

FOREIGN IMPACTS AND CLIMATE CHANGE

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U.S. administrative agencies now routinely base domestic regulatory decisions upon the expected global impacts of carbon dioxide emissions. This is a startling divergence from traditional regulatory practice, which had been to entirely exclude foreign impacts from domestic regulatory analysis. Even more strikingly, this significant shift in valuation practice has occurred with virtually no legal analysis as to when or whether agencies have the statutory authority to consider foreign impacts. As a result, a number of recent rules proposed on the basis of a globally scoped Social Cost of Carbon (“SCC”) are now vulnerable to legal challenge. To insulate future rules against such challenges, agencies should adopt the globally scoped SCC only where they have performed individualized, statute-specific analyses of their own authority to incorporate foreign impacts into their decisions.

<i>Introduction</i>	372
<i>I. The Social Cost of Carbon: A Practical Description</i>	375
<i>A. The Institutional Context of the Development of the SCC</i>	376
<i>B. How Was the Current SCC Calculated?</i>	382
<i>C. What Is Included in the SCC?</i>	386
<i>D. Foreign Valuation in Context</i>	389
<i>II. Calculating a “Global” SCC</i>	391
<i>A. Distinguishing Scope and Economic Standing</i>	392
<i>B. The Current SCC Adopts a Global Scope, But Its Treatment of Economic Standing Is Ambiguous</i>	397
<i>III. Implications of the Global Valuation of Climate Change</i>	400
<i>A. Agencies’ First Responsibility Is to Implement Statutes</i>	402
<i>B. The IWG Reports Elide Over Agencies’ Statutory-Specific Authority</i>	408
<i>C. Evaluating Agencies’ Specific Statutory Authority to Implement a Globally Scoped SCC</i>	409
1. <i>Energy Policy and Conservation and Energy Independence and Security Acts</i>	410
2. <i>Clean Air Act</i>	414
3. <i>Corporate Average Fuel Economy Standards</i>	418
<i>Conclusion</i>	420

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INTRODUCTION

The Social Cost of Carbon (“SCC”) is the often-overlooked centerpiece of the United States’ current policy on climate change.¹ The SCC is a standardized, monetized estimate of the global harm caused by each incremental emission of a ton of carbon dioxide (“CO₂”).² An Interagency Working Group (“IWG”)³ developed the SCC in 2009, under the auspices of President Barack Obama and then-“Regulatory Czar” Cass Sunstein,⁴ partially in response to a U.S. Court of Appeals for the Ninth Circuit case finding that an agency’s treatment of the impact of carbon-emissions reductions as zero was arbitrary and capricious.⁵ Although it is a relative newcomer to regulatory analysis, administrative agencies now routinely use the SCC when they calculate the expected costs and benefits of proposed policies.⁶

¹ See William Pizer, Matthew Adler, Joseph Aldy, David Anthoff, Maureen Cropper, Kenneth Gillingham, Michael Greenstone, Brian Murray, Richard Newell, Richard Richels, Arden Rowell, Stephanie Waldhoff & Jonathan Wiener, *Using and Improving the Social Cost of Carbon*, 346 SCIENCE 1189, 1189 (2014).

² INTERAGENCY WORKING GRP. ON SOC. COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12866, at 1 (2010) [hereinafter IWG REPORT 2010], <http://perma.cc/S7RH-BVME> (“The SCC is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change.”); INTERAGENCY WORKING GRP. ON SOC. COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12866, at 2 (2013) [hereinafter IWG REPORT 2013], <http://perma.cc/R485-PUGM>. For an important early analysis of the legal and institutional implications of the SCC, see generally Jonathan S. Masur & Eric A. Posner, *Climate Regulation and the Limits of Cost-Benefit Analysis*, 99 CALIF. L. REV. 1557 (2011).

