

## **SUSTAINABLE ECONOMY III: SUSTAINABLE LIVING**

### **4. CAP-AND-TRADE OR CARBON TAX?**

#### **Introduction**

Alternatives to carbon-based energy (coal, oil, natural gas) are not being developed at a rapid pace because doing so is apparently not cost-effective. Carbon-based energy is cheap compared to alternatives, such as wind and solar-based energy. If the cost of carbon-based energy were to rise, companies would spend more on energy production that does not increase the amount of carbon in the atmosphere. For this reason, many governments around the world are discussing, or have embarked on, ways to increase the cost of carbon-based energy. This would reduce incentives to use carbon-based energy and increase incentives to research, develop, and use non-carbon-based energy systems. Two proposals being discussed and implemented around the globe are a cap-and-trade system and a tax on carbon emissions.

#### **Cap-and-Trade**

Under a cap-and-trade system, a company is given a limit, or "cap," on its carbon emissions. If its emissions come under the cap, it can use the difference as a credit that can then be sold to another company. If a company goes over its cap, it must buy carbon credits to make up the difference. These carbon credits would be traded on an open market like a stock exchange. A cap-and-trade system would allow a government to reduce the overall level of carbon emissions over time while allowing companies some flexibility in deciding the timing of their reductions in carbon emissions.

#### **Carbon Tax**

A carbon tax would tax all CO<sub>2</sub> emissions, regardless of the source. The cost of carbon-based energy would rise as a result, and non-carbon-based energy would become more cost-effective. This would reduce the amount of carbon emissions overall as individuals and companies turn more often to these energy alternatives. The carbon tax has the advantages of being simple and easy to understand. Voters understand taxes. Plus, it would be easy to implement. The revenue raised through a carbon tax can be used to offset payroll or income taxes.

#### **Cap-and-Trade or Carbon Tax – Argument 1**

Cap-and-trade has critics on both the right and left of the political spectrum while also gaining some bi-partisan support. One of the criticisms is that it is too complicated. Since it is difficult for most of the general public to understand, how will voters know whether they support it? Voters may not understand, for instance, that a cap-and-trade system would increase the cost of many of the goods and services they use. Indeed, some support cap-and-trade exactly because it is misleading.

Advocates of cap-and-trade argue that it is preferable to a simple carbon tax because it fixes a national cap on carbon emissions and it 'hides the ball' (it doesn't use the word 'tax') even though it amounts to one. Also, since the current financial collapse, there is not much confidence in Wall Street type traders. So, there is some concern about setting up a market for carbon credits. An alternative that would be more simple and easier to understand is a tax on carbon emissions.

A cap-and-trade system differs from a tax in two basic ways. The essential distinction is that a tax fixes the *price* of pollution, while a cap controls the *quantity*. From the perspective of the planet, this makes all the difference. Based on what the science tells us, we have to reduce greenhouse gas emissions dramatically in the next several decades, perhaps by as much as 80-90% relative to current levels. The only way to guarantee those cuts is to put a cap on emissions.

A tax achieves emissions reductions only indirectly, through the price. The problem is that we don't really know the appropriate level of the tax that will induce the changes in energy demand and consumption that are needed to bring emissions down far enough and fast enough to avoid dangerous climate change. And we don't have the time (or the political attention span) to try out different taxes in a search for the "right" level. Moreover, as the economy grows, so will emissions, meaning that the tax would need to be raised over time to ensure that emissions continue to fall, as they must. Finally, political pressures will be omnipresent to set the tax low to begin with and to lower it thereafter. All of these factors suggest that we neither know what the right tax is, nor have the political will to set it at that level.

In contrast, a cap controls quantity directly. In British Columbia, the Legislature, not the market, would determine the allowable quantity of emissions, while the market, not the Legislature, would determine the price. In this way, science can determine the policy goal, while the market figures out the cheapest and fastest way to achieve it. That seems to be the right division of labor. Setting a cap on emissions is especially important given the growing body of scientific evidence suggesting that the impacts of climate change are likely to be abrupt and nonlinear, characterized by "tipping points" such as the melting of the Greenland or West Antarctic Ice Sheet, which would slowly but surely raise sea levels by several meters. A hard cap is the best way to ensure that we cut greenhouse gas emissions enough to avoid exceeding dangerous thresholds in the climate system.

A second (and less fundamental) difference between a tax and cap-and-trade concerns whether firms pay for every tonne of pollution they emit, or receive some tonnes for free. A carbon tax would likely be applied to all emissions. In contrast, under a cap-and-trade system, once the cap on allowable emissions is set, government could give away some portion of the allowances for free to regulated firms, without affecting the efficiency of the program in terms of achieving emissions reduction. This strikes some people as an unfair break for polluters. But it does offer an important *political* advantage: politicians can distribute allowances as they see fit, without affecting the basic performance of the program.

Now, it's worth pointing out that raising revenue *does* matter for efficiency in the economy at large. That's because government can use the revenue to cut income taxes, which represent a drag on the economy. Moreover, if those tax cuts are targeted wisely, they can also help ensure distributional equity, offsetting the impact of higher energy costs on low-income households.

