



Policy in motion: reassembling carbon pricing policy development in the personal transport sector in British Columbia

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ABSTRACT

British Columbia's carbon tax is an example of a relatively systemic climate pricing policy in the North American transport sector. This research uses Actor-Network Theory to retrace and reassemble the development of the tax from inception to implementation. From the fieldwork, six stages of the policy development process emerged, beginning with the surfacing of the concept of tax shifting in 1998 to the implementation of a carbon tax in 2008. This article explores how British Columbia's experience aligns with lessons from the carbon taxation literature relating to a range of themes including education, leadership, timing, administration, taxation level, revenue allocation and communication.

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1. Introduction

There is growing consensus that introducing carbon pricing in the form of a tax or tradable permits is instrumental in addressing the causes of climate change, such as energy intensive personal transport (IPCC, 2007; Stern, 2006; Stiglitz, 2006). Carbon taxation aims to internalize the negative environmental impacts of fossil fuel consumption, namely the increasing atmospheric concentrations of greenhouse gases that contribute to climate change. In coordination with other policy initiatives, carbon taxation is a form of environmental pricing that has the potential to address major distortions in current fossil fuel and land consumption habits that characterize North American transport and development patterns (Hsu et al., 2008; Ubbels et al., 2004).

In 2008, the Canadian province of British Columbia was a first-mover in North America, implementing a broad-based carbon tax.¹ Of the carbon pricing initiatives implemented or considered in North America during this period, British Columbia's carbon tax is unique in that it includes the transport sector and is set at a relatively high price which is scheduled to escalate. The development of British

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¹ British Columbia is the western most Canadian province; it is larger than France and Germany combined (Government of British Columbia, 2009b). It has a population of almost 4.5 million, with 40,000 immigrants arriving each year (Government of British Columbia, 2009b). Victoria, the capital, and Vancouver are the main population centres accounting for 60% of the population. In Victoria, the transit mode share is 7% overall and 10% amongst commuters, while in Vancouver it is 12% overall and 17% for commuters (British Columbia Public Transit Plan, 2008b; Statistics Canada, 2006). The transit mode share for other regional centres is 3% (Statistics Canada, 2006).

Columbia's carbon tax policy is the strongest example of the implementation of more systemic, rather than marginal, climate pricing policy in the transport sector in North America.

The goal of this research is to reassemble the interactions that resulted in British Columbia's carbon tax. Actor-Network Theory, with its grounded and incremental approach to capturing processes, shaped both the narration and analysis of British Columbia's policy development experience. This article summarizes the distinct phases of the policy development process, from inception to implementation, which emerged from the research participants' narratives and explores how British Columbia's experience aligns with lessons from the carbon taxation literature. The documentation of the process that caused carbon pricing to emerge as a political priority and a practical reality in British Columbia yields increased understanding of institutional approaches to policy design and framing in the personal transport sector.

2. Background

The consumption of fossil fuels results in negative economic externalities. That is, third parties who are not involved in a market transaction are adversely impacted, for example, in the form of increasing atmospheric concentrations of greenhouse emissions (Stern, 2006; Goodstein, 1999; Gowdy and O'Hara, 1995). As the emissions impose no cost on the buyer or seller, fuel demand is elevated (Goodstein, 1999; Gowdy and O'Hara, 1995). A characteristic of negative economic externalities is that they involve natural resources which are commonly held, such as the atmosphere. Due to the open access, non-excludable nature of these resources, they are vulnerable to exploitation, as individuals are more likely to exploit a common, unpriced resource for which they incur no private cost (Hardin, 1968). As market prices do not reflect true

costs, optimal production levels from an environmental perspective are not identified by the market. This fallibility of neoclassical economics is termed a market failure (Gowdy and O'Hara, 1995). Climate change has been referred to as the "greatest market failure the world has seen" (Stern, 2006). An alternate perspective is that, given the ubiquity of such market failures, that they are "not failures but simply the regular way in which markets function" (Callon, 2007, p. 146).

In 1912, the British economist Alfred Pigou proposed taxation as a means to correct such market failures (Gowdy and O'Hara, 1995). Consequently taxes implemented with the goal of integrating or internalizing negative externalities into market transactions are referred to as Pigouvian (Gowdy and O'Hara, 1995). The additional price signal serves to lower demand (Stern, 2007). To address the issue of negative externalities in the case of greenhouse gases, two interventions can be made: pricing emissions via taxation or assigning property rights via emissions trading (Ramseur and Parker, 2009; CBO, 2005; Gowdy and O'Hara, 1995). In both cases, negative externalities are priced so as to more fully reflect the true costs to society.

