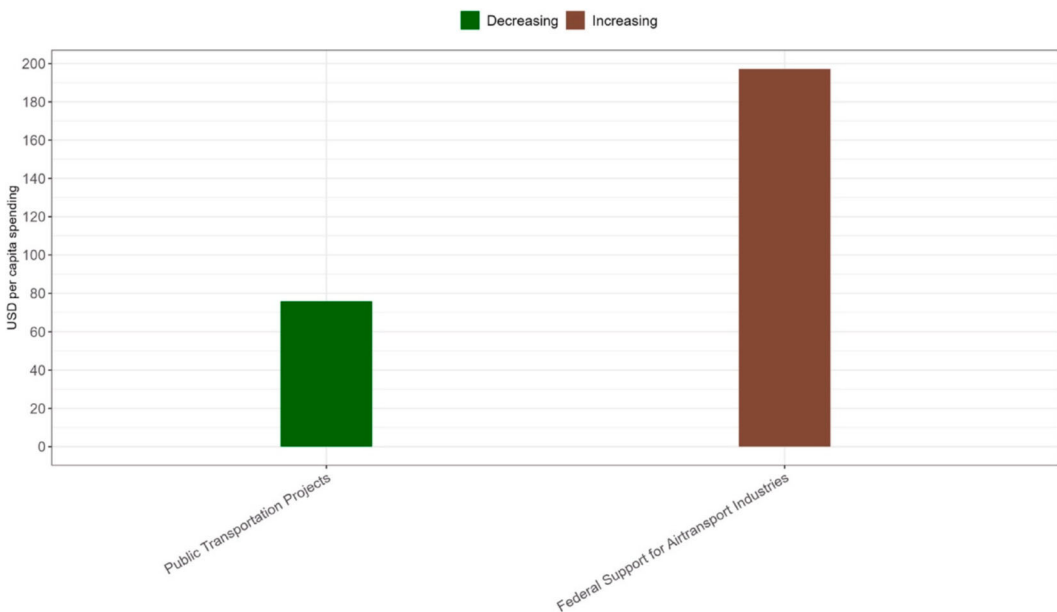


Figure 5. Emissions impact of the US CARES Act.

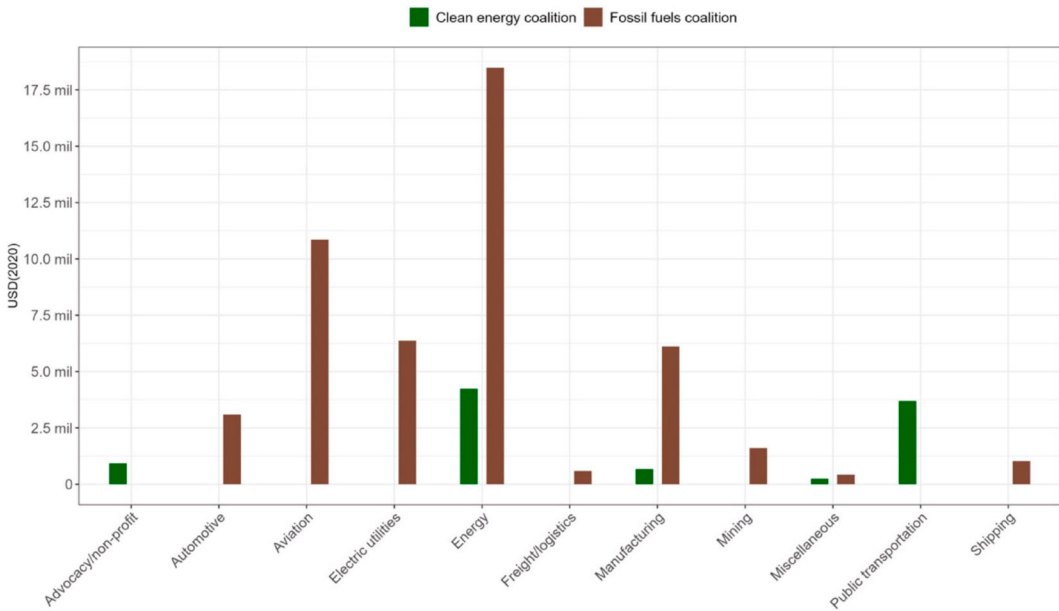


Figure 6. Industrial breakdown of US lobby spending, Q1 2020.

