



## A rural myth? Sources and implications of the perceived unfairness of carbon taxes in rural communities



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### ABSTRACT

Since British Columbia's carbon tax was implemented in 2008, local interest groups and municipal politicians have claimed that the tax places an unfair burden on rural communities. We investigate the sources of this perception of unfairness and its implications for policymaking. We examine the distributive effects of British Columbia's carbon tax using a computable general equilibrium model of the Canadian economy. We find that the rural population would indeed have experienced a disproportionate burden had the carbon tax been introduced without redistributive measures, but that the revenue recycling program introduced in parallel with the tax was sufficient to balance the inequity. Hence, the Northern and Rural Homeowner Benefit Program, a transfer program introduced later in response to public protests, was unnecessary. Additionally, analysis of polling data shows that the new program failed to increase support for the carbon tax in rural communities, despite making these households better off on average than households in large urban centers. We therefore conclude that this ongoing opposition is based on a rural myth. Policymakers should carefully investigate distributive impacts of carbon policies and address evidential inequities. Yet, before overcompensating groups that still feel disadvantaged, policymakers should address the myth of unfairness at its source.

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### 1. Introduction

It is a common perception that carbon or fuel taxes hit rural households harder compared to households living in urban communities, mainly due to the greater dependence of rural households on car travel and their increased fuel needs to heat their typically larger and more remotely located homes. As a result, support for such policies in rural communities is often lower than in urban areas. Yet empirical evidence of the distributional effects of fuel taxation on rural versus urban households is scarce and in the absence of supporting evidence it is not clear whether the perceived injustice is merely a 'rural myth'. Several questions arise: Do rural communities indeed carry a disproportionately larger share of the costs resulting from a carbon tax? If yes, what can government do to offset the burden on households in rural communities? If not, why do rural people perceive a disadvantage and should policymakers respond to these perceptions?

We investigate these questions using the carbon tax policy in British Columbia as a case study. In 2008, British Columbia became the first jurisdiction in North America to introduce a carbon tax to meet its

emission reduction target. The tax is now \$30/t CO<sub>2</sub>,<sup>1</sup> and applies to almost all fossil fuel combustion in the province. The tax is designed to be revenue neutral by law, which means that the government must fully recycle carbon tax revenues to households and businesses through other tax cuts and targeted benefit payments. The policy has received overall positive responses yet there has also been a popular belief that the policy's costs are allocated unevenly across the province (Lee and Sanger, 2008). In particular, rural households in the Northern part of the province have claimed that they have been disproportionately burdened by the carbon tax. These communities suggested that their consumption of heating fuels and gasoline was inherently higher and more difficult to be substituted than that of households in the urban centers of the province's South. Protests effected the announcement of the Northern and Rural Homeowner Benefit Program in the 2009 Budget as a mechanism for carbon tax revenue recycling. The program has been available to eligible households since the 2011 tax year, apportioning 6–7% of the total carbon tax revenue.

The introduction of the homeowner benefit program can be seen as part of a general trend, whereby an increasing amount of British Columbia's carbon tax revenue is directed away from broad cuts of distorting labor and capital taxes towards more specific lump sum

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<sup>1</sup> All values in the text are in Canadian dollars.

payments and tax incentives to specific interest groups.<sup>2</sup> This trend raises concerns about the policy's cost effectiveness, and in particular its capacity for triggering double dividend effects. Initially, British Columbia's carbon tax has been considered a textbook model for efficient carbon legislation including uniform prices across fuels and emitters, full revenue recycling mainly through broad cuts of other distortionary taxes and only very few exemptions. There is a risk that going forward, political conflicts and the exemptions and concessions granted to appease these conflicts may gradually compromise the policy's effectiveness and efficiency as vocal lobby groups achieve exemptions and benefits under the carbon tax revenue recycling program (Harrison, 2013).

We use a static computable general equilibrium model (CGE) of the Canadian economy to investigate the welfare implications of the British Columbia carbon tax and revenue recycling measures on rural as compared to urban households in 2012. To do so we disaggregate British Columbia households by location; we distinguish rural, small urban and urban households. We also decompose welfare impacts to identify some mechanisms behind the different experiences of households in different locations. Specifically, we investigate the impact of the groups' varying transportation patterns on tax incidence and thus respond to a central argument put forward by opponents to the tax.

We find the following. First, had the British Columbia carbon tax been introduced without any revenue recycling measures in place (i.e., if revenue had been retained by government), rural households in British Columbia would indeed have experienced the largest welfare loss due to the carbon tax. However, in contrast to the common belief, we find no evidence that the limited availability of public transport in remote areas has any significant impact on tax incidence. We do find, however, that the expenditure share of transportation fuels for rural households is larger than that for urban households, and this is an important driver of the incidence of the policy. Second, our results indicate that the revenue recycling program introduced in parallel with the tax in 2008 (not including a transfer program specifically targeted at rural households) was sufficient to generate a welfare gain for all household groups.<sup>3</sup> While rural households still benefit the least from the policy, compared to households in urban and small urban areas, the differences are trivial in size. It follows that, according to our analysis, there was no need for the introduction of the homeowner benefit program following the implementation of the tax. Third, we find that the introduction of the program significantly overcompensated rural households, such that these households are net beneficiaries from the carbon tax and associated revenue recycling mechanisms, relative to urban households. Finally, we also make use of polling data to document that rural opposition to the carbon tax was maintained (and actually significantly increased) following the introduction of the benefits, which seems to indicate that the program failed to address the concerns.

