

# **Cap and Trade or Carbon Tax? Differences and Implications**

by

Michael Aylward

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Economics for Equity and the Environment Network (E3) is a nationwide network of economists developing arguments for environmental protection with a social equity focus. For more information, please contact Kristen Sheeran, Director, at [ksheeran@e3network.org](mailto:ksheeran@e3network.org). E3 is a program of Ecotrust.

## **Overview**

- A cap on carbon emissions is more desirable than a tax because there is more certainty about the prudent quantity of emissions than there is about their total costs.
- Requiring upstream producers to hold emissions permits is simpler than requiring all users of carbon-intensive products to hold permits.
- The permit allocation decision is important – prices will rise by the same amount whether we give permits to producers for free or sell them in a public auction.
- Permit auction revenues can be used to compensate lower- and middle-income families for higher prices on carbon-intensive products, and to invest in clean technologies.

The two major ways to address excessive carbon emissions are a direct tax and a binding limit on their total quantity. There is a simple difference in implementation between these two mechanisms, but likely little difference in overall effects. In either case, there is a series of choices – in scope of coverage, who bears the compliance burden, and use of generated revenue – to be made that affect the policy impact more than the choice of which mechanism to use. The purpose of this brief is to inform decision-making on some of these choices.

## **Differences between a Tax and a Cap**

The primary difference between a carbon tax and a capped emissions system is simple: a carbon tax imposes a price on emissions – leaving their ultimate quantity to the market – whereas an emissions cap imposes an upper bound on their total quantity – leaving their ultimate price to the market. Which approach makes more sense? That depends on whether we are more confident in our estimates of the true costs of carbon emissions – which would justify a tax – or in our estimates of prudent emissions quantities – which would justify a cap.

Accounting for the true costs of carbon emissions – including the myriad of indirect external costs – is a difficult task even in principle, let alone in practice. This makes finding an effective tax rate difficult as well. On the other hand, there is near scientific consensus about the range of carbon emissions that is minimally reckless, which is part of the reason that most economists and scientists favor the certainty of a carbon cap over a carbon tax. With so little time left to address the risks of climate change, it would be less prudent to have to continuously adjust carbon tax rates in order to achieve emissions targets.

All this being said, there is less at stake with the choice between a tax and a cap than there is in the details of implementing either one. Which entities will have direct compliance obligations? How will the permits be allocated? Will there be exemptions or programs to support domestic competitiveness? Will low- and middle-income families bear a disproportionate share of the costs of the emissions reductions? How will we ensure sufficient R&D investment in clean technologies? The remainder of this brief focuses on how to implement a cap, with the understanding that similar choices would be required under a tax.

## **Point of Regulation**

In order to implement a cap, we must decide which entities will be required to hold permits (similarly for a tax). For instance, if petroleum refiners are required to hold permits, a user of the refiners' downstream products (e.g., a driver of a gasoline-fueled car) need not hold permits since her emissions are limited at an earlier point of entry into the economic system.

Targeting upstream sources of emissions has several benefits: (1) simplicity and minimal bureaucracy resulting from a relatively small number of regulated entities, and (2) comprehensive coverage of carbon-intensive activities since more emissions come under the umbrella of earlier points of entry. The important thing to ensure when regulating emissions upstream is to accurately account for all the eventual emissions resulting from the regulated entities' products – still, accounting for downstream emissions is far simpler than requiring permits for them.

## **Permit Allocation**

Once we make a decision on which entities to regulate, one of the most important decisions is how to allocate the permits. President Obama has consistently supported auctioning all of them, while utilities and major producers of carbon-intensive products favor free allocation. They claim that auctioning permits – by increasing the cost of production – would force them to raise consumer prices while giving permits away for free would not raise consumer prices in the same way. This is a fallacy.

The fact is that when emissions permits are tradable, permit holders' ultimate choice of how much to charge for their carbon-intensive products does not depend on whether they paid for their permits or received them for free. Whenever producers use their emissions permits, they incur the opportunity cost of not being able to sell the permits to other firms.

Producers will not allow themselves to go uncompensated for this foregone revenue – they will pass on the opportunity cost to consumers by raising prices on carbon-intensive products. Therefore, when permits are traded, consumer prices will increase by the same amount regardless of whether the permits were initially auctioned or given away.<sup>1</sup>

While the decision to auction permits will not affect consumer prices, it will certainly affect the burden of the associated price increases. Because carbon-intensive products like electricity and gasoline comprise a much larger proportion of lower-income people's expenses, they are the ones who will be hardest hit by the elevated costs. However, we can mitigate this outcome by using some of the revenues from permit auctions to compensate lower-income people. Failing to do so would constitute a redistribution of wealth from poor and middle-class families to wealthy shareholders and executives of fossil fuel producers – in other words, it would be both unfair and counterproductive.

In addition to the distributional implications of permit allocation, there are also significant efficiency impacts. If firms' permit allocations are based on their emissions in prior years – a system known as “grandfathering” – this would create a perverse incentive to increase

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<sup>1</sup> Regulated electric and natural gas utilities may be an exception to this, since their prices must be approved by state utility commissions – which could conceivably require the savings from unpaid-for permits to be passed on to customers. This approach has been promoted by the industry-nonprofit coalition that shaped current legislative efforts (the U.S. Climate Action Partnership), and is being considered by the legislation's co-sponsors, Representatives Henry Waxman and Ed Markey.

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emissions in interim periods in order to increase free permits in the future. This would cause both market distortions and an exacerbation of the problem we seek to address.

### **R&D in Clean Technology**

Finally, there are also real efficiency gains to be had in coordinated research and development of next-generation clean technologies. President Obama's call to invest \$15 billion a year for ten years is vital to a swift transition toward clean energy technologies. However, the market does not provide sufficient incentive for private interests to invest in research that may not pay off for years, or whose gains cannot be fully captured by the investing firm. A portion of the revenues from permit auctions can be used to fund these investments.

### **Conclusion**

There are several important decisions to be made in the implementation of any emissions regulation policy, and those decisions will have an outsize impact on the policy's effectiveness and fairness. The issues discussed in this brief suggest that our best choices are to (1) regulate emissions upstream, (2) distribute permits through auction, and (3) use the auction revenues to protect low and middle-income families from higher consumer prices, and to invest in deploying emerging clean technologies.