Exploring the Implementation Gap

A combined analysis of emissions reductions potential, cost-effectiveness, and public support for climate policy instruments in Canada

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Background & Motivation

Policymakers are faced with a three-way tension in climate policy design:

> ➢ **Environmentally effective** measures may impose high economic costs or face strong public opposition
> ➢ **Cost-effective** measures often face resistance due to their visibility and direct costs to energy consumers, and thus may not achieve emissions reductions
> ➢ **Politically feasible** measures may be insufficient to meet emissions targets or impose high economic costs

Public opinion research shows mixed evidence regarding support for different types of policy instruments [1-2], while techno-economic modelling studies provide guidance on which policies must be implemented to achieve emissions targets but tend to overlook social, political, and economic constraints [3-4].

Research Question: How can policymakers design climate policy packages that optimize across three interrelated objectives—emissions reductions, cost-effectiveness, and political feasibility—to achieve emissions targets while maintaining public support and minimizing economic costs?

Methods

This Canadian case study addresses this question by forecasting **emissions reductions** and **techno-economic outcomes** across 10 policy instruments, then comparing those with **policy support levels**.
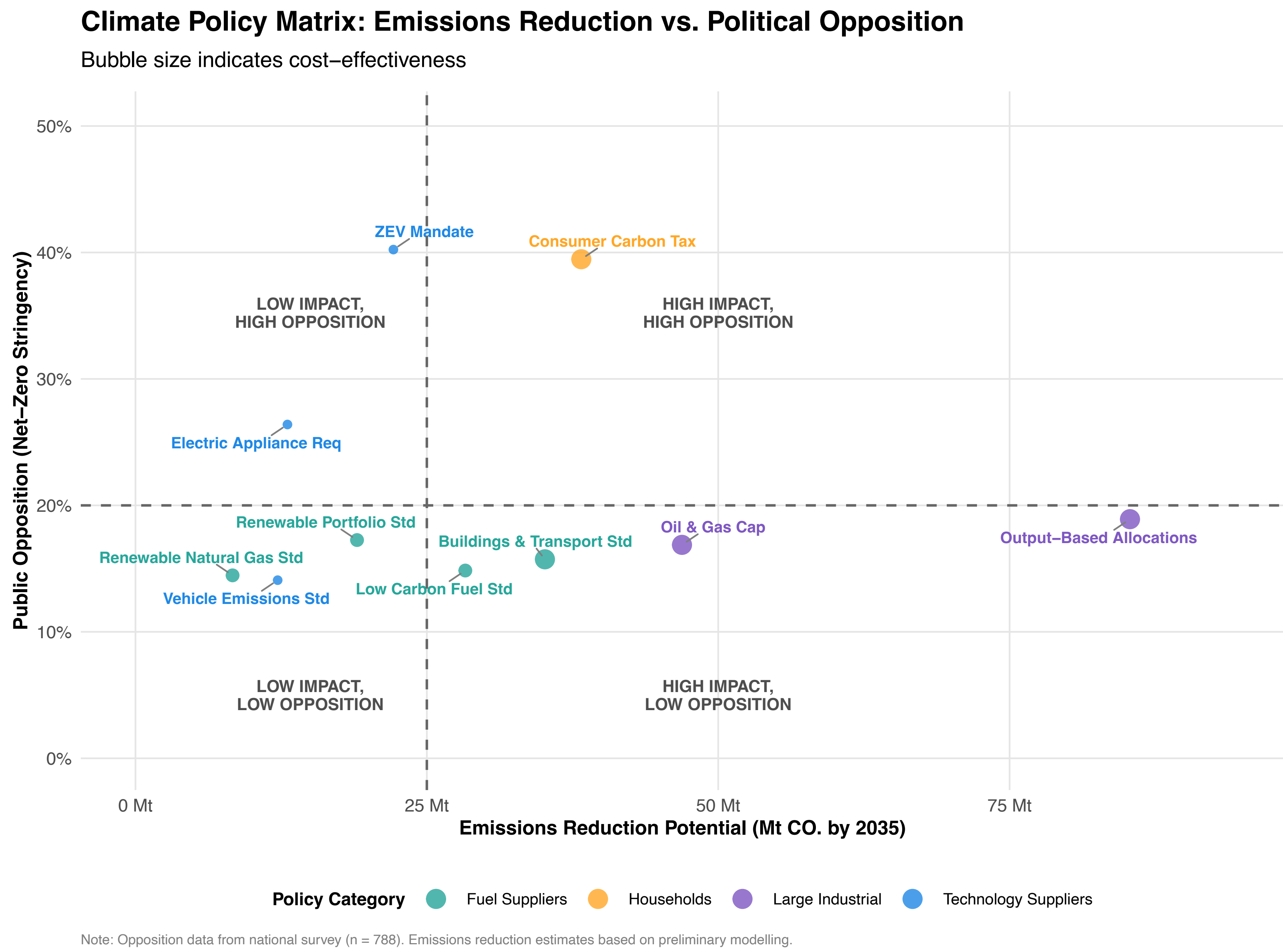
Energy-Economy Modelling:

