

Carbon Pricing and Carbon Washington

Exploration of Carbon Pricing looking toward WA Initiative 732

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Yoram Bauman grew up in the Bay Area and attended college in Portland, Oregon studying mathematics. He continued his education obtaining a Ph.D. in economics at the University of Washington, where he later worked as a lecturer and conducted research. More recently, Bauman has found work as a stand-up comedian. According to his website, he is “the world’s first and only stand-up economist” performing at venues, from colleges to corporate events, and appearing in larger media. such as TIME magazine, PBS, and NPR. With all of his work, Bauman seeks to combine his passions in comedy, economics, and the environment. In 2008, Bauman helped to pass a revenue-neutral carbon tax in British Columbia. After seeing the success of this policy and the complacency of Washington State regarding carbon pricing, Bauman began work on drafting his own carbon tax for the state. He formed a small group of volunteers, which would then become Carbon Washington, and began work on turning his vision into reality. In November of 2016, the state of Washington will vote on Initiative 732. This initiative is the result of Bauman’s years of financial experience and environmental interests and could be the United State’s first carbon tax.

Why is it that, in 2016, Washington the first state to propose a carbon tax in? Other states, such as California, have recently implemented a cap-and-trade system for carbon pricing and suspect success under that system in greenhouse gas emission reduction. With so many new developments in the field of carbon pricing and so much more to come in the future, it will be important to understand both carbon tax and emissions trading schemes. In this paper, I will examine both mechanisms’ basic guidelines and the possible advantages and disadvantages of each. I will look to Sweden and New Zealand as examples of each of these programs in practice. Lastly, I will explore the lessons of each system and come to a conclusion of the feasibility and success of a carbon tax in Washington State.

## WHAT IS CARBON PRICING?

Carbon pricing is the idea that a cost should be applied to pollution in order to encourage a reduction in greenhouse gas emissions. These programs come in two general forms: carbon tax and emissions trading schemes (ETS). I will define and explore these fundamental structures below.

### *Carbon Tax*

Carbon taxes seek to reduce greenhouse gas emissions by putting a regulated price on emissions. This form does not control the exact amount of emissions that are released, but, by controlling the cost of those emissions, aims to influence polluters to reduce their emissions. Carbon taxes have been in existence since 1990, when the first tax was implemented in Finland, followed shortly after by the Netherlands, Sweden, Norway, and Denmark (Sumner, 2009). The goal of these taxes is two-fold, in that they encourage lower emissions while also generating tax revenue. Money from these systems can be used in many ways: some invest in climate mitigation policies, some return the money to citizens through tax cuts, and others place the money into a state's general operating budget.

### *Emissions Trading Schemes (ETS)*

Emissions trading schemes set a cap on the amount of greenhouse gas emissions that can be released in a state, country, or region. After the cap is decided, certain allowances are distributed to emit, and the market then sets the price for those allowances. As opposed to a carbon tax, ETS sets the aggregate emission level but leaves the price of emissions to be determined by the market. Globally, 35 countries and 20 subnational jurisdictions have implemented emissions trading schemes (World Bank, 2013). There are different features to pay attention to in the design of an ETS. Related to the way allowances

are distributed, systems range from free to auction models. The price of allowances can also be contained through price ceilings and the use of offsets, or on the other hand left to the uncertainty of the market. If auctions are used to sell allowances, the government can also generate revenue in this system.

## CASE STUDIES

### *Sweden's Carbon Tax*

In 1991, Sweden put one of the world's first carbon taxes into action. Three years earlier in 1988, Sweden had adopted its first climate policy objective, which aimed to stabilize carbon dioxide emissions at the current level (Ministry, 2005). Additions made to that program resulted in the country's pioneering carbon tax. The existing system of energy taxes was reduced by around 50 percent as the carbon tax was introduced. At its implementation, this tax was set at a rate of \$44.37 USD per metric ton of CO<sub>2</sub>. There were some differences on how this tax was applied to different areas. Industries, such as manufacturing and agriculture, paid a much lower rate. In 1993, these industries paid a rate of \$11.28 compared to \$45.15 elsewhere (Sumner, 2009). The tax has increased incrementally through the years. Today, the tax rate is set at \$150 per metric ton of CO<sub>2</sub>. From 2005 to 2007, the tax generated \$3.65 billion annually. Sweden uses the revenue from this tax for the general government budget.

