The Green New Deal and The Future of Carbon Pricing

Carolyn Fischer and Grant D. Jacobsen*

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Abstract

In this article, we discuss the future of U.S. climate policy within the context of the Green New Deal (GND). The GND has many features and this article is not meant to provide a comprehensive evaluation of all components of it. Rather, we focus on carbon pricing and whether it, rather than mandates and standards, should feature more centrally in the future of U.S. climate policy. We orient our discussion around issues related to theoretical aspects of different climate policy instruments and empirical evidence on their performance. We consider the efficiency and effectiveness of different approaches, their distributional aspects and how these relate to the increasingly important environmental justice priorities, and their political feasibility.

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*Fischer is at the the University of Ottawa and the Vrije Universiteit Amsterdam. Jacobsen is at the University of Oregon.

1 Introduction

Climate change and the set of policies that are motivated by it have become one of the most salient issues in American society and politics. Survey evidence from 2020 indicates that 60% of Americans feel that climate change is a major threat to the United States and 52% believe that addressing climate change should be a top policy priority (Kennedy, 2020). Growing concern related to climate change, combined with the election of President Joe Biden and Democratic control of both chambers of Congress, suggest that the coming years may be a pivotal era for climate policy in the United States.

The elevated importance of climate change has coincided with new discussions about the way in which climate policy should be structured. For many years, policy debates focused directly on climate change have, in large part, involved enacting a price on carbon, which could be implemented either through a carbon tax or cap-and-trade system. Within the U.S., interest in a carbon price perhaps peaked in 2009 with the American Clean Energy and Security (ACES) Act of 2009 (i.e. "Waxman-Markey" bill), which included the creation of an emissions trading scheme. The bill passed the House but was never brought to a vote in the Senate.

Most recently, the policy focus has shifted toward the "Green New Deal." The Green New Deal (GND), as embodied through a nonbinding House resolution (H.Res.109; 116th Congress) sponsored by Rep. Alexandria Ocasio-Cortez, is an aspirational plan calling for aggressive change throughout the economy related to mitigating climate change and addressing other societal problems, most notably economic inequality and systemic injustice. Carbon pricing is not mentioned in the resolution, which instead focuses on setting am-

bitious goals. Among other items, the resolution calls for 1) "meeting 100 percent of the power demand in the United States through clean, renewable, and zero-emission energy sources"; 2) "upgrading all existing buildings in the United States and building new buildings to achieve maximum energy efficiency, water efficiency, safety, affordability, comfort, and durability, including through electrification"; 3) "removing pollution and greenhouse gas emissions from manufacturing and industry as much as is technologically feasible"; and 4) "overhauling transportation systems in the United States to remove pollution and greenhouse gas emissions from the transportation sector as much as is technologically feasible." The focus of these goals on zero or technology-based thresholds, as well as the absence of carbon pricing within the resolution, indicates that carbon mitigation policies under a GND-approach would likely take place through regulatory mandates, such as standards for power production, energy efficiency, and transportation.

The relevance of the GND to recent discussions related to climate change is hard to overstate. It certainly has become more prominent than a carbon tax or cap-and-trade and more readily embraced by politicians. For example, Senator Bernie Sanders, who featured a carbon tax in his 2016 presidential campaign, eschewed a carbon price for a climate policy centered around the GND during his 2020 campaign. President Biden's administration has also embraced at least a modified version of the GND approach to climate policy and one of the leading candidates to head the EPA under the Biden Administration, Mary Nichols, was reportedly removed from consideration in part due to her previous support for carbon pricing in California (Davenport, 2020). These political trends are also reflected in the interest of the public. For example, Google Trends data, which capture Google search volumes for different topics reveal that carbon pricing experienced a surge in interest around the time

of the Waxman-Markey bill, but it has subsequently declined; meanwhile, interest in the GND surged in 2019 and remained elevated relative to carbon pricing in 2020 (Figure 1).

A natural question now, given the trends outlined above, is whether the GND is a wise approach to climate policy. In this article, we discuss the future of U.S. climate policy within the context of the GND. The GND has many features and this article is not meant to provide a comprehensive evaluation of all components of it. Rather, we focus on carbon pricing and whether it, rather than mandates and standards, should feature more centrally in the future of U.S. climate policy. We orient our discussion around issues related to theoretical aspects of different climate policy instruments and empirical evidence on their performance. We consider the efficiency and effectiveness of different approaches, their distributional aspects and how these relate to the increasingly important environmental justice priorities, and their political feasibility.