³ The Interagency Working Group on the Social Cost of Carbon included the Council of Economic Advisers, the Council on Environmental Quality, the Department of Agriculture, the Department of Commerce, the Department of Energy, the Department of Transportation, the Environmental Protection Agency, the National Economic Council, the Office of Energy and Climate Change, the Office of Management and Budget, the Office of Science and Technology Policy, and the Department of the Treasury. IWG REPORT 2010, *supra* note 2, at 1.

⁴ Sunstein was the Administrator of the Office of Information and Regulatory Affairs (“OIRA”), an office created by the 1980 Paperwork Reduction Act as part of the Office of Management and Budget (“OMB”). *About OIRA*, OFFICE OF MGMT. & BUDGET, <http://perma.cc/KX5A-EPXG>. OIRA is responsible for reviewing all collections of information by the federal government. *Id.* In recent decades, the office has become increasingly central in setting and implementing executive regulatory policy, leading to the colloquial handle of “Regulatory Czar” for its Administrator. For more on OIRA’s role in federal rulemaking, see generally CURTIS W. COPELAND, CONG. RESEARCH SERV., RL32397, FEDERAL RULEMAKING: THE ROLE OF THE OFFICE OF INFORMATION AND REGULATORY AFFAIRS (2009). For Professor Sunstein’s reflections on his experiences as the OIRA Administrator, see generally Cass R. Sunstein, *The Office of Information and Regulatory Affairs: Myths and Realities*, 126 HARV. L. REV. 1838 (2013).

⁵ See *Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1198–202 (9th Cir. 2008).

⁶ See, e.g., Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830, 34,936 (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60) [hereinafter Clean Power Plan Proposed Rule] (proposing new regulations of CO₂ from existing power plants); Energy Conservation Program: Energy Conservation Standards for Standby Mode and Off Mode for Microwave Ovens, 78 Fed. Reg. 36,316, 36,318 (June 17, 2013) (to be codified at 10 C.F.R. pts. 429, 430); EPA, EPA-420-R-12-016, REGULATORY IMPACT ANAL-

Because current scientific models project that increasing carbon emissions will have a negative impact on the future environment, adding the social impacts of climate change into cost-benefit analyses pushes agencies towards adopting more aggressive climate policies. Any policy that drives the estimate of the SCC upwards also tends to make climate policies more stringent.

One key and largely undeliberated aspect of the United States' SCC is that it is designed—and used—to estimate the *global* cost of carbon emissions.⁷ That is, it is meant to count all of the impacts each ton of carbon will have on the entire globe—not just on the country that emitted it.⁸

There are a number of reasons why a country like the United States might want to internalize all of the climate change impacts caused by its policies. It might be the politically savvy thing to do, given foreign relations. It might be the ethical thing to do. It might be a mechanism for forced savings in a fraught situation, or for foreign aid in a context rife with distributional inequity. It might even be the efficient thing to do, if signing on to count global impacts encourages other countries to do the same.

That said, the decision to count global impacts—and to count them in the way they are counted—occurs against an institutional backdrop that constitutes a bold diversion from existing regulatory policy. In other domestic regulatory contexts, the United States does *not* count foreign impacts.⁹ The typical agency practice is, in fact, to leave foreign impacts out of cost-benefit analyses entirely.¹⁰ Canadians die from U.S. air pollution every year.¹¹ When that air pollu-

YSIS: FINAL RULEMAKING FOR 2017–2025 LIGHT-DUTY VEHICLE GREENHOUSE GAS EMISSION STANDARDS AND CORPORATE AVERAGE FUEL ECONOMY STANDARDS, at 7-3 (2012), <http://perma.cc/A6XF-HARY>; EPA, EPA-452-R-11-011, REGULATORY IMPACT ANALYSIS FOR THE FINAL MERCURY AND AIR TOXICS STANDARDS, at 5-88 (2011), <http://perma.cc/PYG9-DJ2V>. Note that this use of the SCC—to inform the cost-benefit analyses incorporated into regulatory impact analyses—is precisely in line with the stated purpose of the initial IWG report. See IWG REPORT 2010, *supra* note 2, at 1 (“The purpose of the ‘social cost of carbon’ (SCC) estimates presented here is to allow agencies to incorporate the social benefits of reducing carbon dioxide (CO₂) emissions into cost-benefit analyses of regulatory actions that have small, or ‘marginal,’ impacts on cumulative global emissions.”).