Themes in the environmental pricing and carbon taxation literature include revenue allocation, distributional impacts, administration, public trust and effectiveness. Revenue allocation can take the form of a revenue neutral tax that is matched with decreases in other taxes, such as income or labor taxes, or a revenue generating tax, the proceeds of which are directed to general revenue or earmarked for environmental projects or technological initiatives (Hsu et al., 2008; Klok et al., 2006; Buchanan, 1963). Economists prefer revenue neutral tax shifting as it has the potential to yield a double dividend of reduced environmental impact and increased economic efficiency (Clinch et al., 2006). However, hypothecation is discouraged by economists as it is considered to be a compensatory solution for inaccurately pricing goods to reflect their social costs. As well, it reduces decision-making authority and funding flexibility (Clinch et al., 2006; Klok et al., 2006; Li and Wachs, 2004; Ubbels et al., 2004). Findings on public preference regarding revenue allocation are more varied: Hsu et al. (2008) find primary public support for revenue neutral models, but also not insubstantial support for technological earmarking; Schuitema and Steg (2008) find a preference for revenue hypothecation to transport initiatives over allocation to general government funds; and Clinch et al. (2006) recommends a hybrid approach combining tax reductions, investments in environmental projects and lessening of distributional impacts.

Findings indicate that carbon taxes tend to be regressive, imposing disproportionate costs on low income households (Wier et al., 2005; Jacobsen et al., 2003; Aasness et al., 1996). This strain is exacerbated when there is a lack of alternatives; fuel demand elasticity is directly related to the availability of viable sustainable transport options (Tiezzi, 2005). Providing direct compensation, such as through cash transfers for households that do not pay income tax and therefore do not benefit from income tax reductions, can lessen financial strain while maintaining the environmental integrity of the tax (Litman, 2009; Ramseur and Parker, 2009; OECD, 2007). Concern about distributional impacts may also be lessened when it is perceived that the government is taking proactive measures (Jacobsen et al., 2003). Related to revenue allocation and distributional impacts is the issue of public trust. There exists distrust amongst the public that tax revenues will actually be allocated in the way that government promises, and also that the tax will unfairly burden certain segments of society (Klok et al., 2006; Dresner et al., 2006). In addition to tax design, public participation, public communication strategies and process transparency may contribute to the restoration of trust (Lorenzi et al., 2007; Clinch, 2006).

To aid transparency and administrative efficiency, taxes need to be simple and broad-based across sectors and greenhouse gases

(Litman, 2009; Clinch, 2006; Bruvold and Larsen, 2004; Godal and Holtmark, 2001; Ekins and Speck, 1999). The lack of effectiveness of Norway and Finland's carbon taxes are attributed in part to their narrow bases resulting from numerous exemptions (Vehmas, 2005; Anderson, 2004; Bruvold and Larsen, 2004). Sweden's carbon tax is deemed effective in the district heating sector, while it has had "no discernible effects" in the transport sector (Bohlin, 1998, p. 289). This is ascribed to the relatively small contribution of the carbon tax relative to other transport costs (Bohlin, 1998). Such findings have led to speculation that, given the short term price inelasticity of fuel, the primary goal of carbon taxation as implemented in Scandinavia may be revenue generation, not emission reduction (Klok et al., 2006; Vehmas, 2005; Bohlin, 1998).

2.1. North American context

In the late-2000s, a variety of carbon pricing initiatives were undertaken by sub-national jurisdictions in North America, ranging from provincial carbon taxes in Quebec and British Columbia, to municipal carbon taxes in Boulder and San Francisco, to multi-state emissions trading schemes, such as the Regional Greenhouse Gas Initiative and the Western Climate Initiative. In addition, carbon taxation was featured as a plank of the 2008 Federal Liberal Party of Canada election platform. Of the seven initiatives, only three include the transport sector: British Columbia, Quebec and the pending Western Climate Initiative. Transport was excluded from the other initiatives for reasons of jurisdictional responsibility, administrative logistics, investment scale and existing tax levels. Of the five North American carbon pricing initiatives in place in 2009, Quebec, British Columbia, Boulder, San Francisco and the Regional Greenhouse Gas Initiative, prices ranged from a low of US\$0.04 per tonne in San Francisco to a high of CA\$15 per tonne in British Columbia. As British Columbia's carbon tax uniquely combines inclusion of the transport sector and a relatively high taxation level, it is the focus of this research.

