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Self-reinforcing and self-undermining feedbacks in subnational climate policy implementation

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ABSTRACT

This study demonstrates how interpretive feedback functions as an intervening mechanism during policy implementation that helps explain variation in subnational climate policy entrenchment. We examine three interrelated climate policy processes in Ontario, Canada from 2001–2018: a coal phase-out (2001–2014), the feed-in-tarriff (FIT) program for renewable energy (2006–2013) and a cap-and-trade program (2008–2018). Successful framing of the coal phase-out in terms of gains for both public health and climate change helped generate a broad-based coalition of support during implementation. Conversely, we find that the FIT and the cap-and-trade programs were vulnerable to framing around losses, especially regarding electricity rates and household costs, which counter-coalitions used to weaken public support during implementation. Our analysis demonstrates that building supportive coalitions for climate policy goes beyond the material gains and losses generated by initial policy designs. Framing strategies interact with policy designs over time to support or undermine policy durability.

Introduction

Why do some climate policies endure while others do not? In North America, carbon pricing policies have survived political leadership changes in British Columbia, Quebec, and California (Harrison 2012, Houle *et al*. 2015, Boyd 2017), while other regional emissions trading systems have fully collapsed in the same time period (Rabe 2016). Renewable portfolio standards have endured in some US states (Rabe 2018), but there has been notable retrenchment in Arizona, Texas, Ohio and Kansas (Stokes 2020). Within jurisdictions, not all climate policies endure: for example, although Germany's feed-in-tariff system for renewable energy production has entrenched, the country has struggled to phase out coal (Schmid *et al*. 2019, Meckling 2019a).

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To address this variation, climate scholars have focused on coalition building that deepens and strengthens support for policies over time (Levin *et al.* 2012, Bernstein and Hoffmann 2018, Stokes and Breetz 2018, Meckling 2019b). Policy design can build political support by providing material resources to constituents, strengthening supporting coalitions. The presumption is that policies that deepen benefits to a concentrated set of constituents or that broaden the set of beneficiaries during policy implementation are more likely to withstand external shocks and political upheavals, as has been the case for British Columbia's carbon tax (Rabe 2018) and the Regional Greenhouse Gas Initiative in the eastern United States (Raymond 2016). Conversely, climate policy designs that deepen costs to vested interests, or that distribute increasing costs across a wide variety of constituents are much more likely to generate ongoing political contestation (Breetz *et al.* 2018). Yet in some cases climate policies that generated direct material benefits to clean tech producers, such as the feed-in-tariff (FIT) program in the Canadian province of Ontario, failed to create strong coalitions of support (Stokes 2013, 2016). Other policies that generated substantial material costs to a broad set of producers and consumers have endured, such as the European Emissions Trading System (Rabe 2018).

These puzzling discrepancies, we argue, can be explained by the political dynamics of issue framing in climate policy implementation, through *interpretive feedback effects*. Drawing on policy feedback and framing literatures (Chong and Druckman 2007, Béland and Schlager 2019) and prospect theory (Tversky and Kahneman 1981), we show that the publics' perceptions of gains and losses during implementation act as an intervening mechanism to explain policy durability. Policy designs, including the communication and framing efforts of government actors, can provide an opportunity for elite supporters to generate different 'gain frames,' increasing the salience of the ongoing benefits of a policy among the general public, dampening voters' desire for policy retrenchment (Levin *et al.* 2012, Lachapelle 2017). However, policy designs can also inadvertently provide opportunities for policy opponents to generate a multitude of 'loss frames' during policy implementation that increase the salience of costs. When perceptions of loss prevail, an implemented climate policy will seem a risky endeavor, encouraging voters to support policy reversal or termination (Tversky and Kahneman 1981, Jacobs and Weaver 2015, Skogstad 2017). Thus, government actors and allied and opposing elites and political parties are frequently engaged in the contentious politics of policy framing, targeting the general public, with substantial effects on climate policy durability.

We demonstrate how these interpretive feedback effects influence climate policy entrenchment through a detailed examination of three interrelated climate policy processes in Ontario, Canada (2001–2018): a coal phase-out (2001–2014), the FIT program for renewable energy (2006–2013) and a cap-and-trade

program (2008–2018). Whereas case study research always involves trade-offs compared to cross-unit analyses, following Gerring (2004), the research design – focusing on multiple cases with varying entrenchment outcomes in a single jurisdiction – provides several analytic advantages, detailed further below.