⁷ An important exception to the general neglect of this issue comes from economists Ted Gayer and Kip W. Viscusi in their paper *Determining the Proper Scope of Climate Change Benefits* (Vanderbilt Univ. Law Sch., Law & Econ. Working Paper No. 14-20, 2014). Their arguments are discussed in more detail *infra* Part II.

⁸ See IWG REPORT 2010, *supra* note 2, at 10–11 (describing the adoption of a “global SCC,” in contrast to the “domestic SCC” sometimes used in earlier regulatory impact analyses).

⁹ For a discussion of how regulatory agencies treat cross-border impacts in non-climate contexts, see Arden Rowell & Lesley Wexler, *Valuing Foreign Lives*, 48 GA. L. REV. 499, 524–34 (2014) (finding that agencies routinely exclude all foreign impacts from cost-benefit analyses, with the impact that foreign lifesaving is valued at \$0, and noting the contrast between that practice and the apparent practice embodied in the SCC). See also generally *Symposium on Foreign Life Valuation*, U. ILL. L. REV. SLIP OPINIONS 1–49 (2015) (discussing other complexities in foreign life valuation).

¹⁰ For a discussion of U.S. practices towards foreign life valuation across multiple regulatory and non-regulatory contexts, see generally Rowell & Wexler, *supra* note 9.

¹¹ In fact, the United States and Canada have entered into a specific international agreement to recognize this fact. See Air Quality Agreement, Can.-U.S., Mar. 13, 1991, 30 I.L.M. 676, <http://perma.cc/TBF3-2YAH>. There is even a particular annex drafted to recognize the risks of ozone exposure titled “Annex 3: Specific Objectives Concerning Ground-Level Ozone Precursors.” *Id.* at Annex 3.

tion is something other than CO₂—for example, ozone—the impact to Canada counts for \$0 in U.S. cost-benefit analyses.¹² So it is startling to realize that the same Canadian imperiled by U.S. CO₂ emissions would be used to justify something like \$4.7 million in domestic U.S. expenditures.¹³

This is not just a theoretical shift in valuation methodology; the choice of how to count the foreign impacts of climate change has real implications for regulatory policy. Consider the historic “Clean Power Plan” rule, proposed by President Obama in June 2014, for limiting CO₂ emissions from the nation’s power plants.¹⁴ Under the U.S. Environmental Protection Agency’s (“EPA’s”) cost-benefit analysis, we should expect that rule to cost \$7.3 billion, and to provide benefits of \$30 billion.¹⁵ At first glance, then, the rule passes a cost-benefit analysis: \$30 billion is more than \$7.3 billion. However, while the \$7.3 billion in costs will accrue primarily to *domestic* industry in compliance costs, the \$30 billion in benefits was calculated by looking to the *global* impacts of carbon emissions.¹⁶ The IWG has estimated that only 7–23% of total climate change impacts will accrue within U.S. borders.¹⁷ Had EPA relied on these numbers to calculate the rule’s impacts—a method in line with EPA’s domestic focus for other risks, such as ozone¹⁸—it would have calculated a benefit of only \$2–7 billion. This entire range falls below the projected costs of the rule, so with a domestic scope for climate change impacts, the Clean Power Plan rule would fail a cost-benefit analysis. The final rule will surely be challenged in court, whether it is promulgated in its existing form or not. In any such challenge—as with the proposed rule itself—the global versus domestic nature of the benefits assessment will play a central role in setting climate change policy.