3. Methods

Actor-Network Theory (ANT) was developed as a means to study scientific and technological developments. ANT challenges researchers to root their work, not in social theories, but in concrete experiences grounded in reality (Latour, 2005). A reason for forwarding this challenge is to remind the researcher that her job is not to define for participants what occurred, but rather to describe the experiences and perspectives of participants (Latour, 2005; Murdoch, 2001; Law, 1992). Latour employs the analogy of a traveler treading through an unfamiliar landscape (Latour, 2005). He prompts the researcher to keep her terrain "flat," to retrace the transactions between humans and non-humans actants, resisting the temptation to hitch a ride on an existing social order (Latour, 2005, p. 190). "The first ANT reflex," Latour asserts, "should be to ask: 'In which building? In which bureau? Through which corridor is it accessible?'" (Latour, 2005, p. 183). A good account of the social follows the specific connections and larger networks between actors with the goal of describing "local processes of patterning, social orchestration, ordering and resistance" (Latour, 2005; Law, 1992, p. 386). By retracing the incremental steps that led carbon taxation from theory to political prioritization to implementation this research documents a process that is of increasing interest to jurisdictions as they aim to reduce greenhouse gas emissions (Rutland and Aylett, 2008; Laurier and Philo, 1999).

ANT was used to retrace the carbon taxation policy development process in British Columbia. Following ANT, not only human, but also non-human actors, termed actants, such as government

documents and atmospheric greenhouse gas emission concentrations, were identified. The changing networks of actants enmeshed in the policy process were identified and the dynamics between actants articulated. The constellation of humans and non-humans enrolled in the development of British Columbia's carbon tax was retraced through in-depth, semi-structured conversations. A conversational approach allowed research participants to recount, in an intuitive manner, their involvement in and perspectives on the policy process. A series of conversation focus areas were identified by the researcher, such as relevant individuals, events and documents.

Of the 24 research participants, eleven were civil servants and political representatives, six were representatives of non-governmental organizations, four were academics and three were public transit authority representatives. In total, just over half of the participants were directly employed by government, including the civil servants, one transit authority representative and the political representative. Conversations were conducted in person in Victoria and Vancouver, British Columbia, between September 8, 2009 and November 4, 2009. In addition, two phone interviews were conducted on November 23, 2009 and December 3, 2009. Conversations with individuals ranged from 30 to 60 min. Email correspondence was used in two cases. Secondary materials, such as government documents, non-governmental organization publications and media items were also reviewed.

4. Results

From the fieldwork, six stages of the policy development process emerged, each with a unique constellation of actants: 'Starting Line, 1998–2000,' 'Hitting the wall, 2001–2006,' 'Changing course 180°, July 28, 2006–February 13, 2007,' 'Hitting stride, February 14, 2007–May 28, 2008,' 'Stumbling over hurdles, June 1, 2008–May 12, 2009' and 'Staying the course, May 13, 2009–' (Fig. 1).

4.1.1. Starting Line, 1998–2000

The first phase, 'Starting Line, 1998–2000,' marked the emergence of the concept of tax shifting in British Columbia. In April 1998, Alan Thein Durning and Yoram Bauman of the Northwest Environment Watch, now the Sightline Institute, published a "readable booklet" titled *Tax Shift: How to Help the Economy, Improve the Environment, and Get the Tax Man off Our Backs*. The authors set out the issue as follows: "Mostly, we tax things we want more of, such as paychecks and enterprise, not things we want less of, such as pollution and resource depletion. Naturally, we get less money and more messes" (Durning and Bauman, 1998).

Tax Shift influenced and was acted upon by a member of the governing New Democratic Party, Joan Sawicki, who is credited with introducing *Tax Shift* into policy discourse. Upon being appointed Minister of Environment in July 1999, Sawicki commissioned a tax shift report. In October 1999, a group of academics from Simon Fraser University submitted *Environmental Tax Shift: A Discussion Paper for British Columbians* to government. A civil servant, recalling the role of *Environmental Tax Shift*, observed that "one of the ways that [it] helps is that the Finance officials, at least, have been primed by that earlier work." Subsequently, three tax shift pilot projects, including a motor vehicle feebate, were outlined in the 2000 provincial budget "as part of our green economy initiative" (Government of British Columbia, 2000, p. 9). However, the programs were not implemented before the New Democratic Party lost power in 2001.

During this time, the concept of tax shifting emerged elsewhere in North America. The Canadian Federal Technical Committee on Business Taxation released a 1998 report that addressed tax shifting and in 2000 Cleveland State University hosted the first annual International Conference on Environmental Taxation Issues. An underlying actant in this, and all phases, was increasing public awareness of greenhouse gas emissions and climate change.