the airlines than the financial crisis did. Second, extractive fossil fuel companies lobbied intensively but were unable to secure CARES Act support despite Republican political power. Finally, the clean energy coalition did not invest substantial resources into lobbying – even less so than during the Global Financial Crisis. The absence of a clear correlation between lobbying spending and CARES Act support suggests that in the context of a divided government, the nature of the COVID-19 crisis – which had particularly adverse consequences for the aviation industry – was a more important factor in driving industrial stimulus support than outside interest group influence.

Overall, our analysis of the CARES Act shows that:

- (1) Fossil stimulus spending outweighed green spending by a factor of about 3.
- (2) Green spending items constituted about 1 per cent of total spending. Practically all the green spending was investments in public transportation.
- (3) Fossil spending amounted to about 3 per cent of the total. Most of this spending comprised support for the aviation industry.
- (4) Fossil-fuel based lobby groups dominated lobbying spending in the lead-up to the adoption of the CARES Act; however, we find no clear association between industrial lobbying spending and stimulus support received.

Canada's COVID-19 Economic Response Plan

Measures to constrain the spread of Covid-19 significantly hampered economic activity and led to a recession in Canada. Companies started mass layoffs of workers, and in May 2020 the unemployment rate reached 13.7 per cent, the highest since 1976.⁶

In the 2019 elections, Prime Minister Justin Trudeau's Liberal Party had obtained 157 seats, down 20 seats from the 2015 elections. The Conservative party won 121 seats, up 26 seats from 2015. Despite losing the popular vote and suffering a decline in the number of seats, the Liberals were able to form a minority government, whereas the Conservatives remained the Official Opposition.

Before the 2019 election, the Liberal government introduced a minimum carbon price, starting at CAD20 per ton in 2019, increasing to CAD50 by 2022, and increasing further by CAD15 per year between 2023 and 2030. The Liberals also pledged to exceed Canada's Nationally Determined Contribution under the Paris agreement and to achieve net-zero emissions by 2050.⁷ They wanted to terminate 'inefficient' fossil fuel subsidies, promised flood maps for all of Canada, and offered communities increased funding both for mitigating natural disasters and for adapting to disasters that nevertheless occur.

While the Liberals argued that their rebate system linked to the carbon tax would leave most Canadians better off (despite higher prices on gas and heating), the Conservatives deemed the tax an ineffective 'tax grab',⁸ vowed to repeal it, and wanted each province to be able to decide for itself whether to impose carbon pricing. Still, the Conservatives committed to meeting Canadian targets under the Paris Agreement and proposed reducing emissions through green-technology investments – in part by launching a green-tech-patent tax credit for businesses. They also advocated signing agreements that could ensure Canada carbon credits for funding emissions reductions abroad. Overall, the political landscape for green recovery spending was more favourable in 2020 than in 2009, especially since the Liberals Party favoured relatively strong climate policy.

Although the political landscape was more climate policy-friendly in 2020 than 2009, the balance of power between pro-climate and pro-fossil-fuel interest groups remained heavily skewed toward the latter. [Figure 7](#) shows the distribution of interest groups attempting to influence politics from January through April 2020 in Canada. Of the 2727 registrations we identified in lobbying registers with a clear energy interest, 385 would likely benefit from a continued extraction of fossil fuels, while only 172 would likely benefit from a clean-energy transition. The most active lobbying industries were oil and gas, besides aviation.