We find that in the case of the coal phase-out, a deliberate initial focus by policy advocates and government officials on population health benefits, followed by a subsequent focus on climate benefits during policy implementation, facilitated processes of self-reinforcing feedback by convincing Ontarians that the coal phase-out would generate gains, both currently and in the future. This interpretive feedback bolstered the strength of the pro-climate coalition throughout a long period of policy implementation, making it difficult for subsequent governments to reverse the policy. In contrast, the provincial government's focus on the economic gains of the FIT failed to generate issue salience during the process of policy implementation. Simultaneously, elements of the FIT policy design, such as the removal of municipal control on the siting process, allowed policy opponents to generate several 'loss frames' for rural Ontarians during implementation, resulting in policy retrenchment. The loss frames generated during the implementation of FIT remained salient during the subsequent adoption and implementation of the emissions trading system. Despite the government's attempts to frame the cap-and-trade program as a policy that would provide substantial climate benefits to Ontarians, policy opponents successfully generated additional loss frames regarding household costs and government performance during implementation, facilitating policy reversal. Our analysis demonstrates that although policy makers are generally attentive to the ways in which policy design can initially build coalitional support, they are often less attuned to how *perceptions of losses and gains* among the general public can serve to undermine policy durability over time.

The next section details our analytical framework. We then outline our methodology and provide a timeline of policy developments in Ontario. The remainder of the article analyses the dynamics of the cases and discusses the implications of our findings for future research on subnational climate policy entrenchment.

Issue framing, policy feedbacks, and policy entrenchment

Policy design fosters political dynamics during policy implementation that can strengthen or undermine policy entrenchment (Pierson 1993, Béland 2010, Campbell 2012). Policy design can interact with policy context during implementation to increase the 'stickiness' of climate policies, facilitating policy entrenchment through a process of 'self-reinforcing feedback' (Patashnik 2003, Levin *et al.* 2012). While scholars' characterizations and labelling of self-reinforcing feedback mechanisms vary slightly, they all focus

on how climate policy designs can foster processes of coalition building by increasing returns to a concentrated set of beneficiaries or raising costs of reversal over time, deepening support for a particular intervention (Levin *et al.* 2012). For example, by guaranteeing fixed prices to renewable energy producers over a set period, producers can reduce marginal costs, increase profits, and strengthen renewable energy producers' support for FIT programs over time (Meckling 2019a).

Self-reinforcing feedbacks can also occur when policy designs increase returns for a wider breadth of diverse beneficiaries over time (Levin *et al.* 2012). For example, climate programs that use funds generated by emissions trading systems to support housing energy efficiency measures can benefit an ever-increasing number of homeowners in a jurisdiction (Raymond 2016). Similarly, electric vehicle targets and standards can weaken historical coalitions between oil and gas distributors and public utilities by providing new material incentives to utilities to invest in charging infrastructure and support ongoing electric vehicle production (Bade 2019).

However, policy designs can also unleash countervailing processes of 'self-undermining feedback': unintended political dynamics that undermine support, making policy reversal or termination easier (Jordan and Matt 2014, Jacobs and Weaver 2015). Policies can facilitate the creation of counter-coalitions by increasing costs to a concentrated set of actors over time (Jordan and Matt 2014). For example, emission trading systems that lower emissions caps on industry emitters increase the burden on fossil fuel producers over time, intensifying industry opposition (Rabe 2018). Policy designs can also generate unanticipated costs for other sets of actors during policy implementation. For example, attempts to decarbonize a jurisdiction's energy mix through a renewable portfolio standard can draw voters' attention to alternative energy producers' market share, encouraging jurisdictions to abandon nuclear energy (Schmid *et al.* 2019). Table 1 summarizes how material benefits and costs can shape coalitions in support of or in opposition to climate policies.

Although energy and climate scholarship has focused primarily on how material costs and benefits affect coalitional strength (Schmid *et al.* 2019,

Table 1. Climate policy feedbacks: resource effects.

Process	Mechanism	Indicator
Self-reinforcing feedback	Policy design fosters deepening benefits to a concentrated set of constituents and/or provides benefits to a broader set of constituents during implementation	Pro-policy coalitions increase in size during policy implementation
Self-undermining feedback	Policy design imposes deepening costs to a concentrated set of constituents and/or imposes costs on a broader set of constituents during implementation	Anti-policy coalitions increase in size during policy implementation

Meckling 2019b), broader policy feedback and political communication scholarship also stresses that the *perception of gains and losses* among mass publics can significantly influence processes of self-reinforcing and self-undermining feedback (Jacobs and Weaver 2015, Skogstad 2017). Political communication studies have demonstrated that framing, specifically which elements of a policy are highlighted and/or excluded, can affect how members of the public determine their policy preferences (Tversky and Kahneman 1981, Chong and Druckman 2007). Attribute framing, policy labelling, and framing around benefits have been found to influence public support for various climate policies (Ansolabehere and Konisky 2016, Lachapelle 2017, Stokes and Warshaw 2017). At the same time, public opinion scholars have stressed that the influence of framing effects is highly dependent on contextual factors, including voters' partisan affiliations, demographic effects, and the presence and valence of competing frames (Pralle and Boscarino 2011, Aklin and Urpelainen 2013, Lachapelle 2017).

