



Carbon Taxes vs. Carbon Markets: The Easy or the Right Way?

Why well-designed carbon markets are a superior environmental and economic policy for reducing carbon emissions.

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As Benjamin Franklin famously wrote, “in this world, nothing is certain except death and taxes.”ⁱ In the midst of the Earth’s climate crisis and the beginning of what scientists are calling the sixth mass extinction of biodiversity,ⁱⁱ failure to solve the problem of excess greenhouse gas emissions (“carbon emissions”) will certainly lead to more of the former. But does humanity’s attempt to reduce carbon emissions need to result in the latter?

Advocates of carbon taxes are right to point out that pricing carbon is an essential step in curtailing carbon emissions. Carbon emissions are a negative economic externality – that is, a third-party cost created by a transaction between two other parties. Carbon pollution contributes to climate change and has a real cost that is not adequately accounted for in economic transactions. Although the concept of externalities emerged in early 1900’s economic literature, it wasn’t perhaps until the 1970’s that regulatory approaches to address environmental pollution began to proliferate based on the reality that markets are often unable to naturally price and manage the pollution that market actors generate. However, as history has shown, the form in which environmental regulation is pursued matters greatly in terms of both the economic and environmental outcomes. For example, pricing carbon, as opposed to outright bans on fossil fuels, is an approach that can decarbonize economies in an orderly manner without choking the economic engine essential for societal prosperity. Carbon taxes are one such mechanism to price carbon, but not the only way, or the best way.

The appeal of carbon taxes as a pricing mechanism is easy to understand. With their apparent simplicity and perceived ease of implementation, proponents believe they will provide the certainty that industry needs to reduce emissions. By taxing the carbon content of goods and services, whether at the point of production or consumption, carbon costs will largely be passed onto consumers, making greener goods and services more cost competitive next to carbon-intensive alternatives. It certainly comes as no surprise that many serious, smart, and good-intentioned individuals think that carbon taxes are the policy solution, or at least one of the solutions, we should pursue to reduce emissions.

The reasoning is straightforward: two basic functions of taxes are to raise revenues and discourage activities. Why not, therefore, simply implement carbon taxes to raise money for climate investments and discourage emissions? Or tax and dividend carbon in a revenue-neutral manner to manage impact on consumers? The reason why the answer to these questions should be a resounding *no*, is not because carbon taxes cannot do both, but rather because there is a more economically efficient and environmentally sound way to solve the problem: thoughtfully designed carbon markets.

Carbon markets (whether they be cap-and-trade, cap-and-invest, or cap-and-dividend models) are a form of environmental market. Environmental markets are policy solutions designed to achieve measurable environmental goals, as tracked through environmental credits, by facilitating private investment through the pricing of negative and positive externalities using the laws of supply and demand. This article explains five advantages of carbon markets versus carbon taxes as both an environmental and economic policy:

- I. **CARBON MARKETS ENSURE EMISSION REDUCTIONS WHEREAS CARBON TAXES DO NOT**
- II. **CARBON TAXES WILL ALWAYS BE SET INCORRECTLY BECAUSE OF LIMITED INFORMATION COMPARED TO MARKET-DETERMINED PRICING**
- III. **CARBON MARKETS CREATE COMPLIANCE FLEXIBILITY THAT ENABLES MARKET EFFICIENCY AND COST-EFFECTIVENESS**
- IV. **CARBON MARKETS CREATE PROFIT INCENTIVES THAT PROMOTE ECONOMIC INNOVATION AND GROWTH**
- V. **CARBON MARKETS GENERATE POLICY ROBUSTNESS BY FOSTERING STAKEHOLDER ENGAGEMENT AND EQUILIBRATING TO REAL WORLD CONDITIONS**

Any adequate regulatory solution to address climate change must first and foremost focus on the environmental goal of achieving emission reductions, with a secondary yet vital consideration being the economic efficiency of the solution. Readers are asked to appreciate the difference between each policy approach from this perspective so that the many benefits of carbon markets as a solution can be properly understood. The cost of our climate crisis depends on it.