We assess the emissions effects of all the individual line items in Canada's Covid stimulus package, which amounted to CAD100 billion.⁹ It contained 20 individual spending measures intended to stimulate the economy. We find that approximately 93 per cent of the stimulus spending did not have a clear emissions effect, whereas about 1 per cent likely generated increased GHG emissions, and about 6 per cent likely helped reduce them ([Figure 8](#)). Thus, Canada's Covid economic stimulus

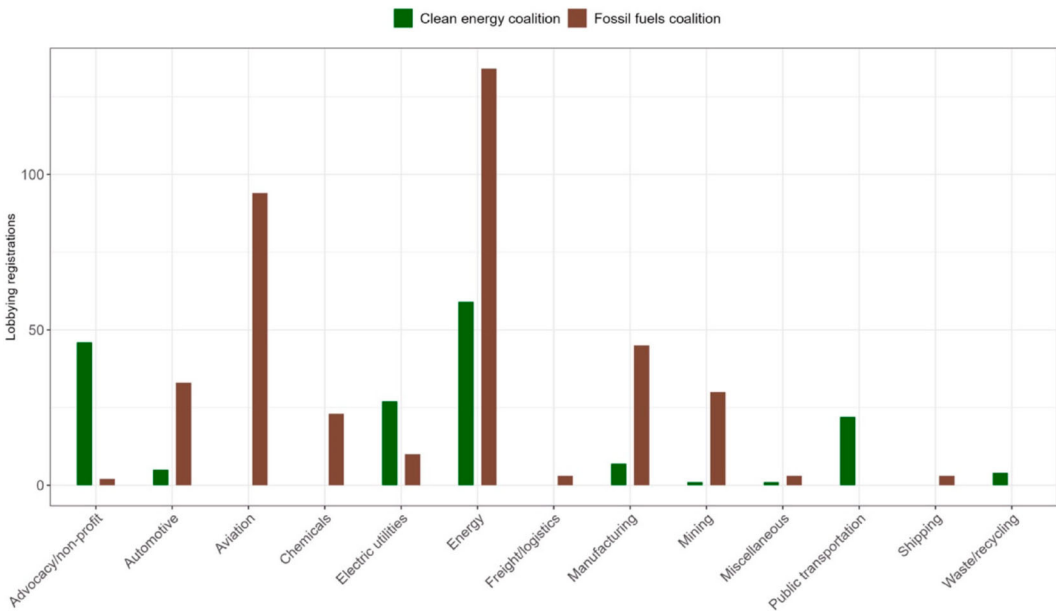


Figure 7. Number of lobbying registrations by industry in Canada. January 1–April 30, 2020.

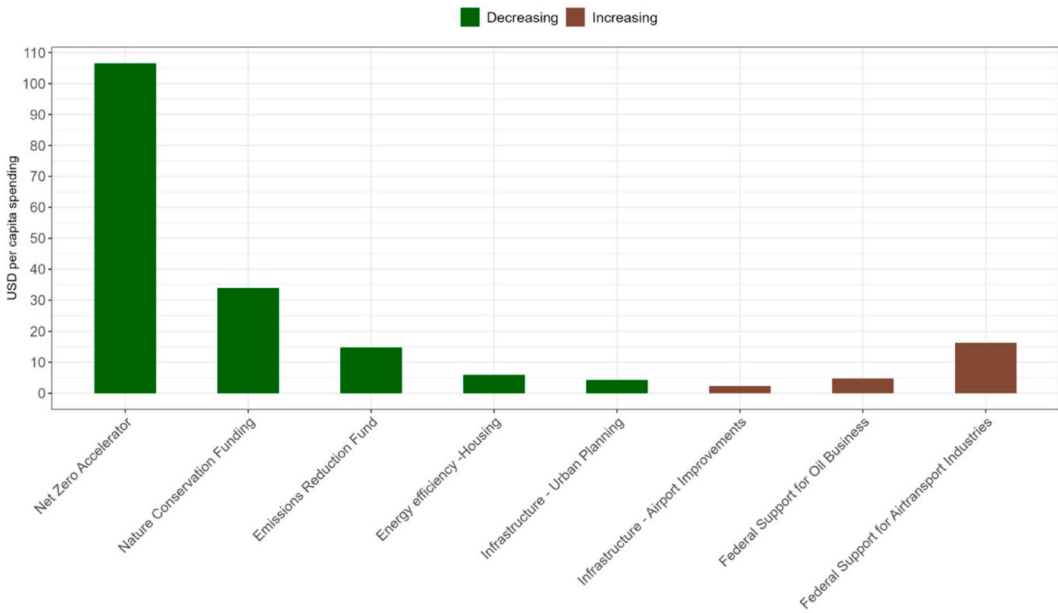


Figure 8. Breakdown of Canada's Covid-19 economic stimulus package.