But if raising revenue is our goal, a cap-and-trade system can be designed to do it just as well as a tax can. The BC Legislature could decide to auction off most or all of the allowances, rather

than giving them away for free. Whether we use a tax or cap-and-trade, we will have to negotiate how to divide up the "pie" created by placing a value on the right to pollute. Will we allocate those allowances to polluters or to consumers at large? The key point is that a cap-and-trade system doesn't require doing one thing or the other. Rather, it provides the political flexibility to make those divisions while still accomplishing the ultimate goal, which is reducing greenhouse gas emissions.

### **Cap-and-Trade or Carbon Tax – Argument 2**

The supporters of carbon taxes claim that such taxes are superior to carbon cap-and-trade systems for six fundamental reasons:

- (1) **Carbon taxes will lend predictability to energy prices.** With carbon taxes ramped up through a multi-year phase-in, future energy and power prices can be predicted with a reasonable degree of confidence well ahead of time. This will make it possible for literally millions of energy-critical decisions – from the design of new electricity generating plants to the purchase of the family car to the materials used in commercial airframes – to be made with full cognizance of carbon-appropriate price signals. In contrast, a cap-and-trade program will exacerbate the volatility of energy prices since the price of carbon allowances will fluctuate as weather and economic factors affect the demand for energy. The vaunted advantage of cap-and-trade – that future levels of carbon emissions can be known ahead of time – is mostly notional, particularly if the cap-and-trade system includes a “safety-valve” for auctioning off additional carbon allowances if the price of allowances exceeds a predetermined level. And even certainty in future emission levels is of questionable value, since there is no agreed-upon trajectory of emissions for achieving climate stability and preventing disaster. The real target for which Canada and British Columbia must aim is to reduce carbon emissions as much as possible, and then more.
- (2) **Carbon taxes will provide quicker results.** The taxes themselves can be designed and adopted quickly and fairly. Cap-and-trade systems, by contrast, are devilishly complex and will take years to develop and implement. Thorny issues must be addressed intellectually and resolved politically; the proper level of the cap, timing, allowance allocations, certification procedures, standards for use of offsets, penalties, regional conflicts, the inevitable requests for exceptions by affected parties and a myriad of other complex issues must all be resolved before cap-and-trade systems can be implemented. During this time, polluters will continue to emit carbon with no cost consequences.
- (3) **Carbon taxes are transparent and are easier to understand than cap-and-trade.** A carbon tax is transparent and easy to understand; the government simply imposes a tax per tonne of carbon emitted, which is easily translated into a tax per kWh of electricity, gallon of gasoline or therm of natural gas. By contrast, the prices for carbon set under a cap-and-trade system will vary with market fluctuations and be impossible even for big business (let alone small businesses or consumers) to predict. A cap-and-trade system will require a complex and difficult to understand market structure in order to balance the many competing interests and ensure that the trading system minimizes abuse and maximizes real carbon reductions.
- (4) **A Carbon tax’s simplicity protects it from the perverse incentives and potential for profiteering that will accompany cap-and-trade.** In contrast to the simple and straightforward process of implementing a carbon tax, the protracted negotiations necessary

to implement a cap-and-trade system will provide constant opportunities for the fossil fuel industry and other invested parties to shape a system that maximizes their financial self-interests as opposed to an economically efficient system that maximizes societal well-being. If allowances are allocated based on some type of baseline reflecting past pollution (which has been the practice with NO<sub>x</sub> and SO<sub>2</sub> trading programs), rather than being auctioned, polluters will have perverse incentives to maximize emissions before the cap-and-trade system goes into effect in order to “earn” those pollution rights.

- (5) **Carbon taxes address all sectors and activities producing carbon emissions.** Carbon taxes target carbon emissions in all sectors, energy, industry and transportation, whereas at least some cap-and-trade proposals may be limited in application.
- (6) **Carbon taxes can produce a far more equitable result than cap-and-trade.** Carbon tax revenues can be returned through dividends or can be used to fund progressive tax-shifting to reduce regressive payroll or sales taxes. The costs of cap-and-trade systems, both implementation and the costs incurred as more expensive technologies replace older and less expensive coal-fired combustion, for example, are far more likely to be imposed upon consumers with less possibility of rebating or tax-shifting. Moreover, because cap-and-trade relies on market participants to determine a fair price for carbon allowances on an ongoing basis, it could easily devolve into a self-perpetuating province of lawyers, economists, lobbyists and other market participants bent on maximizing their profits on each cap-and-trade transaction. The dollars that will be funneled into making the market work could be better spent reducing regressive taxes, protecting poorer households and/or helping consumers use less energy.

### **Cap-and-Trade – Argument 3**

For all its benefits, cap-and-trade still isn't the most effective or efficient approach for reducing carbon emissions. That distinction goes to ... a carbon tax. While cap-and-trade creates opportunities for cheating, leads to unpredictable fluctuations in energy prices and does nothing to offset high power costs for consumers, carbon taxes can be structured to sidestep all those problems while providing a more reliable market incentive to produce clean-energy technology.