To preview our overall conclusions, we believe carbon pricing should play a role in the future of climate policy. When designed properly, carbon pricing has clear advantages over regulatory standards. While the historical performance of carbon pricing to date has been modest (as has the performance of regulatory standards), that is because most pricing schemes have been designed inadequately (e.g., with prices that are much too low). With respect to equity and environmental justice, existing evidence suggests that an appropriately designed carbon price would lead to better distributional outcomes than regulatory standards. Finally, we fail to find evidence that ambitious regulatory standards would be more politically acceptable than an ambitious carbon price.

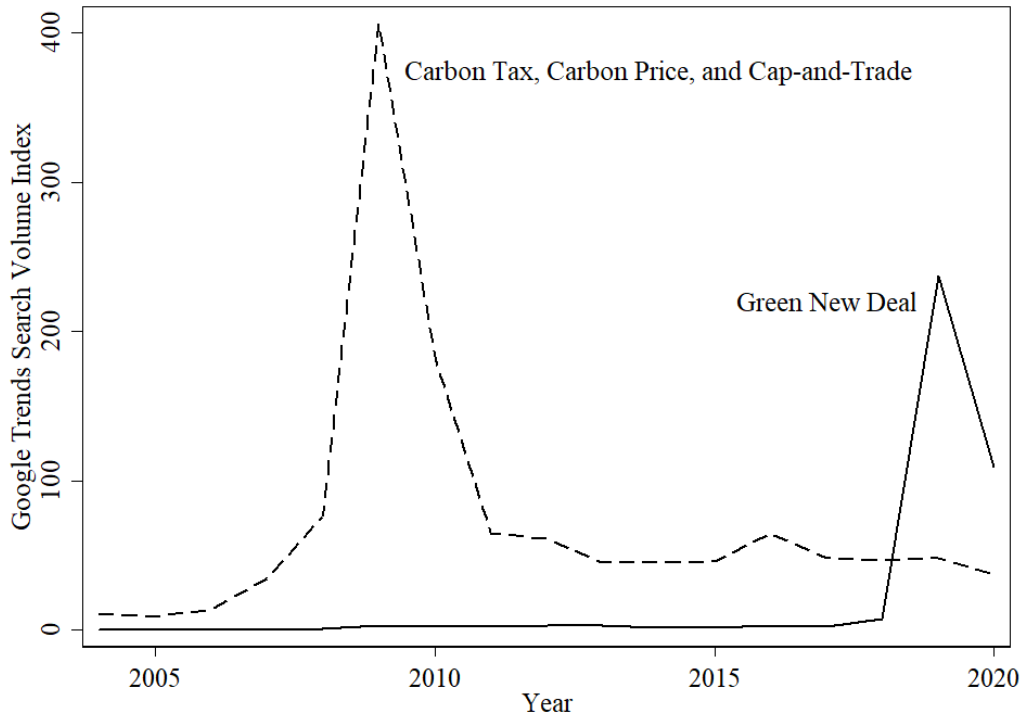

Figure 1: **Annual Google Trends Search Volumes for Carbon Pricing and Green New Deal.** The carbon price line combines search volume for the phrases "carbon tax", "carbon price", and "cap and trade". The data are indexed such that 100 points on the vertical axis represents the highest search volume during any one month for "Green New Deal.".

2 The Economic Case for Carbon Pricing

The economic case for carbon pricing is well-known among economists and policy wonks, although possibly less appreciated among the public. The High-Level Commission on Carbon Pricing led by Nobel prize-winning economist Joseph Stiglitz and Lord Nicholas Stern stated prominently, "A well-designed carbon price is an indispensable part of a strategy for reducing emissions in an efficient way" (Carbon Pricing Leadership Coalition, 2017, p.3). The reason is that carbon pricing activates incentives throughout the economy, all along the value chain, for taking the costs of emissions into account when making decisions, large

and small, about energy use, production processes, technology investments, and consumption habits. No other instrument can do that, and no regulator can fathom standards for all the opportunities to reduce emissions and the ingenuity to develop new products and technologies.