package had a significantly more climate-friendly profile than its Global Financial Crisis stimulus package. The Net Zero Accelerator, a strategic innovation fund aimed at industrial decarbonisation, is by far the most significant green spending measure. This \$8 billion fund provides support to large-scale investments in key industrial sectors, with the aim of reducing GHG emissions and to ensure that Canada remains competitive in a net-zero economy (Government of Canada 2022). Two of our interviewees confirmed that the idea of this fund emerged in the Liberal Party. Whereas this industrial policy measure will likely reduce Canada's GHG emissions, it should be noted that a key objective for the fund is to help the largest industrial emitting sectors (e.g. oil and gas) to decarbonise. Hence, the fund subsidises existing fossil industry to an extent.

To summarise, our analysis of lobbying activities and Canada's economic stimulus package in response to the Covid-19 crisis suggests that:

- (1) Green stimulus spending outweighed fossil-fuel related stimulus spending by a factor of about 7.
- (2) Measures to advance a clean-energy transition constituted about 7 per cent of total spending. The most significant green spending item was the Net Zero Accelerator – a strategic innovation fund aimed at industrial decarbonisation – followed by nature conservation funding.
- (3) Measures to support fossil-fuel industries only amounted to about 1 per cent of the stimulus spending. This support went largely to the air transportation sector.
- (4) As in the Global Financial Crisis case, we find no clear relationship between lobbying activities and sectoral support in the Canadian Covid-19 stimulus package.

Discussion and conclusion

This article examines green stimulus spending in response to two recent economic downturns, the Global Financial Crisis and the Covid-19 crisis, in Canada and the US. Drawing on both quantitative and qualitative evidence, the empirical findings from our four case studies suggest that the preferences of political parties in power at the onset of the economic crisis affects the distribution of stimulus spending – even in cases where interest groups invest substantial sums in lobbying for financial

support. Notably, we find that liberal governments with a clear decarbonisation agenda use the political window of an economic crisis to engage in green stimulus efforts. Contrastingly, we do not find consistent patterns between interest groups' lobbying activities and governmental stimulus measures: in our four cases, lobbying – whether from pro-climate or pro-fossil fuel coalitions – does not overwhelmingly shape economic stimulus investments. [Table 1](#) summarises our main findings. Substantial green investments only occur in two of the packages we assess, both of which were formulated by liberal governments with clear decarbonisation agendas. In contrast, we do not find a clear pattern between institutional permeability and green recovery spending.

The American Recovery and Reinvestment Act of 2009 exemplifies the strongest green stimulus effort across our four cases, allocating 10 per cent of total spending to emissions reduction measures. These measures included vast investments in the renewable energy industry as well as support for public transportation and energy efficiency initiatives. The Obama administration had a clear decarbonisation agenda and utilised the stimulus package accordingly. Despite heavy lobbying from the fossil-fuel coalition, Democrats, who controlled both Congress and the Presidency, were able to pass substantial green investments without fossil compensation.

The Canadian COVID-19 stimulus package showcases another case of significant green stimulus investments, despite strong lobbying from the fossil fuel industry. In this case, Trudeau's Liberal government was able to include a vast green industrial stimulus in the form of an innovation fund for emissions-reducing technologies. Nonetheless, the package also contained some direct and indirect support for fossil fuels companies.¹⁰ The remaining packages, Canada 2009 and US 2020, displayed a greater emphasis on supporting fossil-intensive industries. Neither conservative government engaged in substantial green stimulus, although the Harper government included minor clean energy subsidies in its package.