These studies suggest that issue frames are a resource that policy elites can use to build coalitions in support of their preferred policies. Policy designs can foster self-reinforcing feedbacks by providing opportunities for policy elites to mobilize 'gain frames' emphasizing economic, social, health, or environmental gains to individuals, groups, and society at large. Gain frames can increase the salience of the success of a given policy, making it more difficult to reverse (Skocpol 1995, Patashnik 2003).

Conversely, self-undermining feedbacks are more likely if the dimensions of a climate policy design can be framed to increase the salience of loss (Jacobs and Weaver 2015). Findings from cognitive psychology and prospect theory suggest that given functionally equivalent options, individuals will strive to avoid loss rather than seek out gains (Tversky and Kahneman 1981). Jacobs and Weaver (2015, p. 447) argue that this predisposition to loss-aversion can have significant effects on public attitudes, as these cognitive biases make citizens particularly susceptible to loss, as opposed to gain, frame effects. Policy elites can highlight losses in order to reduce support for a given policy intervention. Some climate policy designs inadvertently provide opportunities for policy opponents to generate a variety of 'loss frames' during policy implementation, making implementation seem like the riskier option and supporting a return to the status quo ante. These framing effects may also contribute to a pattern found by Stokes and Breetz (2018, p. 77), that 'as renewable [or] low-carbon energy technologies matured . . . they became more politically contentious.' While they emphasize the material threat to fossil fuel coalitions, the increased salience of perceived loss over time can exacerbate this dynamic and be used instrumentally by those industries and their political allies. Disentangling material from framing effects can be difficult when they co-vary, but our cases below also contain several instances when framing magnified or made more salient ambiguous material costs or benefits. For example, in the cap-and-trade case elaborated below, 60% of voters for the

right-of-centre Progressive Conservative (PC) party perceived their electricity bills had increased in the year prior to the 2018 election following the PC's active campaign to link the proposed cap-and-trade program to higher electricity prices and therefore losses. Meanwhile, only 26% of the incumbent Liberal party's supporters did, which suggests framing effects contributed to retrenchment by undermining public support despite similar material conditions for all voters (Lachapelle and Kiss 2019). Table 2 provides an overview of how perceptions of losses and gains among the public can foster or diminish climate policy entrenchment.

Research design and methodology

The study of three climate policies over a 20-year period in Ontario provides a useful exploratory, theory-generating case study to identify the causal mechanism of interpretive feedback effects in the entrenchment or retrenchment of climate policies. First, it compares implementation dynamics of three different climate policies – what Gerring (2004) would classify as a diachronic research design with an N of 6 since each policy is investigated at initiation and implementation phases – while holding the broad institutional and economic contexts constant. Second, although jurisdiction over climate policy is shared between provincial and federal governments in Canada, the absence of national policy until recently has situated Canadian subnational governments as significant policy makers in the field (Simpson *et al.* 2008, Boyd 2017, Rabe 2018). Third, these policies – a coal phase-out, carbon market and renewable energy procurement – are emblematic of major climate strategies experimented with at the subnational level in North America over the last twenty years (Rabe 2018, Stokes and Breetz 2018). Fourth, outcomes of the three policies vary despite being initiated by the same government, with only the coal phase-out becoming entrenched while the others faced various levels of reversal under two different governments. Finally, the policies are the most important environmental policies adopted in the province over the last two decades and were responsible for

Table 2. Climate policy feedbacks: interpretive effects.

Process	Mechanism	Indicator
Self-reinforcing feedback	Policy design provides an opportunity for policy supporters to create several 'gain frames.' These frames increase the salience of public benefits and policy success, increasing policy durability	Types of 'gain frames' increase in public debate during policy implementation
Self-undermining feedback	Policy design provides an opportunity for policy opponents to generate 'loss frames.' These frames increase the salience of public losses, making policy reversal or termination seem acceptable to voters.	Types of 'loss frames' increase in public debate during policy implementation

a 19% reduction in Ontario's GHG emissions (the majority) during that time (Harris *et al.* 2015, Jordaan *et al.* 2017).

Implementation of these policies occurred during the tenure of the Ontario Liberal Party, a centre-left government, which helps to control for the broad influence of partisan ideology on policy implementation. Dalton McGuinty led the Liberal Party to electoral victories in 2003, 2007 and 2011. Following a change in leadership to Premier Kathleen Wynne, the Liberal Government won a fourth election in 2014 but lost in 2018 to the Ontario Progressive Conservative (PC) Party led by Doug Ford.