A key advantage of carbon pricing is that it treats all emissions equally—no business or household is required to take on higher costs of reducing its last ton of CO2 than another. Every actor is incentivized to reduce their emissions further as long as that is cheaper than paying the price, and this marginal cost equalization is a key component of cost-effectiveness that inflexible standards by definition lack. Furthermore, carbon pricing ensures that polluters pay for their emissions. By contrast, reliance on subsidies to low-carbon technologies imposes the burden on taxpayers and leverages only a narrow set of options to crowd out dirty sources.

Proponents of technology-based mandates often argue that guaranteed markets for these technologies are needed to drive scale economies and innovation. Of course, most demand-pull policies will drive innovation in improving and lowering the costs of those technologies that are demanded. However, carbon pricing can play an important role in creating expectations that there will be markets for new low-carbon products and technologies that standards and mandates, having to be more explicit about eligibility, have a hard time conceiving.

An ideal policy mix would supplement carbon pricing with policies that correct for market barriers and missing incentives for innovation and adoption of clean technologies, including support for R&D and de-risking investments. Done well, such complementary policies can certainly improve the cost-effectiveness of carbon pricing. However, done poorly,

heavy-handed policies and excess reliance on specific technologies can double or triple the costs of achieving the desired emissions reductions, even taking all these additional market imperfections into account (Fischer, Preonas, and Newell 2017). The reason is that the more specific the mandate or targeted subsidy, the fewer opportunities for emissions reductions that can be being taken. For example, relying predominately on building out renewable energy neglects the considerable emissions reductions that can be achieved in the meantime by switching to lower-emitting fuels and energy conservation.

3 Empirical Evidence on Climate Policy and Carbon Mitigation

Carbon prices have been implemented, scheduled for implementation, or are under consideration in at least 61 jurisdictions (see Figure 2), providing an opportunity to empirically evaluate how effective they are in practice. Best et al. (2020) evaluate national data on carbon emissions and carbon pricing and find that the average annual growth rate of carbon emissions from fuel combustion has been about two percentage points lower in countries with carbon prices. In a meta-analysis, Green (2021) presents related evidence that carbon pricing is associated with a zero to two percent reduction in emissions per year. These reductions are modest considering the emissions reductions targets that have been set under international agreements. Models indicate that CO2 emissions must decline by about 45% from 2010 levels by 2030 to avoid global temperature change of greater than 1.5 degrees C (IPCC, 2018).