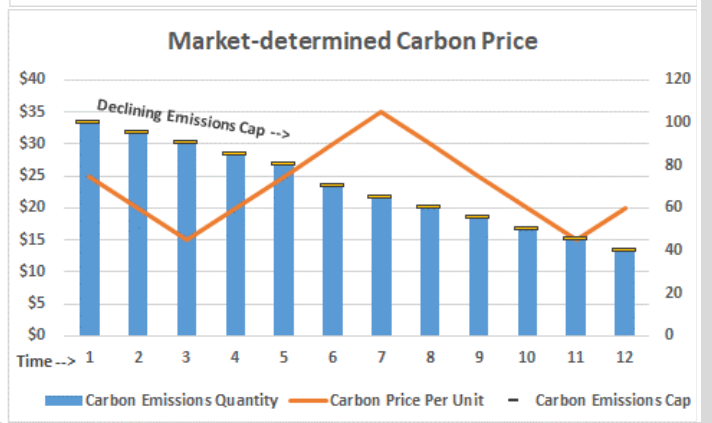
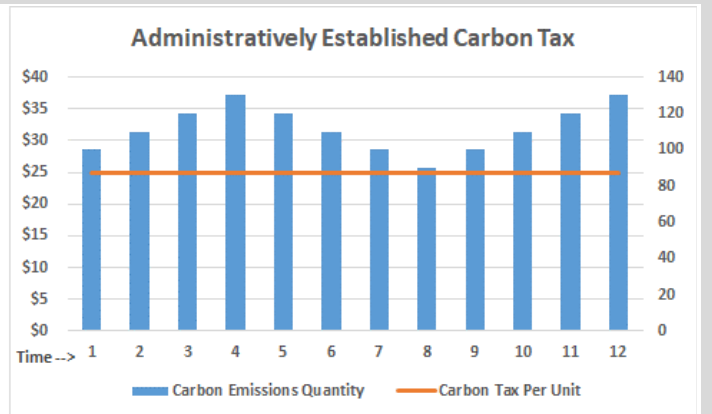
I. CARBON TAXES DO NOT ENSURE EMISSION REDUCTIONS WILL BE ACHIEVED, WHEREAS CARBON MARKETS ARE DESIGNED TO DELIVER ACCOUNTABLE EMISSION REDUCTIONS IN THE REQUIRED TIMEFRAME.

This is because carbon emissions can still increase under a carbon tax, even if set aggressively. Carbon taxes are flawed as a policy mechanism because of their focus on the cost of carbon emissions, or its price, rather than the quantity of carbon emissions, which is the true target of the policy. While perhaps a subtle difference, it is essential to distinguish between a quantity-focused goal, as under a carbon market, and a cost-focused goal, as under a carbon tax. Pricing carbon and taxing carbon need not be the same thing. Econ 101 teaches students that fixing price in a market leads to fluctuating quantity, while fixing quantity leads to fluctuating price. Fixing price rather than quantity flies in the face of the current scientific consensus asserting that carbon emissions must begin decreasing immediately to avert the worst impacts of climate change. One of the primary advantages of carbon markets is the creation of a transparent and legally enforceable emissions reduction “cap” that ensures not just a price on carbon, but a firm limit on emissions that is predictably lowered overtime. This allows policy makers to set the key factor – the emissions cap – while letting the market determine the best way of achieving emissions reductions and the price to the economy.

II. ADMINISTRATIVELY ESTABLISHED CARBON TAXES WILL ALWAYS BE SET INCORRECTLY BECAUSE OF LIMITED INFORMATION IN THE DECISION-MAKING PROCESS, WHEREAS CARBON MARKETS WILL CONTINUOUSLY ADJUST MARKET PRICES TO PROVIDE DECISION-USEFUL INVESTMENT SIGNALS FOR EMISSION REDUCTION STRATEGIES.

Set the tax too low and emission reductions will fail to materialize. Set the tax too high and the economic impacts will be too costly, detrimentally affecting other important economic objectives. So how do policy makers know the appropriate level that reduces the desired level of emissions without unnecessary economic pain? They don’t. It would only be a guess. The ideal level is always a moving target. Econ 101 teaches students that prices are simply information. And it is information that drives decisions behind the production, allocation, and consumption of economic resources. The main issue with administratively set carbon taxes is that they will always be established with a small subset of information (whatever is available and important to policy makers), while markets, in their collective and distributed nature, will incorporate an exponentially greater volume of information into discerning where market prices need to clear to reduce carbon emissions against the targets. Using market-based solutions to determine carbon prices therefore better reflects the real world costs of decarbonizing, resulting in more cost-effective abatement strategies in the short run and long run.

ILLUSTRATION OF A PRICE VS. QUANTITY-FOCUSED GOAL → FIXING MARKET PRICES (AS UNDER A CARBON TAX) LEADS TO FLUCTUATIONS IN QUANTITY, WHILE FIXING QUANTITY (AS UNDER A CARBON MARKET) LEADS TO FLUCTUATIONS IN MARKET PRICING. FIXING THE COST OF CARBON WITH CARBON TAXES WILL NOT ENSURE CARBON EMISSION REDUCTIONS ARE ACHIEVED IN THE REQUIRED TIMEFRAME, WHEREAS CARBON MARKETS CAN BE DESIGNED TO ENSURE EMISSION REDUCTIONS OCCUR IN THE NECESSARY TIMEFRAME AND AT THE LEAST POSSIBLE COST.