British Columbia's carbon tax timeline

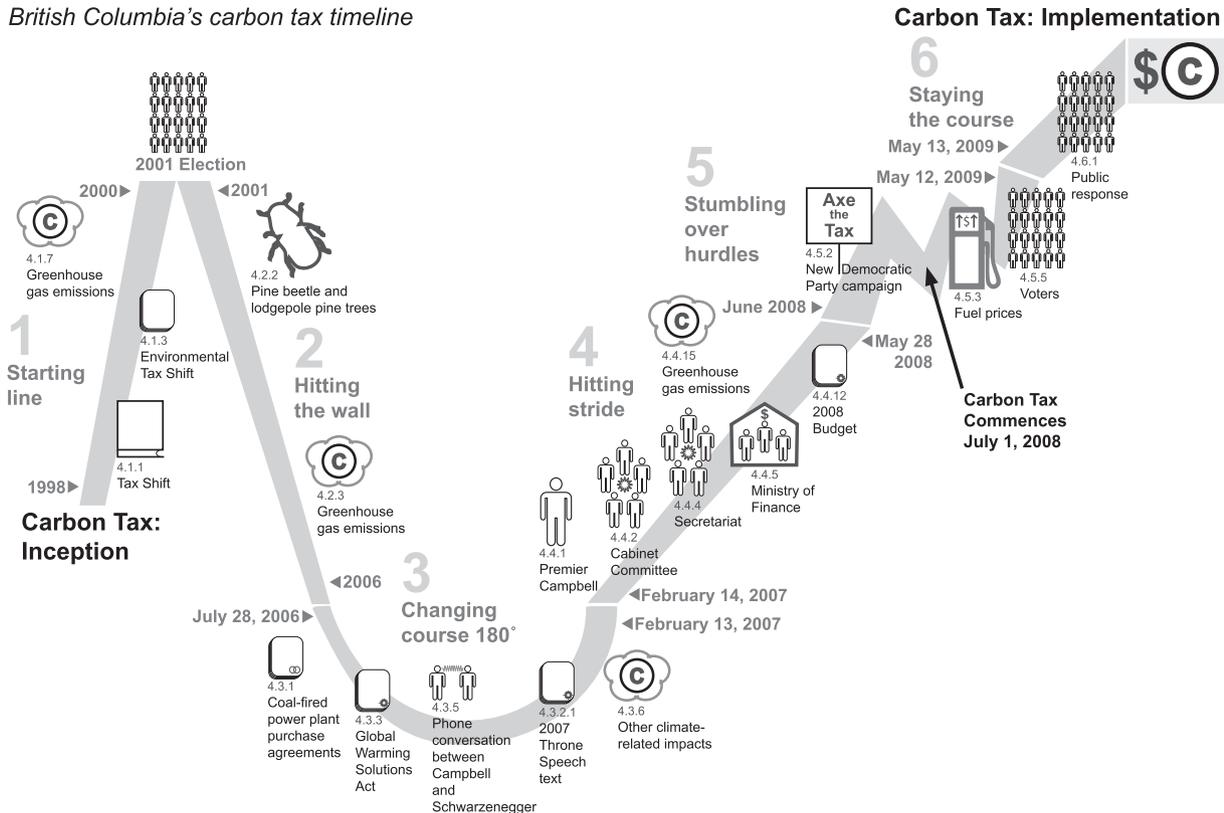


Fig. 1. Visual conceptualisation of carbon tax policy development process, British Columbia.

Canada signed and ratified the *Kyoto Protocol* in April 1998 and December 2002 respectively (UNFCCC, 2009). The period between 1998 and 2000 marks an initial coalescence of actants around the concept of carbon pricing.

4.1.2. Hitting the wall, 2001–2006

Few traces of environmental pricing are evident in British Columbia during the second phase, ‘Hitting the wall, 2001–2006.’ The more conservative Liberal Party gained power in May 2001 in a landslide election. Premier Gordon Campbell implemented “bold, 25% tax cuts on the first day in office [...] These tax cuts gave B.C. some of the lowest personal income tax rates in the country” (British Columbia Liberal Party, 2009). Of this period a civil servant observes, “There were a lot of people in government who were in denial, politically certainly, about climate change.” Traces of environmental pricing at the federal level are also scant during this period. A civil servant explained that: “former Prime Minister Chretien said, you know, ‘There will never be a carbon tax.’ Well, that kind of took that one off the table for, you know, for a very long period of time.”

While traces of tax shifting are limited in this phase, the impacts of climate change became more apparent. Through 2001–2006, two actants moved to the foreground of political and public concern: pine beetles and lodgepole pine trees. A lack of cold winters created ideal conditions for pine beetles resulting in an epidemic (British Columbia Ministry of Forests and Range, 2009). In 2001, the Ministry of Forests and Range issued four press releases related to the pine beetle infestation; by 2006 this number rose to 36. The primary concern was the threat to the economically significant forest industry: in 2004, the total fee paid to the government by forest industries for the right to log was \$1.2 billion (Council of Forest Industries, 2009). Actants outside of British Columbia also gained momentum. In February 2005, the *Kyoto Protocol* entered into force signaling increased global galvanization around the issue of climate change and in May 2006 the American documentary, *An Inconvenient Truth*, was released which according to a civil servant influenced “both the public and decision-makers.”