As far as effectiveness, in December 2008, Sweden reported that nationwide emissions had dropped more than 40 percent from the mid-1970s. In its first years of tax between 1990 and 1995, CO<sub>2</sub> emissions fell by 15 percent (Sumner, 2009). In the past few decades, Sweden has seen considerable increases in the use of biomass for heating and

industry because with this tax biomass became a less expensive choice than oil or coal and therefore a competitive energy source. Additionally, the population of Sweden grew from 8.59 million to 8.98 million from 1990 to 2003. In that same period, the national GDP increased by an average of 1.9 percent annually. Even with industry and population growth, Sweden's emissions decreased, with their per capita emissions significantly lower than other developed countries (Ministry, 2005). With these results, Sweden has disproved one of the greatest worries of carbon pricing—that putting a price on emission will hurt industry and economy. It is important to note that these changes cannot all be attributed to the carbon tax, but the myriad of environmentally sound policies that Sweden has enacted over the last few decades.

#### *New Zealand's ETS*

The New Zealand Emissions Trading Scheme (NZ ETS) was adopted in 2008. This policy required all sectors of the economy to report their emissions and purchase emission units. Agriculture, however, was removed from the legislation in 2009, allowing this area to be exempt from purchasing emissions units, but still reporting emissions. Other sectors were phased in over a five-year period, from forestry, stationary energy, industrial processing, waste, and synthetic GHGs. In total, the ETS covers 52 percent of the emissions in New Zealand (ICAP, 2016). The emissions units are now allocated mostly through free allocation, but in 2012 an amendment was made to the legislation to introduce the auctioning of units, though no decision has been made of how to implement this. As of now, the NZ ETS has no fixed cap, but may in the future if auctioning is put into practice. This policy is still relatively new, and working through transitional phases. In June of 2015, the program was limited the trading of units to domestic units only to better control the price

of units (ICAP, 2016). The goals of the NZ ETS were twofold—they wanted to meet the commitments they had made under the Kyoto Protocol as well as reduce overall emissions to keep New Zealand on track to becoming a low emissions economy. So far, the country is on track to meet its goals for emissions reductions in 2020.

While the NZ ETS started out with the best intentions when adopted in 2008, amendments made in 2009 and 2012 gutted the program's effectiveness. The decision to exclude the agricultural sector does little to help reduce the state's emissions. The agricultural sector is responsible for approximately half of the country's greenhouse gas emissions (Leonard, 2015). This decision was made based on a worry that the NZ ETS would damage the nation's economic competitiveness internationally. Additionally, the emission units are freely allocated, further limiting the incentive to reduce emissions. Overall, this policy seems to be going through many growing pains in its early years due to inattentive planning and backtracking by amendments to the original legislation.

#### COMPARING CARBON TAX AND ETS

When looking emission reduction, each system has different advantages, and both could work correctly in the right circumstances. Carbon taxes can encourage continuous emission reduction because tax benefits will continue until an entity reaches zero. However, ETS will only motivate reduction to the point of the cap. On the other hand, emissions trading schemes do ensure reduction to the set cap, while in theory with a carbon tax it is not guaranteed that any reduction will occur. Carbon tax systems must assume businesses will find it beneficial to reduce their emissions, rather than just accept the additional cost of a tax. ETS assures some degree of reduction, but leaves little