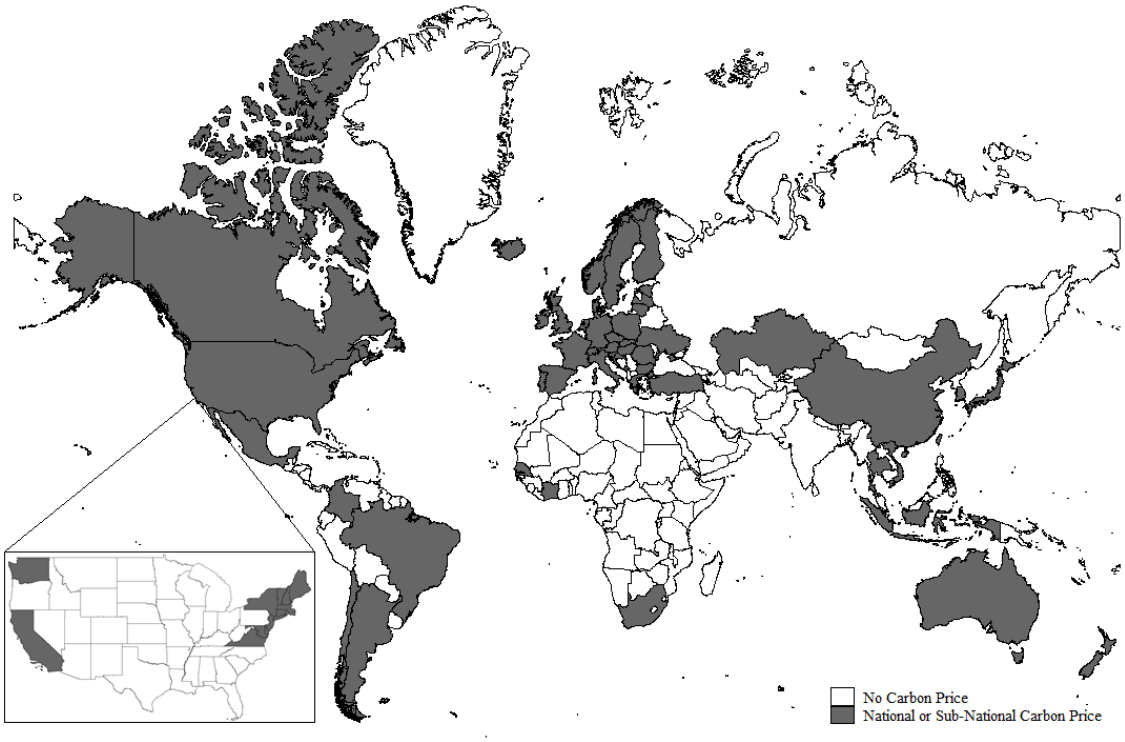

Figure 2: **Countries Where Carbon Pricing Initiatives Have Been Implemented, Scheduled, or are Under Consideration at the National Level or in a Sub-National Jurisdiction.** Figure 2: Data Source: WBG (2020).

Ex post analyses using micro data further confirm significant effects of carbon pricing on emissions reductions and investments, without significant changes to employment or profits (Venmans et al., 2020). Studies comparing firms regulated by the EU ETS to similar firms below the coverage threshold estimate that the carbon price caused covered firms to reduce their emissions by around 10%, despite an extended period of low prices (Martin, Muûls and Wagner, 2016). Studies of the carbon tax in British Columbia found that its modest price, which rose gradually to about USD $22.20 by 2012, reduced emissions by 5 to 15 percent with negligible effects on the overall provincial economy (Murray and Rivers, 2015).

In addition to reducing emissions, a key aspect of any climate policy is that it leads to innovation. As with mitigating emissions, carbon pricing has been shown to be an effec-

tive tool for spurring innovation, although that magnitude of the effect has been modest. Calel and Dechezleprêtre (2016) find that EU ETS caused covered firms to increase their research effort, with their patent applications for clean technologies rising by 9%. Weak carbon prices, that occurred with the collapse of allowance values for several years in the EU ETS, diminished clean patenting activity (Bel and Joseph, 2018). Studies of other carbon pricing systems confirm that carbon prices encourage innovation, although primarily incrementally rather than through disruptive innovation (Grubb et al., 2021).

While carbon pricing does not have a strong record of creating large emissions reductions or breakthrough technologies, the primary reason for this is not the use of pricing itself, but the fact that carbon pricing schemes have been limited in scope and used prices that were beneath what would be required to achieve more aggressive reductions. Carbon prices in the range of $40-$80 in 2020 are needed to reduce emissions in line with the goals of the Paris Agreement (Carbon Pricing Leadership Coalition, 2017). Until very recently, more than half of covered emissions have been under a carbon price of less than $10 and the global average carbon price is $2/tCO2 (Parry, 2019). However, today EU ETS allowances are trading at the equivalent of nearly $50 and Canada has announced a carbon tax hike to reach CAD 170 (US $135) by 2030.

Does carbon pricing's modest historical effectiveness mean carbon prices cannot be more effective going forward? We remain optimistic about the potential use of carbon pricing for several reasons. First, market-based policies have been shown to perform well when designed appropriately. Schmalensee and Stavins (2013) review the performance of the SO2 allowance trading program. During its first phase, before it was mostly rendered obsolete by changes in the broader regulatory environment, the program performed "exceptionally well

along all relevant dimensions" and led to sharp reductions in emissions and substantial cost savings relative to what would have been accrued under a command-and-control regulatory approach. Secondly, gas taxes—which have similar properties to a carbon tax—have been shown to be effective at reducing gasoline consumption (Li et al., 2014). While the elasticity is modest, recent evidence suggests short-term gasoline elasticity demand may be greater than has been appreciated (Levin et al. 2017) and longer-run responsiveness would likely be even greater due to more time for adjustments to the vehicle fleet (Donna, 2019).

Moving forward, regardless of the choice of carbon policy, the key consideration is that the policy is designed with the features (e.g., the right carbon price) that are required to meet its objectives. As with carbon pricing, standards-based climate policies have not performed well when designed inadequately. For example, state renewable portfolio standards (RPS) appear to have created, on average, small or insignificant increases in renewable generation (Upton and Snyder, 2017) and the effect has depended on the design features of the RPS (Carley et al, 2017).