4.1.3. Changing course 180°, July 28, 2006–February 13, 2007

The third phase, ‘Changing course 180°,’ marked a period of dramatic change. In July 2006 a Crown Corporation, B.C. Hydro, awarded contracts for the first two coal-fired power plants in British Columbian history. A non-governmental organization representative described public reaction to the news that the province was planning to burn coal,

All you had to do was just tell people, and even people who weren’t sympathetic to environmental issues, they would stop in the street when we’d be, like, handing out material, and they’d go ‘We are?’ ‘We are!’ [indicating disapprobation].

However, events in another jurisdiction spurred a dramatic reversal in British Columbia’s policy direction.

In September 2006, the Republican Governor of California, Arnold Schwarzenegger, approved a *Global Warming Solutions Act*. The *Act* committed California to achieving 1990 greenhouse gas emission levels by 2020, and to this end permitted the use of both market-based mechanisms and regulation (State of California, 2008). The *Act* received accolades and a number of research participants commented that British Columbian Premier Campbell noted this positive response. A phone conversation between Campbell and Schwarzenegger in December 2006 served as a turning point, leading to a period of collaboration between civil servants in California and British Columbia regarding climate change measures.

According to a civil servant, “there were lots of conversations with California; their fingerprints are all over B.C.’s policies.”

The first public expression of these new policies was in February 2007 with the reading of the provincial *Throne Speech*, which sets out the direction of government for the coming year. The government announced an ambitious greenhouse gas emission reduction target of “at least 33 percent below current levels by 2020. This will place British Columbia’s greenhouse gas emissions at 10 per cent under 1990 levels by 2020” (Government of British Columbia, 2007). A range of complementary initiatives, including actions related to sustainable transport, vehicle efficiency, low-carbon fuels and community planning, were part of the reduction plan.

The concept of environmental tax shifting was also introduced:

The cost of climate change is directly related to our consumption. Over the next year, the Province will consider the range of possibilities aimed at encouraging personal choices that are environmentally responsible. It will look for new ways to encourage overall tax savings through shifts in behaviour that reduce carbon consumption (Government of British Columbia, 2007, p. 7).

A non-governmental representative recalled her reaction:

... no one else seemed to pick up on it, but I was like-, I was reading it and there was this part-, I can’t remember exactly what the wording was. [...] I’m going, ‘[Campbell’s] talking about carbon tax!’ He’s talking about pricing, it’s in there.

The breadth of the climate change initiatives is indicated by one civil servant, who described the policy direction of the *Throne Speech* as a “huge sea change.” A non-governmental organization representative commented that, “Campbell has, you know, legacy aspirations. He wants to be known for, you know, some big ideas [...] and he doesn’t seem to be averse to 180s.” Serving to further highlight the potential political opportunity of acting on climate change was the lack of federal leadership. After signing the *Kyoto Protocol on Climate Change* in 1998, 2006 marked the withdrawal of Canada from its international commitment; a civil servant commented that “what’s happened in B.C. and the [Western Climate Initiative] has been motivated, quite frankly, by a lack of action at the federal level.”

4.1.4. Hitting stride, February 14, 2007–May 28, 2008

The 2007 *Throne Speech* signaled the foregrounding of environmental tax shifting. The fourth phase, ‘Hitting stride,’ marked a period of concerted activity within the government of British Columbia on climate change policy, culminating in February 2008 with the introduction of a provincial carbon tax. Several research participants noted that the Premier was the driver behind climate change initiatives broadly, and the carbon tax initiative specifically. The Premier established and chaired a Cabinet Committee on Climate Change, indicating a high level of political commitment. The mandate of the Committee was to bring “together key government ministries to make policy related to greenhouse gas (GHG) reduction and climate change adaptation” (Government of British Columbia, 2009a).

A civil servant observed that the Committee “met very frequently... They heard from a lot of outside experts, um, David Suzuki Foundation, industry associations, academic experts. They also asked each Ministry and Minister to bring forward very short options papers.” A civil servant recalled an option papers submitted by the Ministry of Finance,

... so there [was] a whole range of [option papers]. And one of them was brought forward by the Minister of Finance

concerning the possibility to consider tax shifting. Ah, it didn't get tossed into the dumpster, um, so from there, there was a fair amount of work that went into thinking internally.

The inclusion of tax shifting in the Ministry of Finance option paper served to fortify the mention of tax shifting made in the 2007 *Throne Speech*.