III. CARBON MARKETS CREATE COMPLIANCE FLEXIBILITY FOR MARKET PARTICIPANTS TO ACHIEVE EMISSION REDUCTIONS THEREBY PROMOTING ECONOMIC EFFICIENCY AND POLICY COST-EFFECTIVENESS.

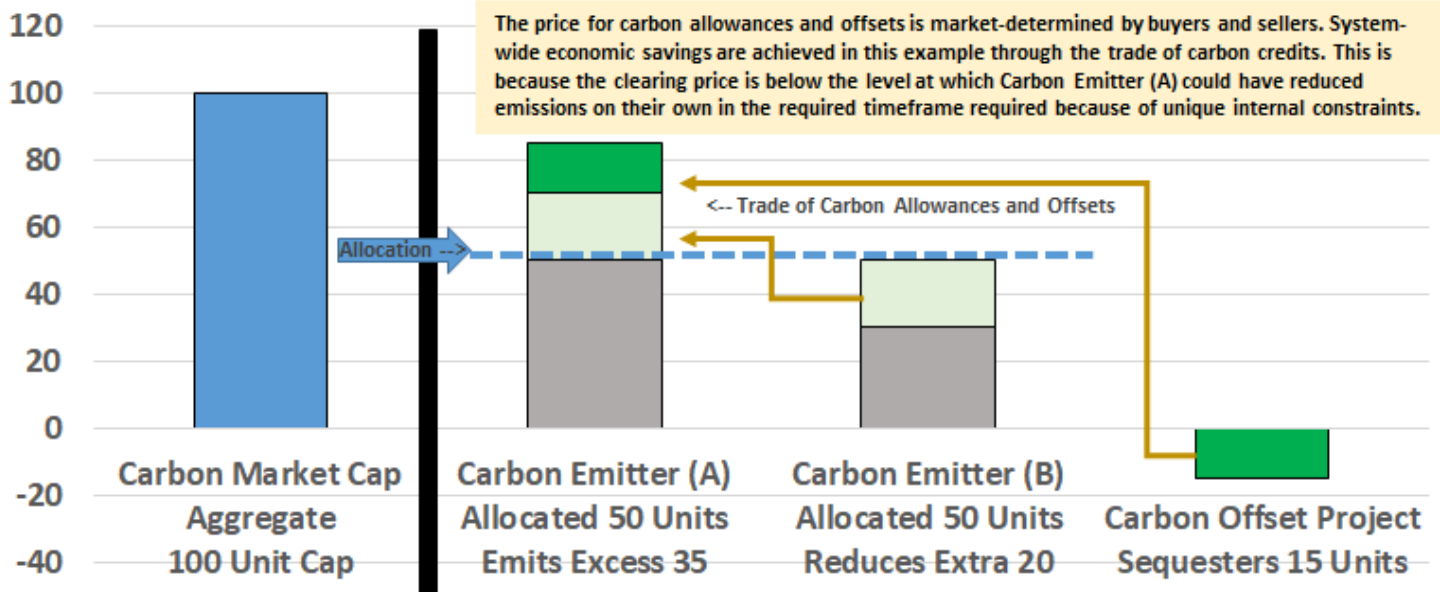
Cap-and-trade market-based mechanisms work by setting an aggregate cap on emissions, defining the obligated entities, and distributing allowances (i.e., legal permits allowing the holder to emit a quantity of emissions), and then letting those entities trade amongst themselves to achieve the most optimal use of credits.ⁱⁱⁱ Entities able to reduce their own emissions below the market price of allowances earn revenue by selling excess allowances to entities that may not have economical emission reduction opportunities. Trading results in a win-win outcome for both the seller and buyer when the price of carbon allowances is above and below, respectively, the marginal cost of reducing their own emissions. Economy-wide compliance costs are lowered by enabling the market to identify and deliver the cheapest emission reductions first (the “low hanging fruit”) while allowing participants more time to thoughtfully invest in tackling more challenging and expensive reductions (i.e., long-dated infrastructure transformation).