motivation to further reduce emissions from the set cap. In administering these programs, carbon taxes are generally easier to administer. Because of the known price, these taxes are more straightforward and less prone to gaming. In cap-and-trade systems, costs can be extremely unpredictable due to supply, demand, and regulatory conditions (Betz, 2009). This volatility can be mitigated, however, through banking and borrowing of allowances, as well as cost containment mechanisms. Lastly, in economic terms, carbon taxes are expected to generate greater revenue than ETS. It is common practice for the implementation of ETS systems to freely allocate permits. This makes compliance much cheaper for industries, whereas with a carbon tax industries are immediately being charged for their emissions (Taschini, 2013). Emissions trading schemes can generate revenue when auctioning of units is utilized, but this usually tends to be a practice phased in over time as well as generally less lucrative than a set tax. Overall, both programs can work, but the uncertainty of ETS requires strict attention to policy, while carbon taxes are simpler to implement and see clear results in the short-term.

#### INITIATIVE MEASURE NO. 732

The carbon tax under discussion in Washington State is a revenue-neutral carbon tax. This initiative is broken down into four essential parts: 1) Reduce state sales tax by one percent, 2) Fund the Working Families Rebate, 3) Eliminate the B&O business tax for manufacturers, and 4) Institute a carbon tax of \$25 per metric ton CO<sub>2</sub> on fossil fuels consumed in the state of Washington. The main selling point of this policy is its claim to be revenue neutral. The first three parts of this tax all focus on how this system would return money to taxpayers to offset the cost of the carbon tax, thus creating a neutral effect on

individuals, businesses, and state government. This is similar to the policy of British Columbia that was passed in 2008 by a center, right-leaning government at the time. Since the implementation of this tax, carbon emissions have dropped by five to 15 percent by 2015 and the economy has not been negatively affected (Murray, 2015). These statistics are also similar to what was seen in the early years of Sweden's carbon tax as discussed before and show promise for benefits of a similar program in Washington.

Focusing on the carbon tax itself, the tax will be phased in over two years starting at a rate of \$15 per metric ton of CO<sub>2</sub>, growing to \$25. After this, the rate will increase to keep revenue up despite anticipated reductions in emission—Carbon Washington is expecting a two percent decrease in emissions yearly (Bauman, 2014). It will increase at a rate of 3.5 percent plus inflation to a maximum of \$100 in 2016 dollars. The Washington State Department of Ecology reported statewide emissions at 92.0 million metric tons of CO<sub>2</sub> in the year 2012. This tax is structured to cover about 90 percent of these emissions, prompting emissions to decline by two percent per year.

After looking at both systems and their application, I think it is the best choice for Washington State is to pursue a carbon tax rather than an emissions trading scheme. Within a small system, carbon tax can be efficiently and pointedly used to bring in new state revenues while encouraging emissions reduction. Emissions trading programs are risky due to price volatility and market uncertainty. As seen in New Zealand, when emissions units were traded internationally, the market was diluted, and prices of units dropped. If Washington joined other cap-and-trade systems in the region such as California, there is greater risk that prices of emissions allowances could vary and do less to encourage emission reduction. Additionally, we saw the gutting of the original NZ ETS by



following governments who were more focused on economic competitiveness. This is a definite possibility in the United States where it seems the main argument from carbon pricing opponents is focused on economic and industry worries. By implementing a revenue-neutral tax policy, Washington is more likely to see bipartisan support for this program, guaranteeing its full implementation. Sweden is an excellent example of how a carbon tax in Washington could later be integrated into to a larger region or nationwide ETS. Sweden had already established its carbon tax when the European Union introduced its ETS. Sweden was able to make some changes to existing policy and effectively utilize both forms of carbon pricing. This could be a reality for Washington as other states and the country begin to explore carbon pricing. Lastly, any carbon-pricing program must be accompanied by other policies to achieve substantial greenhouse gas emission reductions. While Sweden saw great success with their program, the carbon tax was just one of many policies focused on GHG emissions reduction. Sweden has utilized the EU ETS, invested in research and development, and developed strategies to address the waste sector (Ministry, 2005). The lesson here for us in Washington is that while this carbon tax will be a great start, there is much more to be done with policy to better our emission levels and our environment.

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