Contrary to our expectation, we do not find evidence that stimulus spending is more affected by the fossil-fuel lobby in the US than in Canada. Since the balance between fossil fuel and clean energy interest groups is relatively constant across our four cases, we infer that the elite ideology (Aklin and Urpelainen 2018, Schulze 2021, Carmack *et al.* 2022) of the political constellation in power is a more important factor in determining green stimulus spending than external lobbying efforts. This finding aligns with growing literatures on the strategic dimensions of state capacity, which highlight governments' ability to strategically outmanoeuvre opposition from outside interests to advance political goals, even in the context of political institutions that are highly permeable to interest group influence (Meckling and Nahm 2021).

While lobbying does not appear to be the decisive factor in climate investments during economic recessions, several unanswered questions remain. First, liberal parties were able to advance climate-friendly recovery packages even in the face of substantial opposition from fossil fuel lobbies, yet overall investments in green economic recovery nonetheless fell short of the interventions necessary to meet the goals of the Paris Agreement (Nahm *et al.* 2022). Despite their ability to bypass interest group opposition, liberal political parties ultimately failed to use recovery spending to sufficiently advance a climate agenda, which is puzzling if fossil fuel lobbies were indeed unable to sway the policymaking process. Although we do not observe clear patterns between lobbying and spending outcomes throughout the four cases, our research design cannot rule out that fossil fuels interest groups successfully retained the status quo and undermined transformative green spending efforts.

Table 1. Summary of case studies.

		Institutional permeability	
		Moderate	High
Political constellation	Conservative	Canada 2009 (GFC) <i>Fossil investments, small green compensation</i>	US 2020 (COVID) <i>Fossil investments, no green compensation</i>
	Liberal	Canada 2020 (COVID) <i>Green investments, fossil compensation</i>	US 2009 (GFC) <i>Green investments, no fossil compensation</i>

Second, our analysis does not establish whether and how green stimulus spending has been effective in reducing greenhouse gas emissions. While studies have shown positive effects of the 2009 ARRA in the US (Bolinger *et al.* 2010, Aldy 2013), some of the Canadian green spending measures, e.g. its funding of abandoned oilwell clean-ups and carbon capture and storage projects, have likely been ineffective or even contra-productive for emissions reductions. With the global rise of investment-based climate politics (Armitage *et al.* 2023, Darvas and Wolff 2023) and green industrial policy (Allan *et al.* 2021), spearheaded by the massive US Inflation Reduction Act, future research should more systematically examine the emissions effects of economic spending packages to draw lessons for how to channel green funding most effectively.

Finally, our work raises questions about the potential impact of different types of crises on policy responses. The Global Financial Crisis was caused by structural problems in the economy, perhaps making governments more prone to investments in economic restructuring than under the Covid-19 pandemic, which was first and foremost a global public health emergency.

While economic crises offer a political window to advance climate goals, our findings suggest that it takes pro-climate political representation to advance climate goals during recovery from economic recessions. Contrary to literatures that have emphasised the primacy of institutional factors in determining interest group battles, we find that political factors greatly shape the goals governments pursue.

Notes

1. Although, as helpfully pointed out by an anonymous referee, strong party discipline also arguably entails that Canadian interest groups 'only' have to successfully lobby party elites to gain the support of the entire party, which may be easier than successfully lobbying many individual legislators in the US.
2. Since TARP mainly extended loans (not subsidies) we have not examined the programme here.
3. This proposed coalition proved highly controversial and forced the immediate abdication of Stéphane Dion from the Liberal Party's leadership. Michael Ignatieff took over the *de facto* leadership of the Liberal Party in December.
4. The number is 358,000 if we exclude auto dealers.
5. See: <https://thenarwhal.ca/industrialization-wilderness-wade-davis-northwest-transmission-line/> (Accessed: October 5, 2023).
6. <https://globalnews.ca/news/7029601/canada-may-unemployment-rate/>.
7. <https://www.bbc.com/news/world-us-canada-38056587>.
8. <https://globalnews.ca/news/7646946/canada-carbon-tax-experts/>.
9. <https://www.theglobeandmail.com/politics/article-liberals-plan-100-billion-in-new-stimulus-spending-begin-plotting/>.
10. Including spending directed toward cleanup of abandoned oil wells and carbon capture and storage.

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