> ➢ CIMS partial-equilibrium model of the Canadian energy system
> ➢ Technology adoption algorithm incorporates both financial costs and revealed consumer/business preferences in decision-making
> ➢ Forecasted impact of 10 climate policy instruments at 4 different stringency levels
> ➢ Implemented emissions constraint to represent cost-effective techno-economic pathway

Public Support Assessment:

> ➢ Conducted nationally representative web-based survey (n=788) in August 2024
> ➢ Measured public support for the same 10 policy instruments at different stringencies
> ➢ Cluster analysis to identify distinct audience segments based on policy preferences
> ➢ Demographic and psychological profiling of clusters

Results

Climate Policy Matrix: Emissions Reduction vs. Political Opposition
Bubble size indicates cost–effectiveness

Note: Opposition data from national survey (n = 788). Emissions reduction estimates based on preliminary modelling.
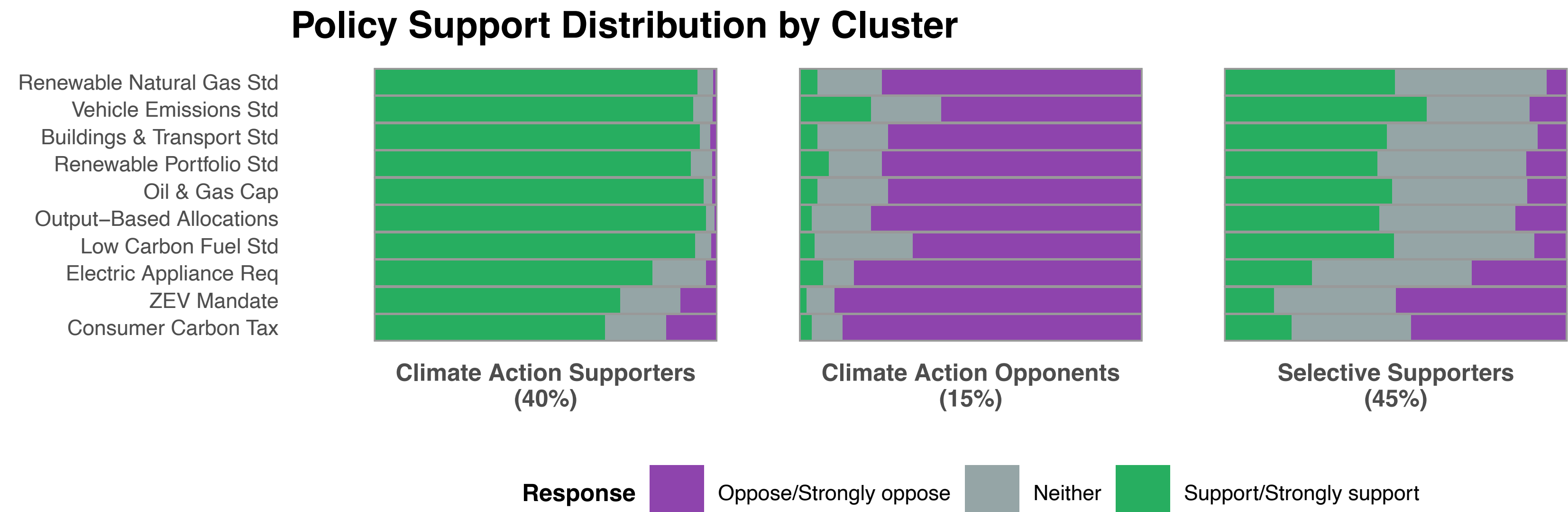

Policy Support Distribution by Cluster

Emissions reduction insights: Measures targeting large industrial emitters deliver the largest emissions reductions, with Output-Based Allocations and an Oil & Gas Cap leading at over 85Mt and 47Mt CO_2 respectively by 2035. Consumer-facing policies such as a ZEV Mandate achieve meaningful reductions, while smaller-scale policies such as a Renewable Natural Gas Standard deliver limited emissions reductions.

Cost-effectiveness patterns: Consumer carbon pricing, by design, achieves the lowest cost per tonne of emissions reduced in our simulations, while technology-specific mandates such as the Electric Appliance Requirements show higher costs due to their prescriptive nature. Supply-side policies including a Buildings & Transport Standard (modeled on the EU's ETS2) demonstrate strong cost-effectiveness by targeting large industrial facilities or fuel suppliers with market-based (flexible) mechanisms.

Public support dynamics: Policies that target salient household technologies encounter high levels of opposition despite their emissions reduction potential. In contrast, supply-side policies targeting industry face consistently low opposition (15-18%).

Key Findings

1. Results support prioritizing **market-based policies that target large industrial emitters**. These policies combine high emissions reduction potential and cost-effectiveness with strong public support (even at net-zero stringency levels).

2. Policies that control sales of household technologies face opposition. However, market-based mechanisms **targeting suppliers of fuels used in buildings and transport** see much less opposition, despite similar techno-economic outcomes.

3. Cluster analysis suggests that policy design and communications should **focus on persuadable "Selective Supporters"**. Compared to the entrenched supporters and opponents, these respondents are politically moderate and show greater uncertainty in their policy preferences.

References
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