During the summer of 2007, a Climate Action Secretariat was formed. The Secretariat served as a coordinating hub for climate change initiatives, dealing with “the Cabinet process, the Legislative process, the Budget process.” Ministry of Finance staff worked closely with the Climate Action Secretariat to operationalize the policy. The Ministerial responsibilities included evaluating the feasibility of modeling the carbon tax on the existing gas tax structure and providing advice on revenue levels, tax efficiency and distributional impacts. While input was provided by the public, non-governmental organization representatives, the business community and academics via pre-budget consultations and policy briefs, the carbon tax was developed largely in-house by the Premier's Office. Of the process a civil servant observed that “power in Canadian government is highly centralized, far beyond most other western nations.”

Elements of the carbon tax design, such as administration, taxation level and revenue allocation were determined early in the process. The government decided to closely follow the existing gas tax model; a civil servant commented, “people know how to tax. That carbon tax was put in place so quickly, ah, compared to the cap and trade negotiations which are ongoing.” With regard to tax level, one civil servant stated, “early on Ministry of Finance had decided it was going to start at \$10 [per tonne] and go up \$5 [per tonne annually], so that price component-, that was fairly well-known.” Similarly, a revenue neutral, rather than a revenue generating model, was prioritized. A civil servant remarked that, “what we did is we took the advice of our economists, who basically said, ‘If you recycle this into reducing taxes that are regressive then you will have negligible impact on the economy.’” To this end, a civil servant noted that “legislation requires that for every dollar we raise in carbon tax we reduce other taxes.”

In February 2008, a variety of people enrolled in the carbon tax development process including the Premier, members of the Cabinet Committee, the Secretariat and Ministry of Finance staff, converged upon the legislature for the first public announcement of the carbon tax. Finance Minister Carole Taylor announced in *Budget 2008: Turning to the Future, Meeting the Challenge* that “we are introducing a major shift in the way we levy taxes. Effective July 1st, we intend to put a price on carbon-emitting fuels in B.C.” British Columbia's carbon tax is broad-based, applying to all fossil fuels and to all sectors of the economy, and accounts for 89% of the province's greenhouse gas emissions (British Columbia Climate Action Team, 2008). The tax started at 2.4 cents per liter in 2008 and is scheduled to reach 7.2 cents per liter by 2012, representing a social cost of carbon \$10 per tonne and \$30 per tonne respectively (Government of British Columbia, 2008a). It is estimated that the carbon tax will reduce British Columbia's greenhouse gas emissions in 2020 by up to three million tonnes annually (Government of British Columbia, 2009b). British Columbia's tax takes the form of a revenue neutral tax shift where the introduction of the carbon tax was matched with decreases in income taxes. It is estimated that British Columbia's tax will generate \$1.85 billion by 2011, the sum of which is redistributed to citizens via income personal and corporate tax reductions (Government of British Columbia, 2008a). The *Budget* included reference to an annual Climate Action Credit of \$100 per adult and \$30 per child designed to “ameliorate the impact of the tax on individuals with low-incomes” (Government of British Columbia, 2008a, p. 4). The *Budget* also described a one-time Climate Action Dividend of \$100 per person (Government of British Columbia, 2008a).

A civil servant reflected, “I went and sat in the Legislature for that one [...] You know, that was, kind of, the high point of my career, frankly, was to see that come into place. [...] It was pretty remarkable [Laughter]”. Similar sentiments were expressed by other civil servants, non-governmental organization representatives and academics. An academic noted the striking “absence of backlash,” while an elected representative recollected that, “we got the ratings of the *Budget* from business groups, etcetera, got ‘As’ on the *Budget*. ‘Very good, yes, it's [revenue] neutral, this is great.’”

4.1.5. *Stumbling over hurdles, June 1, 2008–May 12, 2009*

The fifth phase, ‘Stumbling over hurdles,’ marked a period of political contention. While the government attended in detail to the carbon tax design, the area of public communication was neglected. Upon being asked the nature of the government's communication strategy between the introduction and the implementation of the tax, a civil servant simply shook his head, indicating that there was no strategy. An academic commented that “it was textbook bad communication.” This rendered the government vulnerable to three key actants: the New Democratic Party's *Axe the Tax* campaign, record high fuel prices, and public skepticism regarding both the revenue neutrality of the tax and the intent of the Climate Action Dividend. In June 2008, one month prior to the scheduled carbon tax implementation, the opposition New Democratic Party launched an ‘Axe the Tax’ campaign. The campaign pushed for eliminating the carbon tax and consulting with British Columbians to develop a more effective approach to addressing climate change (British Columbia New Democratic Party, 2009). The angle pursued by the New Democratic Party was a source of surprise to several research participants as the Party identifies itself as environmentally progressive and was a proponent of tax shifting in the late-1990s.