4 Climate Policy and Equity

Much of our discussion thus far has focused on the effect of carbon pricing on overall emissions levels. A critical issue for any climate policy is how it would affect different segments of society. Distributional effects, which have been somewhat neglected in historical discussions of climate policy, have become increasingly prominent in recent years and relate closely to the growing focus within society, policy, and academia on environmental justice.

A first-order question for environmental policies, including climate change policies, is how they alter the burden of pollution on different groups of society. This is an emerging

empirical issue, but several recent studies provide new insights on how environmental policies alter the distribution of pollution. Hernandez-Cortes and Meng (2021) provide evidence that California's cap and trade system reversed previously widening "environmental justice gaps" in carbon co-pollutants, including particulate matter, NOx, and SOx. Similarly, Currie et al. (2019) provide evidence that the Clean Air Act was the single largest contributed to racial convergence in PM2.5 since 2000.

This new evidence suggests that most varieties of environmental policies are likely to reduce disparities in environmental exposure to pollutants. Would a carbon price or regulatory standards approach lead to a greater reduction? The evidence along these lines is inconclusive, but recent investigations suggest it may not matter. Shapiro and Walker (2021) study how offset markets affect the dispersion of pollution in the context of the Clean Air Act. They conclude that "this analysis of twelve prominent offset markets suggest that they do not substantially increase or decrease the equity of environmental outcomes."

The distributional effects of any climate policy will go beyond their effects on pollution exposure, as they will have effects throughout the economy (e.g., effects on prices, wages, taxes, government spending, etc.). Green and Knittel (2020) present evidence on the projected distributional effect of carbon pricing based on census tract data and twelve different policy scenarios. Carbon pricing performs well from a distributional aspect here, too, especially when paired with a dividend to households. They conclude, "we find regulatory standards tend to be regressive and, on average, are a net cost to low-income households—especially those in rural areas. Carbon pricing, when accompanied with a dividend, is progressive for urban, rural, and suburban households, with the average low-income household receiving a larger dividend check than they spend in carbon taxes."

5 Climate Policy and Political Viability

Another important consideration for climate policy is whether it can be enacted politically. Perhaps the Green New Deal should eschew carbon pricing because pricing would imperil its viability? Mildenberger and Stokes (2020) argue along these lines, calling carbon pricing a "political disaster" based on experiences in Oregon, Australia, France, and elsewhere. However, focusing on the failures ignores the many political successes in other jurisdictions, including California, British Columbia, United Kingdom, Europe, and elsewhere. Given the scarce progress that the Unites States—and the globe—has made on enacting policies that would seriously limit carbon emissions, it might be more accurate to argue that enacting any form of climate policy that meaningfully limits emissions has been politically challenging.

The question then, moving forward, as the public's opinion on climate change appears to be trending toward greater climate concern, is which style of climate policy is most likely to succeed politically. In favor of carbon pricing, many jurisdictions have successfully implemented carbon pricing, so it is certainly feasible in some settings. As of 2020, 31 ETSs and 30 carbon taxes are in place or scheduled for implementation, covering about 22 percent of global GHG emissions (World Bank Group, 2020). Indeed the closest trade partners for the U.S.—Canada, Mexico, Europe, and even China—all have and are expanding their use of carbon pricing. Additionally, the revenue collected through carbon pricing can be helpful in making a policy more politically palatable—for example, it could be used to compensate industry for stranded assets, pay for popular subsidies to green investments and innovation, or minimize the net costs to lower income households. Finally, at least in theory, one could argue that the elevated cost-effectiveness of carbon pricing would making an ambitious cli-

mate policy politically acceptable.

6 Conclusion

We do not argue that a carbon price alone can achieve all the goals of the Green New Deal. However, a well-designed carbon price can certainly help achieve those goals, by 1) providing a direct incentive to reduce CO2 emissions throughout the economy, 2) expanding demand for new clean technologies and innovations by ensuring they will be more competitive in the markets they serve, 3) raising revenues to pay for green investments and equity improvements the GND calls for, and 4) enabling greater ambition by lowering the overall cost of the clean energy transition. For these reasons, a Green New Deal would be a poorer deal without carbon pricing at its center.

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