In a comparative study of carbon pricing entrenchment, Rabe (2018) identifies electoral transitions as key 'tests' of policy durability: policies which survive electoral transitions are much more likely to endure. In Ontario, the coal phase-out withstood three electoral tests, including a change in the party in power. However, the FIT failed the transition from a Liberal majority government to a Liberal minority government while the cap-and-trade system failed to survive an electoral transition to an alternative party after the 2018 provincial election (see Figure 1). The chronological sequencing of each case provides an opportunity to examine the individual and overlapping dynamics of self-reinforcing and self-undermining feedbacks over time within a single jurisdiction.

We argue that electoral politics alone cannot explain variation in entrenchment of these policies. All major political parties[1] favoured the coal phase-out (Harris *et al.* 2015). Prior to the implementation of the FIT, both the Liberal and PC party supported renewable portfolio standards (Progressive Conservative Party of Ontario 2007). The termination of the cap-and-trade program in 2018
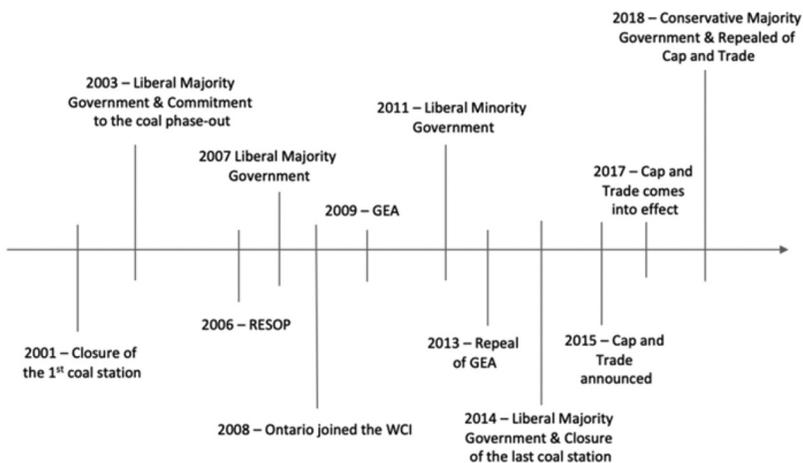

Figure 1. Ontario climate policy timeline.

can be partially explained through a partisan shift from the Liberals to the PC Government, however polling data suggests that climate policy was less of a deciding factor in the election than immigration policy (Lachapelle and Kiss 2019). Partisan politics are less helpful in explaining either the coal phase-out's entrenchment or why the previous Liberal government quietly withdrew support for the FIT when it remained in power in 2013. Instead, we argue that issue framing and policy design generated self-reinforcing feedbacks for the coal phase-out but self-undermining feedback effects for the FIT and cap-and-trade programs, ultimately influencing the degree of policy entrenchment.

We use process tracing to examine the causal mechanisms in each case. Process tracing is well suited to identifying mechanisms of policy change within jurisdictions (Beach 2016). Researchers use process tracing to reconstruct the historical record with close attention to the timing and sequencing of policy decisions, followed by a close examination of how and why political decisions are made (Stokes and Breetz 2018). To assess the presence or absence of self-reinforcing and self-undermining feedbacks in each case we looked for changes in coalition size and gain and loss frames during each period. For evidence of changes in coalition size we considered public statements for and against the policy, membership lists on coalition websites and interview data. To trace the use of gain and loss frames we examined media accounts, policy documents, and public opinion polling. To establish regulatory timelines and identify key policy actors we relied on government policy documents, news releases, and websites, as well as secondary sources, including grey literature and scholarly studies. To identify frames we examined media articles from both the *Globe and Mail* and the *Toronto Star*, the two largest circulation papers in the province, complemented by analysis of policy documents. We support these findings with 6 semi-structured interviews conducted with policy elites in 2019, including high-level government officials directly involved in policy design as well as coalition leaders, including environmental advocates and industry representatives.[2]

Climate policy timeline and political context

This section outlines major climate policy changes and key political events in Ontario to provide context to the case analysis that follows. The Ontario government took the first step toward the province's coal phase-out by legislating the closure of the Lakeview coal station in 2001. Following the 2003 election, the newly elected Liberal Government committed to shutting down all remaining coal power plants by 2007. It postponed the phase-out twice, but in 2007 legislated the closure of the four remaining coal stations, which was achieved in 2014 (Harris *et al.* 2015, Rosenbloom 2018).

In 2006 the McGuinty government also adopted the *Renewable Energy Standard Offer Program* (RESOP), the first feed-in tariff system supporting renewable energy development in North America (Rowlands 2007).

Following the 2007 provincial election, the government introduced a new and expanded policy under the Ontario *Green Energy and Green Economy Act* (GEA). The GEA's goal was to ramp up renewable energy development. However, the Liberal government dismantled the program in 2013 (Stokes 2016, Fast *et al.* 2016).