Moreover, carbon markets can be designed with additional flexibility by incorporating carbon offsets that represent a sort of positive externality. Carbon offsets are emission reduction units issued to projects that avoid or sequester carbon emissions through scientifically rigorous methodologies relative to a baseline scenario representing business as usual. Carbon offsets allow the market to pull in cross-sectoral emission reduction opportunities, such as from agriculture, forestry, and energy efficiency measures, and can incorporate offsets from inter-jurisdictional projects such as from developing countries where emission reductions can be achieved at large scales and at low costs. While beyond the scope of this article to cover in depth, carbon offsets are an intriguing development tool that provide a flow of capital to sustainable infrastructure and ecosystem services with the added potential to create community-driven co-benefits. Many project categories can also sequester carbon directly from the atmosphere, going above and beyond what a carbon tax or carbon allowance market can do on their own.

IV. CARBON MARKETS HARNESS MARKET FORCES BY CREATING TANGIBLE PROFIT INCENTIVES TO REDUCE EMISSIONS AND FOSTER INNOVATION AND ECONOMIC DEVELOPMENT.

High carbon market prices communicate that more emission reductions are required to achieve targets and create a profit incentive for enterprising firms that are able and willing to achieve those emission reductions more rapidly. Access to carbon markets offers firms motivation to risk investment capital to achieve those reductions. This will allocate resources in real-time to innovative technologies, processes, and new infrastructure investments, while risking private capital driven by market data rather than public funds collected through carbon taxes and allocated through the political process, which risks leaving taxpayers on the hook regardless of investment performance. On the other hand, low carbon market prices will signal to the market that it is on track to achieve carbon emission reductions and will temper consumer cost impacts. Low prices are not a sign of market failure, but rather a sign of market success. If environmental advocates are upset with low market prices compared to carbon emissions, the solution is simple: tighten the caps. And since carbon markets are highly compatible with existing legal and economic institutions, they represent a tremendous opportunity to efficiently tap global capital markets to deploy financial resources at the massive scale needed to tackle this critical challenge.

Cap-and-Trade 101 | Illustration of Market-based Mechanisms For Reducing Carbon Emission Reductions (Time Period 1)



CAP-AND-TRADE → ENSURES EMISSION REDUCTIONS ARE ACHIEVED COST-EFFECTIVELY BY ENABLING COMPLIANCE FLEXIBILITY FOR CARBON EMITTERS OBLIGATED TO REDUCE EMISSIONS. CARBON MARKETS WORK BY CAPPING THE AGGREGATE AMOUNT OF CARBON POLLUTION ALLOWED DURING A GIVEN TIME PERIOD THROUGH THE DISTRIBUTION OF ALLOWANCES. WHETHER OR NOT THE PROCESS OF ALLOCATING ALLOWANCES IS REVENUE NEUTRAL IS A MARKET DESIGN DECISION FOR POLICY MAKERS. ALLOWING EMITTERS TO TRADE ALLOWANCES CREATES BOTH MARKET EFFICIENCY AND FINANCIAL INCENTIVES FOR PARTICIPANTS TO ACHIEVE EMISSION REDUCTIONS. IN THE EXAMPLE ABOVE, CARBON EMITTER (B) HAS THE ABILITY IN TIME PERIOD 1 TO REDUCE EMISSIONS BEYOND THEIR ALLOCATION. CARBON EMITTER (A), HOWEVER, SEES AN INCREASE IN EMISSIONS ABOVE THEIR ALLOCATION (SAY THEIR BUSINESS IS GROWING RAPIDLY). CARBON EMITTER (A) MUST PURCHASE CARBON ALLOWANCES FROM CARBON EMITTER (B) AND CARBON OFFSETS FROM A PROJECT TO ACHIEVE COMPLIANCE. BOTH EMITTERS ARE FINANCIALLY BETTER OFF WITH TRADING.

V. CARBON MARKETS GENERATE POLICY ROBUSTNESS BY FOSTERING THE STAKEHOLDER ENGAGEMENT NECESSARY FOR POLICY INTEGRITY AND LONGEVITY.

An effective emissions reduction policy must be one that offers longevity through public, private, and political support, while maintaining its integrity toward underlying environmental goals. This ideal, captured in the concept of policy “robustness”, is accomplished by imbuing the institutions, organizations, policies, and policy making and implementation processes, with the capacity to withstand the inevitable shocks and changes that confront any climate policy over time.^{iv} Key to policy robustness are stakeholders and coalitions of stakeholders motivated to engage the public and private spheres to protect or improve the policies in which they participate. Carbon markets encourage stakeholder engagement by relying largely on the private sector to implement the bulk of the emissions reduction strategy. The buyers, sellers, and myriad market participants are the gears that make the policy engine turn, and though the individual participants may change over time, the incentive to maintain a well-oiled market persists on the whole regardless of the changing views of political administrations or economic conditions. And in stark contrast to the relatively one-dimensional interaction between taxed entities and the government tax authority, the high level of interconnectedness between participants in a carbon market fosters the coalition building necessary for effective policy engagement, increased market innovation, and economic efficiency.

