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The Social Cost Of Carbon And Its Impact On Enviro Law

By **John Lee** (January 30, 2018, 1:52 PM EST)

There is an important but little-known^[1] number underlying many environmental regulations: the social cost of carbon (SCC). The SCC, which is measured in dollars per metric ton of carbon dioxide (CO₂), is defined as “the monetized net effects (damages and benefits) associated with an incremental increase in carbon emissions in a given year.”^[2] Though the number is not widely discussed, the SCC is a crucial metric in many environmental regulations directly related to climate change, and, as such, the SCC has a major impact on how the United States regulates its greenhouse gas emissions.



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Essentially, the SCC attempts to capture in a single number how much “damage” a one-ton release of CO₂ today will have in the future, expressed in today’s dollars. Of course, estimating the amount of potential “damage” concurrently gives an estimate of the potential “benefit” to be accrued if the one-ton of CO₂ is not released. Given the physics of how the global atmosphere operates and how long a molecule of CO₂ remains in the atmosphere after release (the “residence time” of CO₂), that benefit is not, for the most part, experienced by those who would “pay the cost” to mitigate the release of that ton of CO₂ — namely the U.S. population alive when that ton of CO₂ is not released. Instead, the benefit is spread both temporally and spatially — to future generations and to the rest of the global population. Currently, the SCC is estimated to be between \$36 and \$47/ton in present dollars, depending on the discount rate used in the calculation.

There are two principal considerations that go into how the SCC is calculated: the effects of the release of CO₂ into the atmosphere and the economic costs of those effects. These calculations are performed through the use of three “integrated assessment models,” which collectively translate, “carbon dioxide emissions scenarios into changes in greenhouse gas concentrations in the atmosphere, greenhouse gas concentrations in the atmosphere into temperature changes, and temperature changes into net economic effects.”^[3]

There are many complex assumptions that go into these models, one of which is the proper discount rate to apply to convert estimated future costs/benefits into present-day dollars. For example, one of the principal applied assumptions is to consider global effects of the release of CO₂, instead of only limiting consideration to effects within the United States. The complexity of determining which assumptions should go into calculation of the SCC is reflected in the 2010 Technical Support Document, and its 2013 update, released by the Interagency Working Group on the Social Cost of Greenhouse Gasses (IWG).^[4] (Perhaps unsurprisingly, on March 28, 2017, President Donald Trump issued an executive order disbanding the IWG.)

It is important to understand the SCC for three primary reasons. First, federal agencies are required to undertake a benefit-cost analysis (BCA) to assess the economic impact of proposed regulations. This requirement, first mandated by executive order in 1981, and reiterated in executive orders in 1993 and again in 2011, directs federal agencies to assess the economic benefit of certain categories of regulatory actions by using the best available science.^[5] Since the 2008 Ninth Circuit decision in *Ctr. For Biological Diversity v. Nat’l Highway Traffic Safety Admin.*,^[6] federal agencies have been required to consider the SCC in the BCA undertaken for relevant new regulations.

How the SCC is calculated is contentious, however, and highlights the second reason why it is important to understand the SCC and its impact on climate change-related regulations. On Oct. 10, 2017, U. S. Environmental Protection Agency Administrator Scott Pruitt issued a notice of proposed rulemaking, proposing to repeal the Clean Power Plan, an Obama administration rule that sought to reduce CO₂ emissions from power plants. As part of the overall repeal of the CPP, the EPA quietly proposed a change in how the SCC would be calculated in the future, by employing the high-end discount rate of 7 percent instead of the previously applied rate of 3 percent. This change was justified on the grounds that the economic costs of releasing CO₂ should be calculated domestically, not globally.^[7] Raising the applied discount rate to 7 percent reduces the SCC from approximately \$47/ton to around \$6/ton — a reduction of over 85 percent.^[8] This little-noticed change in the SCC calculation accomplishes two goals. First, it calls into question the value of current climate change-related regulations. What previously was economically justifiable suddenly is not. Second, it eliminates the justification for further regulations. In other words, climate change-related regulations now provide little value.

The method used to reduce the SCC, interestingly enough, is consistent with the Trump administration’s overall justification for repealing the CPP. In its argument for repeal, the administration held that the CPP went beyond accepted “inside the fence line” regulatory measures, whereby regulations arguably should focus on an individual facility instead of being promulgated in a generalized manner. In a similar way, by limiting consideration of costs only to within the United States instead of globally, the revised SCC calculation brings regulatory considerations back “inside the U.S. fence line,” whether justified or not.

Finally, however imperfectly calculated, the value assigned to the SCC indicates which parties the United States’ executive branch considers should bear the cost of the CO₂ this nation releases. The cost of carbon release is not free, as is evident in an insurance industry bearing ever larger payouts due to the increasing effects of climate change. By reducing the calculated SCC, this administration is stating that those costs should be borne by future generations and societies outside our borders.

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^[1] As noted in a recent article in *The Economist*, the SCC is referred to by some economists as “the most important number you’ve never heard of.” *The Economist*, Nov. 18, 2017, pg. 25

[2] GAO Regulatory Impact Analysis – Development of the Social Cost of Carbon, GAO-14-663, July 2014, pg. 1, f.n. 1.

[3] GAO-14-663, July 2014, pg. 13. The three models are the Dynamic Integrated Climate and Economy model; the Climate Framework for Uncertainty, Negotiation, and Distribution model; and the Policy Analysis of the Greenhouse Effect model.

[4] Interagency Working Group on Social Cost of Carbon, United States Government, Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866 (Washington, D.C.: February 2010). Interagency Working Group on Social Cost of Carbon, United States Government, Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866 (Washington, D.C.: May 2013).

[5] See, Exec. Order No. 12866, 58 Fed. Reg. 51,735 (Sept. 30, 1993) and Exec. Order No. 13563, 76 Fed. Reg. 3821 (Jan. 18, 2011).

[6] Ctr. For Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1203 (9th Cir. 2008).

[7] See, EPA News Release, EPA Takes Another Step to Advance President Trump's America First Strategy, Proposes Repeal of "Clean Power Plan," Oct. 10, 2017. The United States is estimated to release 15 percent of CO2 emissions globally. Thus, limiting consideration of effects solely domestically instead of globally would require an 85 percent reduction in the SCC, which is accomplished by raising the discount rate employed to 7 percent.

[8] Similar changes have been made in the calculation of the social cost of methane, reducing the calculated value from approximately \$1,400 per metric ton to \$55 per metric ton. See, EPA Revises the Social Cost of a Potent Greenhouse Gas, by Niina Heikkinen, Scientific American ClimateWire, Nov. 20, 2017.

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