The Liberal government initiated its cap-and-trade policy in 2008 when Ontario joined the Western Climate Initiative (WCI), a regional emissions trading system (Houle *et al.* 2015). Despite signing a memorandum of cooperation with Quebec in 2008 and passing legislation enabling the government to establish an emissions trading system in 2009, it did not prioritize regulatory development until the election of the Kathleen Wynne government in 2014.[3] Wynne's majority government pursued climate pricing as a key policy agenda item, committing early in its mandate to collaborate with Quebec (Morrow 2014). The government formally announced it would implement a cap-and-trade system in April 2015 and passed enabling legislation in 2016, with the regulatory framework coming into effect in January 2017 (Morrow 2016). The Ontario government held its first auction in March 2017 generating 472 CDN m in revenue (McCarthy 2017). While in opposition, the PC Party initially adopted a similar pro-carbon pricing position under Patrick Brown (Cohn 2017). However, after a scandal forced Brown to resign the leadership, all three subsequent leadership candidates quickly dropped carbon pricing from their platforms, including the successful candidate, Doug Ford. The PC's 2018 campaign centered on a repeal of cap-and-trade (Progressive Conservative Party of Ontario 2018); once elected, Ford officially terminated the program in October 2018.

Case analysis

Coal phase-out

A coalition of actors led by the Ontario Medical Association and the Ontario Clean Air Alliance (OCCA), which included a broad alliance of environmental advocates, municipalities, health professionals, and political parties, supported the adoption of the coal phase-out (Harris *et al.* 2015, Rosenbloom 2018). Advocates deliberately adopted a public health frame for the coal phase-out, arguing that the closure of coal plants would fundamentally improve air quality and address an ongoing public health crisis in Ontario (Rosenbloom 2018, p. 134). The dominant issue framing pre-adoption was thus a health 'gain frame' in which closure of the coal plants would lead to increased population health benefits and avoid losses due to respiratory illness. Interestingly, advocates downplayed climate benefits in the early stages of the campaign; the focus on health was a deliberate framing strategy to broaden the base of support for the policy

among the public (Harris *et al.* 2015). As Jack Gibbons, Chair of the OCAA noted, 'mothers whose kids suffer an asthma attack – they become very motivated . . . whereas, climate change is more distant and remote.'[4]

Natural gas producers also supported the phase-out, anticipating that their share of Ontario's electricity mix would increase.[5] Prior to adoption, the major opponents to the policy were the Association of Major Power Producers of Ontario and the Power Workers Union, concerned about economic competitiveness and job losses respectively (Harris *et al.* 2015, Rosenbloom 2018). There was also some localized resistance within government from Ministry of Energy bureaucrats concerned about lack of reliability in the energy system.[6]

These elements of policy design generated self-reinforcing feedbacks during policy implementation. As expected, the policy generated distinct benefits for existing natural gas and nuclear producers who increased their share of electricity production. Because the coal-fired plants were publicly owned, there was no incumbent coal industry to oppose the closures as in other jurisdictions (Stokes 2013, Rosenbloom 2018). Despite these concentrated material benefits for producers and diffuse climate benefits for the population at large, the overall makeup of the coalitions remained the same during policy implementation, suggesting that resource effects had a constrained impact on policy durability.

In contrast, during policy implementation the public health gain frame continued to generate broadening support among the general public. As early as 2001, surveys showed that a majority of Ontario residents supported a coal phase-out even if it meant paying more for electricity (Harris *et al.* 2015, p. 11). Observers point to the role of health benefits, evident in the reduction of smog days in Southern Ontario, in broadening support for the policy (Winfield 2011). While the health benefits frame remained salient throughout the period, during later stages of implementation (2007–2014) a secondary 'gain frame' of GHG reductions and climate benefits emerged, as the government re-framed the policy as a part of its green economy agenda (Stokes 2013, Rosenbloom 2018). In contrast, the counter-coalition led by AMPCO and the Power Workers Union could not generate increasing salience for the loss frame regarding grid reliability. Drawing on extensive discursive analysis of media and policy documents, Rosenbloom (2018) finds that the counter-coalition's use of the grid reliability frame declined significantly throughout the implementation period. In contrast, the twin gain frames of health and climate generated a self-reinforcing feedback that solidified public opinion in support of the policy. In 2016 an Environmental Defense survey found that 74% of Ontarians believed that the coal phase-out was the right strategy for the Ontario government to take (Environmental Defence 2016), while a Clean Energy Canada survey found that 70% of Ontarians supported a future ban on the use of coal to generate electricity by 2030 (Nanos Research, and Clean Energy Canada 2016).