A robust policy is one that maintains a level of functional stability in response to external and internal disturbances, whether political, economic, or other. Dynamic markets act quickly to adjust to changes in external and internal inputs, meaning that economic and political shocks are quickly priced into decision making, with emission levels just one of various factors. Whereas carbon taxes may fail to account for the economic or political climate, carbon markets—through the collective information gathering of their participants—price these variables into transactions, thereby balancing carbon prices with realities on the ground. This balancing keeps carbon markets aligned with real-world developments, efficiently lowering the cost of carbon during economic downturns with less economic activity and increasing the price of carbon when the economic engine is running hot.^v By remaining aligned with real world conditions, carbon markets help ensure their own longevity by staying out of the way of economic prosperity without sacrificing the integrity of the underlying emissions goals or risking the political viability of the policy more generally.

Policy robustness is necessary for market actor confidence, long-term investment at scale, and cost-effective development of the critical technologies needed to achieve our climate goals. We should therefore strive to create an emissions reduction policy that is insulated from the whims of the political process and imbued with the self-sustaining characteristics that increase our odds for a long-lived and environmentally successful policy.



In truth, carbon markets can be designed to do everything that carbon taxes do, but with the environmental and economic advantages discussed in this article. Carbon markets are not just a theory either, they are a successful and proven policy concept operationally reducing emissions in countries across the world. Once established, carbon markets can easily be aligned with net-zero goals (assuming the political will exists) and bring us to our goal of economy-wide decarbonization faster than carbon taxes.

Carbon taxes are fundamentally flawed with their primary focus on cost rather than quantity, meaning carbon emissions can still increase with carbon taxes in place. They are what William McDonough and Michael Braungart might call the “less bad approach.” As they write in their book, *Cradle to Cradle*, “being less bad is not being good . . . to be less bad is to accept things as they are, to believe that poorly designed, dishonorable, destructive systems are the best humans can do. This is the ultimate failure of the ‘be less bad’ approach: a failure of the imagination.” Carbon taxes are a failure of the imagination. They are the easy way.

McDonough uses an analogy to convey their message: if you are traveling down the highway in the wrong direction, slowing down doesn’t help you get to where you need to go. Instead, you must completely turn around. The risk that carbon taxes may only help us slow down the rate of carbon emissions should be unacceptable when weighed against the consequences of not solving the problem. Carbon markets, on the other hand, provide the means for placing our scientifically determined goals squarely in the drivers’ seat, while allowing for the greatest achievable economic growth and prosperity under those emissions levels.

In conclusion, as McDonough likes to say, “Design is the first signal of human intent.” If our intent is to solve the problem of carbon emissions and address climate change, then the place to start is design. Carbon markets are the superior design, and it is well worth the time to thoughtfully develop and implement them at the necessary scale. It may not be the easy way, but it is the right way.

ABOUT THE ENVIRONMENTAL MARKETS ASSOCIATION (EMA) – EMA is a 25-year-old pro-environment, pro-business, and pro-competitive markets industry trade association. Its mission is to promote open, competitive, and tradable market-based solutions to solve environmental challenges through the use of environmental commodities and financial instruments, while simultaneously supporting sustainable economic development. The EMA does this through education, advocacy, and networking opportunities for its members and the public. Join today at www.enviromarkets.org.

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ⁱ <https://constitutioncenter.org/blog/benjamin-franklins-last-great-quote-and-the-constitution>

ⁱⁱ <https://www.washingtonpost.com/news/morning-mix/wp/2015/06/22/the-earth-is-on-the-brink-of-a-sixth-mass-extinction-scientists-say-and-its-humans-fault/>

ⁱⁱⁱ The distribution of allowances can raise revenue for public investments or be done in a revenue-neutral manner with revenues being returned directly to consumers. Market design can be adjusted to achieve specific stakeholder goals to reflect jurisdictional circumstances and preferences.

^{iv} Capano, Giliberto, and Jun Jie Woo. *Resilience and Robustness in Policy Design: a Critical Appraisal*. Springer Science + Business Media New York, 2016. Available at https://ash.harvard.edu/files/ash/files/resilience_and_robustness.pdf.

^v A level of price predictability may also be designed into carbon markets in the form of price floors and price ceilings (price collars) allowing markets to discover prices within a desired range that eliminates the possibility of extremes and instills greater confidence in market participants.