British Columbia's carbon tax went into effect on July 1, 2008. Coincidentally fuel prices spiked at the same time. A non-governmental organization representative opposed to the tax noted that “if you're an atheist, this is enough to make you believe that God exists: on the day the carbon tax was announced the price of gasoline here in Vancouver went to a \$1.50 per liter. I just said, ‘Halleluiah.’ People were so upset, so upset.” The Climate Action Dividend and the revenue-neutrality of the tax received more negative attention than the government expected. A civil servant stated that the “\$100 cheques were not well-received.” An elected representative shared that the public “thought that we were trying to buy their vote.” The revenue neutrality of the tax was met with skepticism. A civil servant recalled that public perception was: “‘We're not getting any of that money back.’” Reflecting on the issue of public skepticism, a civil servant commented, “we should have cut the [Provincial Sales Tax] or a more visible tax, instead of income taxes. I'm not sure that it's the right economic answer, but it would have been the right political answer.”

British Columbia held a provincial election in May 2009, ten months after the implementation of the carbon tax. Notably, the Conservation Voters of British Columbia, in response to the New Democratic Party's *Axe the Tax* campaign, created an ‘Anyone But Carole’ campaign, referring to the New Democratic leader; “because of the New Democrats' opposition to key strategies for energy conservation and the B.C.'s continentally-significant carbon tax, we cannot endorse any NDP incumbents that were members of this past caucus.” Following the positive response to the carbon tax announcement in February 2008, public support decreased with high market fuel prices, as well as skepticism regarding the Climate Action Dividend and the taxes' revenue neutrality. Public support increased in response to the New Democratic Party's

'Axe the Tax' campaign and lower fuel prices. The Liberal Party was re-elected and the carbon tax remained in place.

5. Discussion

The May 13, 2009 election marked the dispersal of a broad range of actants who coalesced around the issue of carbon taxation. The sixth phase, Staying the course, is underway with scheduled price escalations of \$5 per tonne per year occurring in 2009, 2010 and 2011 with little media attention. There were, however, calls from the New Democratic Party, municipal Mayors and transit authorities to make the carbon tax revenue generating. A subject of interest is if and how human and non-human actants will be enrolled and coalesce as the carbon tax reaches its highest scheduled level in July 2012. Further, pending emissions reduction data will provide a basis to assess the effectiveness of the tax.

The six phases of the carbon pricing policy development process actor-network were found to be dynamic and heterogeneous, varying both in composition and in power relations throughout the policy development process (Latour, 2005). The actants varied in each phase, although some actants, such as greenhouse gas emissions and Gordon Campbell were present in all. As well, the dominant actant in each phase varied, ranging from the Northwest Environment Watch's *Tax Shift* in the first phase, to Premier Campbell and the pine beetle in the second phase, Governor Schwarzenegger and Premier Campbell in the third phase, to the Premier, Cabinet Committee, Secretariat, the Ministry of Finance and the 2008 Budget in the fourth phase, to voters and the New Democratic Party in the fifth phase and the finally, government in the sixth phase. The detailed and grounded documentation of the policy development process exhibited the relationship dynamics amongst different actants. For example, the power of the Premier, while expected, was made even more apparent through the centralized nature of the policy process. Less expected sources also exerted influence, such as Californian climate policies, the emotion expressed by civil servants and the pine beetle epidemic. Other sources of influence, particularly the public and a coordinated opposition campaign, were less influential than anticipated.

The use of ANT complements other approaches to the study of climate change governance, such as multi-level governance, exemplified by the sub-national leadership characteristic of North American carbon pricing initiatives, and the internationalization of policy regimes, as seen in the influence wielded by California's *Global Warming Solutions Act*. ANT's fine-grained approach provided a basis to explore five common themes of the environmental pricing literature: revenue allocation, administration, distributional impacts, public trust and effectiveness. When the carbon tax was first announced the revenue-neutral model was well-received, supporting the findings of Hsu et al. (2008). However, after the tax was tested by the provincial election, research participants noted that they increasingly heard calls from the public, as well as municipalities and public transit providers, to invest revenues into environmental initiatives, lending support to the findings of Schuitema and Steg (2008). Given shifts in public support, an argument may be made for building flexibility into revenue allocation, possibly through a hybrid approach as recommended by Clinch (2006).

The broad-based tax design was modeled on the province's existing gas tax model, a decision that was noted for its administrative ease and speed. Using in-house knowledge to adapt an existing model compared to creating a new taxation model or developing a cap and trade system achieved a simplicity recommended by Clinch (2006), Bruvoll and Larsen (2004), Godal and Holtmark (2001) and Ekins and Speck (1999). The government was conscious of potential distributional impacts, creating a Climate Action Credit and a Climate Action Dividend. While the

Dividend payment was met with public skepticism, the fact that it was issued may have lessened public concern about distributional impacts, as noted by Jacobsen et al. (2003).