Ontario feed-in-tariff (FIT) program

The implementation of the coal phase-out generated a gap in the provinces' electricity supply; in the early 2000s the government increasingly looked to renewable energy to complement natural gas and nuclear energy production to meet demand (Rowlands 2007). A coalition of environmental advocates led by Environmental Defense Canada and the Ontario Sustainable Energy Association (OSEA) formed the Green Energy Alliance to push government to adopt a renewable portfolio standard in support of the clean tech sector (Nishimura 2012, Stokes 2013). Pre-adoption, the policy had low salience among the public, with limited opposition from automobile manufacturers and cement producers (Nishimura 2012). Initially the FIT thus had some similarities to the coal phase-out, with strong anticipated concentrated benefits to be allocated to energy producers and diffuse costs distributed across a broad base of consumers.

The government's initial communications regarding the FIT focused on increasing the renewable energy industry and stressed local economic benefits through job creation as well as community investment in solar generation (Government of Ontario 2009). Internally, the government had concerns about meeting electricity demand and reducing local resistance to renewable energy production in rural communities throughout Southern Ontario (Hill and Knott 2010). During the coal phase-out, the government decided that the approval process within the Ministry of Environment needed to be streamlined.[7] To address that obstacle, it uploaded the siting process to the provincial level, removing municipal autonomy, and simplifying the approval process (McRobert *et al.* 2016).

The McGuinty government designed the FIT to benefit the renewable energy sector, which facilitated a strong coalition of support among environmental advocates and wind and solar producers. However, the FIT's design also inadvertently provided opportunities for policy opponents to wield several 'loss frames' that undermined public support. Opposition came from grassroots organizations and individuals contesting wind farm development in Southern Ontario (Fast *et al.* 2016). Local communities opposed the FIT for two key reasons. First, the decision to remove municipal autonomy angered several communities who perceived the loss of municipal planning powers as unjust (Walker and Baxter 2017). Second, during implementation, residents became increasingly concerned about potential health risks from wind turbines, including detrimental effects of noise pollution (Stokes 2013). Research suggests that the policy design of the FIT likely had a strong influence on the salience of health risks in local communities since health was one of the few grounds upon which residents could appeal siting decisions (Fast and Mabee 2015, McRobert *et al.* 2016). The intensity of local opposition in Southern Ontario ultimately prompted the Ontario Federation of Agriculture to switch positions on the policy, weakening the pro-policy coalition.

Beyond health and municipal autonomy loss frames, the FIT was also susceptible to counter-coalition frames regarding rising electricity costs. The FIT's design initially provided a very generous rate for solar photovoltaic producers ($0.802-$0.443/kWh), which led critics to observe that the government provided higher prices to RE providers than they would through the wholesale market (Stokes 2013, Winfield and Dolter 2014). Electricity prices in Ontario result from two key components: the market price and a 'global adjustment cost' (GAC), which is the difference between the market price and guaranteed prices paid to regulated and contracted generators. Modelling suggests that increases to the GAC were responsible for the majority of Ontario's electricity price increases from 2008–2017 (Auditor General of Ontario 2017). In 2008 the GAC accounted for 10% of the average annual electricity charge; in 2016 the GAC rose to 85% of the average price. Approximately a third of the average annual GAC is generated by payments to renewable energy producers. The remainder is based on legacy commitments to nuclear, hydro, and natural gas producers (Auditor General of Ontario 2017). However, during implementation of the FIT, policy entrepreneurs in the PC Party used rising electricity rates to exploit the public's loss-aversion by placing the responsibility for rising rates solely on renewable energy production. This framing intensified during the 2011 election campaign: the PC's electoral platform vowed 'to stop the expensive energy experiments that are driving up hydro bills … We will end the feed-in tariff program that … pays up to 15 times the usual cost of the hydro' (Progressive Conservative Party of Ontario 2011, p. 14). Electricity rates were salient throughout the 2011 electoral campaign and the subsequent loss of several Liberal ridings in rural areas signalled to policy makers the lower levels of support among Ontario rural residents toward green initiatives in the energy sector, ultimately leading to the termination of the policy in 2013 (Stokes 2016). Despite ongoing public support for renewable energy[8] it has become common for both journalists and politicians to attribute rising electricity rates to the FIT (e.g. Globe and Mail 2015a, 2015b). This case thus demonstrates the ways in which policy entrepreneurs (in this case, the PC Party) can trigger self-undermining feedback effects by strategically using loss frames in public debate to erode public support for existing policies. By framing the FIT as responsible for a range of losses, the PC party made the termination of the FIT seem like the less risky choice than staying the course, strengthening public support for policy termination. The combination of *perceived* health risks, removal of municipal control, and rising electricity costs overshadowed the concentrated material benefits to RE producers and diffuse environmental benefits to the general public generated by the policy. The dominance of loss frames in public discourse made it difficult for the provincial government to justify its ongoing support for the FIT (Fast *et al.* 2016).