One reason is the power of lobbyists. Special interests have a way of warping the political process so that, for example, a corporation generous with its campaign contributions might win an excessive number of credits. It's also very easy in many to cheat because there aren't strong agencies to monitor and verify emissions, and governments are loathe to step in and give such agencies enough teeth to be effective. Companies or utilities can pretend they're cleaner than they are. Many of the corporate interests pushing for a federal cap-and-trade program are hoping for a seat at the table when credits are passed out, and they will doubtless fudge numbers to maximize their credits; some companies stand to make a great deal of money under a trading system. Also hoping to profit, honestly or not, would be carbon traders. Large financial institutions would jump into the exchange to collect commissions on carbon trades, just as they do with crude oil and wheat. This presents opportunities for Enron-style market manipulation.

Cap-and-trade could also have a nasty effect on consumers' power bills. During periods of heat and extreme cold, more energy is required to run the air conditioners and heating systems, thus causing emission levels to rise sharply. To offset the carbon, energy companies would have to buy more credits, and the heavy demand would cause credit prices to skyrocket. The utilities would then pass those costs on to their customers, meaning that power bills might vary sharply

from one month to the next. This kind of price volatility, which has been endemic to both the North American and European cap-and-trade systems, doesn't just hurt consumers. It actually discourages innovation, because in times when power demand is low, power costs are low, and there is little incentive to come up with cleaner technologies. Entrepreneurs and venture capitalists prefer stable prices so they can calculate whether they can make enough money by building a solar-powered mousetrap to make up for the cost of producing it.

Carbon taxes avoid all that. A carbon tax simply imposes a tax for polluting based on the amount emitted, thus encouraging polluters to clean up and entrepreneurs to come up with alternatives. The tax is constant and predictable. It doesn't require the creation of a new energy trading market, and it can be collected by existing provincial and federal agencies. It's straightforward and much harder to manipulate by special interests than the politicized process of allocating carbon credits.

And it could be structured to be far less harmful to power consumers. While all the added costs under cap-and-trade go to companies, utilities and traders, the added costs under a carbon tax would go to the government, which could use the revenues to offset other taxes. So while consumers would pay more for energy, they might pay less income tax, or some other tax. That could greatly cushion the overall economic effect.

Carbon taxes are fairly laser-like in the way that they target carbon dioxide, which comprises 85 percent of North American greenhouse gas emissions. Carbon taxes are based on the carbon content of fossil fuel, and most fuel that's consumed emits CO<sub>2</sub> in direct proportion to its carbon content. Because of this correlation, taxing carbon can serve as an easy surrogate for taxing CO<sub>2</sub> emissions, avoiding the need for end-of-tailpipe or end-of-smokestack monitoring technology. Refunds or exemptions can provide relief in situations where the carbon is consumed without producing emissions (such as when natural gas is used as a feedstock in making petrochemicals) or when carbon dioxide is sequestered.

Cap-and-trade regimes, which distribute a limited number of emissions allowances, also target CO<sub>2</sub>, but carbon taxes are simpler. As with a gas tax, a carbon tax can be imposed early in the production or distribution cycle of fossil fuels. The Legislature just sets the tax, and the government collects it. With a cap-and-trade system, a new legal commodity is required – a fixed number of allowances to emit CO<sub>2</sub>. A system then needs to be designed for distributing those allowances among regulated entities, rules for transferring and tracking them in the marketplace when emitters buy or sell allowances, and procedures for ensuring that emissions match the allowances a regulated entity has in hand. Cap-and-trade systems may be "market-based," but they must first create a new product and market; carbon taxes add one new component to a traditional, well-established system.

The straightforwardness of carbon taxes makes them economically efficient. The cost of the carbon component of any fossil fuel is set by the tax rate, and is known and predictable, so users can plan accordingly. Tradable allowances have fluctuating prices. Cap-and-trade proposals can build in features which limit the price exposure and allow flexibility in annual compliance, but they add more layers of complexity.

## **Conclusion**

Why not just keep it simple and impose a tax? A classic and serious argument is that the "cap" will produce a known limit on the quantity of emissions, whereas the tax would allow emitters to

decide whether to emit more (or less) based on what is financially rational. But achieving a legitimate ceiling on emissions through a cap-and-trade regime will require accurate monitoring and verification support. Providing allowances for offset projects, which also must be verified, ups the ante even more.

In short, carbon taxes offer cost certainty and simplicity. In 10 years, we may have questions about whether the government is auditing enough carbon tax returns, but we won't be wondering about whether middlemen are making too much money from allowance trading, if investors are manipulating the carbon market, or what new laws we need to guard against those risks.

Nevertheless, it's not just about efficiency and simplicity; a broader, related principle underlies carbon taxes. We should be insisting that the price of carbon-based energy include the costs of the environmental damage it causes. Cost-internalization is a fundamental plank in the platform of market-based instruments, and it isn't limited to carbon taxes. Carbon taxes could lead to other ways to build environmental costs into prices. What about a climate change tax on other greenhouse gases such as hydrofluorocarbons, or taxes on nuclear power or hydropower that recognize their non-carbon-related environmental impacts?

Compiled and synthesized by

Daniel Lousier, PhD  
June 2, 2010