While within academic circles the carbon tax design generally received accolades, the British Columbian process illustrated that parallel effort needed to be expended on developing communication strategies for the public, thereby supporting the observations of Lorenzi et al. (2007) and Clinch et al. (2006). The government's lack of a communication strategy between announcing and implementing the carbon tax created a political opportunity for the opposition New Democratic Party. Similarly the carbon tax launch, which coincided with high market fuel prices, may have been eased with a communication strategy comparing the portion of the price increase attributable to the new tax versus market fluctuations. Even where communication efforts were made, as was the case with the revenue neutrality of the tax, confusion existed. It is important that communication staff prepare for potential scenarios, such as high gas prices and opposition campaigns; this need increases as the tax moves from a marginal to a systemic level.

The British Columbian government introduced the carbon tax at a low level of 2.4 cents per liter to increase public acceptability. As a result, the tax is perceived to have little impact on individual behavior change, including the personal transport sector, as the tax imposes a low cost relative to other transport costs, supporting the findings of Bohlin (1998). However, the tax may influence decisions at the institutional and industrial levels where scale is a factor. British Columbia's experience with regard to taxation levels may offer more applied insights in 2012, when the carbon tax is scheduled to reach its highest price.

The use of ANT's grounded and incremental approach yielded additional contextual lessons, less commonly reflected in the carbon taxation and environmental pricing literature, though perhaps more common in congestion pricing literature. These lessons can be categorized as education, leadership, centralization, timing, and environment. The release of *Tax Shift* and other similar documents in the late-1990s served to expose politicians, civil servants, non-governmental organizations, academics and to some degree the public, to the concepts of tax shifting and carbon pricing. While British Columbia was unsuccessful in implementing tax shifting at the time of the release of these documents, understanding of tax shifting and carbon pricing gradually permeated political parties, government departments and other organizations, rendering the concepts more familiar and acceptable (Talvitie, 2009). Of all the policy lessons, this is one that would likely have been overlooked had ANT, with its focus on piecing together process traces, not been employed.

The carbon tax policy development process moved quickly due to leadership and centralization. When convinced of the value of acting on climate change, Premier Campbell laid out ambitious initiatives in the 2007 *Throne Speech* and set up the structures, such as the Cabinet Committee, needed to advance climate initiatives. The centralization of British Columbia's carbon taxation process raised questions about the nature of Canadian democracy, which was recognized as allowing the process to move ahead quickly while sacrificing public consultation. The process of policy development practiced in British Columbia, while a useful model for other Canadian provinces, may differ from processes in jurisdictions where public consultation requirements are more stringent.

Despite the low tax level, the fact that the scheduled carbon tax launch date coincided with spiking gas prices was identified by research participants as posing a significant challenge. Public anger created political tension; however, a possible benefit of the timing may have been that when gas prices returned to normal levels, the public may have found the low tax relatively palatable. British Columbia's experience makes apparent the difficulty of timing a carbon tax launch, given the variability of fuel prices.

A last lesson offered by British Columbia is that the apparent impacts of climate change in the province played an important role in creating conditions conducive to implementing a carbon tax. The pine beetle epidemic and its economic impact on the forestry sector were influential in illustrating the implications of climate change impacts. It is possible that in the absence of such a local impact, political motivation for taking action on climate change may have been lacking.

6. Conclusions

ANT proved valuable in documenting British Columbia's carbon tax policy development process, which, though it resulted in policy documents, lacked a centralized documentation of the process itself. Through the use of ANT, six phases of the policy development process emerged, each with a dynamic and heterogeneous set of actants. This process served to highlight the relative influence of various actants, with the Premier exerting more power, and the public less than expected, while also allowing room for ecological forces, such as the pine beetle epidemic. In addition to five common themes in the carbon taxation and environmental pricing literature: revenue allocation, administration, distributional impacts, public trust and effectiveness, the use of ANT, with its grounded and incremental approach, elicited additional themes related to the larger context in which the policy development process took place in British Columbia: education, leadership, centralization, timing, and environment.

While British Columbia's tax shifting represents a systemic policy change, the carbon taxation level itself is a marginal policy measure, as the taxation level is perceived as likely too low to instigate behavior change in the personal transport sector. As the taxation level increases annually, the policy will become more systemic. It will be valuable to observe whether the policy logic that characterized the development of British Columbia's carbon tax, including a broad-base, revenue neutrality, scheduled price escalations, and a back stop measure to a suite of climate change initiatives, is maintained or modified. A true test of the public and political acceptability of this Pigouvian policy, as well of its efficacy in initiating behavior change and reducing emissions, may occur in July 2012 when the carbon tax reaches its highest scheduled level.

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