Ontario's cap-and-trade policy

Ontario's cap-and-trade program was vulnerable to self-undermining feedbacks because despite providing diffuse climate benefits to all Ontarians, the policy design created costs for a concentrated constituency: emissions-intensive trade-exposed industries (EITEs). During the regulatory development phase from 2014 to 2016, the government consulted extensively with EITEs concerned about carbon leakage.[9] A broad coalition of environmental and business interests under the umbrella of the Clean Economy Alliance, including Environmental Defense and the Cement Association of Canada, supported Ontario's cap-and-trade program.[10] During this time a counter coalition comprising the Canadian Fuel Association, Small Canadian Manufacturing and Exporters, the Automotive Parts Manufacturers Association of Canada, and oil and gas companies[11] also emerged. The coalition expressed economic concerns regarding carbon leakage and preferences for a carbon tax rather than an emissions trading system (Lefko 2017). To manage these political dynamics, the government focused on mitigating costs for EITEs during the design process and decided to provide free allowances to all industries in the initial phase of the program.[12] Despite this carrot, industry emitters were still uneasy about the distribution of allowances post 2020 (McCarthy 2015).[13]

The government also tried to manage political dynamics by providing benefits to targeted groups through the 2016 Climate Action Plan. The Plan aimed to generate substantial diffuse support for the policy by providing financial incentives to homeowners for retrofits, electric vehicle manufacturers, producers of energy-efficiency goods and services, and renewable energy producers and storage companies (McCarthy and Blackwell 2016, Cohn 2016b). The Climate Plan also explicitly targeted low-income residents, directly through subsidies on energy bills and indirectly through improving energy efficiency in social housing (Government of Ontario 2016). However, the government was unable to implement most of these programs prior to the 2018 election. During the early stages of program implementation, the coalitions in support or opposition to the policy remained static, with very few organizations other than members of the Clean Economy Alliance publicly supporting the policy (McCarthy and Blackwell 2016).[14]

The cap-and-trade program was also vulnerable to issue framing that exacerbated perceptions of loss among the general public. Unlike previous governments that framed climate action as either solving a public health crisis (coal phase-out) or alleviating an energy crisis (the FIT), the Wynne government used climate benefits as the primary 'gain frame' for the policy. The government strongly supported the scientific case for climate change, evident in the text of the 2016 Climate Action Plan: 'Science has confirmed that climate change is profoundly affecting this planet … People and businesses want to know how to change' (Government of Ontario 2016, p. 7).

The government was slow to communicate consumer gain frames (Raymond 2019). It tasked the Ministry of the Environment, which led development of the Climate Action Plan, to develop and coordinate new green programs across the whole of government while also developing a communications plan. As a regulatory department, however, the Ministry had limited experience developing 'retail' communications that coalesced around gain frames.[15] In addition, cap-and-trade was vulnerable to challenges that it generated losses for the general public. In the 2016 Climate Action Plan, the government costed the program as generating a 13 CDN/month increase in household energy costs (Government of Ontario 2016). Although this cost was substantially lower than projected increases under a carbon tax, policy opponents were able to frame the policy as generating ongoing losses for suburban households (Cohn 2016a, Benzie 2016a). This population together with rural communities already negatively affected by the FIT provided a large audience for loss frames. In media debates the PCs used three core loss frames to build public opposition: the policy was simply a gas tax, it would increase household prices just as the FIT increased electricity prices, and it would generate a slush fund that government would likely mismanage (Globe and Mail 2015a, 2015b, Cohn 2016a, 2016b, Progressive Conservative Party of Ontario 2018).

The loss frames propagated by the PCs resonated with the electorate. In a poll conducted by Forum Research (2016) 59% of respondents disapproved of the cap-and-trade plan when explained in simple terms; when respondents were presented with information regarding increases to household costs and fuel prices disapproval rose to 69%. Conversely, when Forum Research highlighted the policy's climate benefits, only 46% approved of the government directing raised funds to support GHG mitigation (Forum Research 2016, Benzie 2016b). Public opinion data suggests that although climate was not a deciding factor in determining vote choice in the election, the PCs' linkage of cap-and-trade with increasing energy prices did resonate with their base (Lachapelle and Kiss 2019, p. 973). In their election survey, Lachapelle and Kiss (2019) found that 60% of PC voters felt that their electricity bills had increased in the past year compared to only 26% of Liberal voters. The cap-and-trade case illustrates the ways in which policy entrepreneurs can use perceptions of loss strategically for political gain, generating self-undermining feedback effects that erode coalitions of support.