We conclude that the evidence base of perceived unfairness of carbon taxes to rural communities should be analyzed carefully before policy actions are taken. If such analysis does not support these perceptions, governments can focus on uncovering and effectively addressing the underlying sources of this 'rural myth' instead of using carbon tax revenues to "buy" support from rural constituencies, which may put at risk the economic efficiency of the policy, and which does not seem effective at garnering support from the targeted groups anyway.

The organization of the remainder of this paper is as follows. Section 2 describes key design features of the British Columbia carbon

tax regime. Section 3 discusses existing research on the social acceptability of a carbon tax and the urban–rural divide in perception of the fairness of such a policy. Section 4 presents the CGE model and data that we use for the analysis of distributional impacts. Section 5 outlines the simulation experiments, and reports the results. Section 6 explores how support for the carbon tax differs in urban and rural communities. Section 7 concludes and suggests policy implications.

## 2. Overview of the British Columbia carbon tax

British Columbia aims to reduce GHG emissions by 33% below 2007 levels by 2020<sup>4</sup> and the carbon tax was introduced as the central measure for achieving this goal. An estimated 77% of British Columbia's total GHG emissions are covered by the tax, including all emissions from burning fossil fuels, tires and peat, and other materials to generate energy or heat.<sup>5</sup> In the first five years of its existence the tax rate increased annually in \$5/tCO<sub>2</sub>e steps, from its starting level at \$10/tCO<sub>2</sub>e in 2008 to its current level at \$30/tCO<sub>2</sub>e. No further increases are planned. The tax applies to all fuels used or purchased in British Columbia, and is calculated based on their carbon content. Greenhouse gases other than carbon dioxide are included and weighted according to 100-year global warming potentials. The initial idea was to treat all sectors and activities the same, but the provincial budgets from 2012 and 2013 introduced partial exemptions for the greenhouse sector and the rest of the agriculture sector (Rivers and Schaufele, 2014).

A key design feature of the British Columbia carbon tax policy is revenue neutrality, i.e. the full recycling of all carbon tax income to British Columbia residents by means of other tax reductions and lump-sum payments (British Columbia, 2012). Each year, British Columbia's Minister of Finance develops a 3-year plan for how to redistribute the anticipated gross carbon tax revenues. This plan is brought to the Legislative Assembly together with the provincial budget. The forecasts are revised as new information becomes available. To date, the British Columbia government has not only ensured revenue neutrality but implemented rebates and tax cuts slightly larger than the neutrally carbon tax revenues. Each year from 2008 to 2012, the granted tax cuts and transfer payments exceeded carbon tax payments by roughly 10%. As shown in Table 3 total carbon revenue in fiscal year 2011/12 (the analysis year for this paper) equalled \$959 M but recycling measures amounted to \$1141 M (British Columbia Ministry of Finance, 2013).

In fiscal year 2011/2012, nearly 60% of revenue measures targeted businesses and 40% went to households. Carbon tax revenue in British Columbia has been recycled back to businesses through two channels: (a) personal tax reductions and transfers to households and (b) business tax rate reductions and corporate tax credits.

Revenue recycling measures to households comprise of personal income tax rate reductions and lump-sum transfers, both primarily targeted at low income households. In 2008/09 the government cut the income tax rates for the two bottom brackets by 5% (i.e. for annual taxable income up to \$70,000) using carbon tax revenues. In fiscal year 2011/12, \$220 M or 47% of the total personal tax measures were used to fund this personal income tax cut. In terms of direct transfers, the largest program is the British Columbia Low Income Climate Action Tax Credit that was introduced with the carbon tax in 2008. In 2011/12 the program received \$184 M in support which corresponds to 39% of total revenues redistributed to households.<sup>6</sup> The third largest recycling measure to support households is the Northern and Rural Homeowner Benefit program, which was introduced in the 2009 budget (for the

<sup>2</sup> For example, the 2012 budget granted exemptions to the agriculture sector as a whole, as well as to particular agricultural subsectors, based on concerns about international competitiveness (Rivers and Schaufele, 2014). The 2013 budget also introduced a number of new benefit programs that target quite specific causes and population groups including seniors, film production, and fitness and art programs for children. The 2014 budget introduced further programs including subsidies for innovation in the cement sector to offset carbon tax payments.

<sup>3</sup> As explained later in this paper, the welfare gain is generated because of the increase in provincial government deficit. We provide deficit-neutral results later in the paper.

<sup>4</sup> Interim mitigation targets have been set at 6% in 2012 and 18% in 2016.

<sup>5</sup> The remaining emissions are mainly related to agriculture, land-use change, and industrial processes.

<sup>6</sup> Eligibility for the Climate Action Tax Credit depends on net household income and household size. The maximum receivable amount equals \$115.50 per adult and \$34.50 per child. In 2011, the net income threshold for singles households was at \$31,711 and at \$36,997 for married couples or single parents. Households with net income exceeding these thresholds may still be able to claim a reduced credit.

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