Discussion and conclusions

Our findings suggest that a core dimension of climate policy entrenchment is the degree to which policy designs, in particular the communication efforts of governments, can increase the salience of gains and losses among mass publics. In the case of the coal phase-out, the health 'gain frame' generated broad public support that complemented support for the policy by environmental groups,

natural gas producers, and the nuclear industry. These factors generated strong self-reinforcing feedbacks that helped to entrench the coal phase-out among both provincial political parties in power.

Yet both the FIT and the cap-and-trade programs failed to communicate strong 'gain frames' of consumer benefits to the public, an aspect of policy design that has contributed to successful climate policy implementation in the United States (Raymond 2016, Rabe 2018). Instead, public discourse in Ontario centred on perceptions of loss, including health risks, loss of local autonomy, rising electricity rates, increasing household costs, and government misman-agement. Policy opponents successfully framed the FIT, and later cap-and-trade, as increasing energy prices for the general public.[16] In the absence of strong narratives about public benefits, narratives of public loss gained traction in public discourse, leading to the Liberal's termination of the FIT in 2013 and the reversal of cap-and-trade as soon as the PCs came into power in July 2018.

In sum, this study demonstrates that how policy makers frame and communicate policies can have a significant impact on policy durability. Gain frames can solidify public support for a climate policy, strengthening pro-policy coalitions and legitimizing governments to stay the course. Conversely, loss frames can undermine public support, strengthening coun-ter-coalitions and making implemented climate policies seem like a risky course of action in the eyes of the public. Interpretive feedback effects thus function as an intervening mechanism between policy design and entrench-ment, as policy entrepreneurs use gain and loss frames strategically to strengthen coalitions and generate mass support for their preferred policies.

The research design here provides some analytic leverage to support the broader applicability of the importance of interpretive policy feedbacks beyond the Ontario case. Further research could help determine whether policy makers supporting decarbonization can simply avoid narratives of loss in order to generate self-reinforcing feedbacks or whether successful climate policies need to generate dominant narratives of gain in addition to high increasing returns to industry entrants, limited costs to incumbent indus-tries, and substantial material benefits to voters in order to entrench.

Notes

1. Ontario has three main parties: the Liberal Party, the Progressive Conservative Party, and the New Democratic Party.
2. Interviewees included key members of the Ontario climate policy subsystem identified through policy documents and media articles; subsequent intervie-wees were selected through snowball sampling.
3. Political observers suggest the delay was motivated in part by the failure of federal Liberal leader Stéphane Dion's Green Shift program in the 2008 federal election (Cohn 2016a), the Great Recession (Boyd 2017) and the salience of carbon pricing and renewable procurement policies in the 2011 election

(Houle *et al.* 2015). During this time the government continued to work internally to plan the institutional framework necessary for cap and trade (Personal interview, government official, 1 March 2019).

4. Personal Interview, Jack Gibbons, Chair Ontario Clean Air Alliance, 8 February 2019.
5. Personal interview, government official, 1 March 2019.
6. Personal Interview, Jack Gibbons, Chair Ontario Clean Air Alliance, 8 February 2019.
7. Personal interview, government official, 1 March 2019.
8. A survey conducted by Environmental Defense in 2016 shows that '80% of respondents said that they would like to see Ontario generate more power from renewable sources' (Environmental Defence 2016).
9. Personal interview, government official, March 1 2019. Carbon leakage refers to the phenomenon in which carbon-intensive industries flee jurisdictions with high production standards or carbon prices to neighbouring jurisdictions, resulting in an increase in GHG emissions in countries with less stringent climate policies.
10. Personal interview, Adam Auer, Vice President Environment and Sustainability, Cement Association of Canada, 1 March 2019; Personal interview, Keith Brooks, Programs Director, Environmental Defence, 22 February 2019.
11. Enbridge Gas Distribution, Union Gas, Suncor Energy, Imperial Oil all expressed displeasure at the policy in 2016, however all four companies participated in the 2018 linked auction (McCarthy 2018).
12. Personal interview, John Godfrey, Former Special Advisor to the Ontario Government on Climate Change, 22 February 2019.
13. Personal interview, Adam Auer, Vice President Environment and Sustainability, Cement Association of Canada, 1 March 2019; Personal interview, Keith Brooks, Programs Director, Environmental Defence, 22 February 2019.
14. Personal interview, government official, 1 March 2019.
15. Personal interview, John Godfrey, Former Special Advisor to the Ontario Government on Climate Change, 22 February 2019. Personal interview, government official, 1 March 2019. Personal interview, Anonymous, 15 March 2019.
16. Personal interview, Keith Brooks, Programs Director, Environmental Defence, 22 February 2019. Personal interview, Jack Gibbons 8 February 2019.

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