This Article has three goals in assessing the implications of foreign impacts on U.S. climate policy. The first of these, presented in Part I, is to provide background for understanding what the SCC is, how it was calculated, and how it is used. As part of this general background, Part I also compares the SCC methodology to foreign-valuation methodologies used in other contexts. After describing the way the SCC is calculated, this Part notes that the SCC’s global focus is a startling divergence from past cost-benefit methodology as used in other regulatory contexts.

¹² See EPA, EPA-452/R-08-003, FINAL OZONE NAAQS REGULATORY IMPACT ANALYSIS, at 6d-13–6d-15 (2008), <http://perma.cc/TYC7-94XA> (explaining the Agency’s calculation method, which is based on county-level data); EPA, REGULATORY IMPACT ANALYSIS: FINAL NATIONAL AMBIENT AIR QUALITY STANDARD FOR OZONE, at 3 (2011) [hereinafter EPA, RIA FOR FINAL NAAQS FOR OZONE], <http://perma.cc/GT5H-F6N3> (explicitly incorporating the 2008 Regulatory Impact Analysis). Agency practice in this realm is opaque; for a discussion and explanation of the way this rule treats foreign impacts, see Rowell & Wexler, *supra* note 9, at 528–31 (concluding that current practice “effectively treats foreign lives (and, in fact, foreign health benefits of all kinds) as having \$0 value”).

¹³ See *infra* notes 110–11.

¹⁴ See generally Clean Power Plan Proposed Rule, *supra* note 6.

¹⁵ *Id.* at 34,840–41 tbl.2 (providing estimates for the year 2030).

¹⁶ *Id.*; see also Pizer et al., *supra* note 1, at 1190 (arguing the government should use a global SCC in cost-benefit analysis).

¹⁷ See IWG REPORT 2010, *supra* note 2, at 11.

¹⁸ For a deconstruction of EPA’s policies on ozone and other non-carbon pollutants, see Rowell & Wexler, *supra* note 9, at 525–31.

The second goal of this Article, addressed in Part II, is to explore the question of what it means to calculate a “global” SCC. This Part argues that policymakers and scholars have elided over an important distinction between two different ways in which a carbon policy might be global: on the basis of the location—or the “scope”—of the impacts incorporated, and/or because it incorporates some measure of global preferences—a notion known as “economic standing.” Scope and economic standing are logically separable questions, with importantly different institutional implications, but the IWG report itself is not disciplined in this distinction, and commentary on the IWG’s calculations has conflated these two issues.¹⁹

The final goal of this Article, pursued in Part III, is to put the calculation of a “global” SCC into institutional context. The IWG report encourages agencies to adopt an SCC that is global at least in scope, and offers agencies the generic assurance that “consideration of both global and domestic values is generally permissible.”²⁰ Yet agencies are bound not only by the guiding hand of the executive, but also by the statutes they administer and by the Constitution. Given these competing tensions, how should agencies, aware of the implications of global versus domestic analyses, incorporate the SCC into their ongoing cost-benefit analyses? Part III argues that application of the SCC requires a statute-by-statute analysis (and sometimes a provision-by-provision analysis) of whether global impact (and/or global standing) is consistent with the statute being administered. It then analyzes two important statutory regimes under which multiple SCC-based regulations have already been promulgated—the Energy Policy and Conservation Act (“EPCA”) and the Clean Air Act (“CAA”)—and finds that agencies implementing these statutes have inexplicably failed to systematically examine their own statutory authority to apply a globally scoped SCC. As a result, recent rules based on the globally scoped SCC are vulnerable to challenge as exceeding agencies’ statutory authority, and as arbitrary and capricious. In the future, agencies should be far more cautious in analyzing their own authority to determine the scope (and possibly the economic standing) of policy-relevant impacts.

In sum, the impacts of climate change on foreign soil are already driving domestic U.S. policy about climate emissions, and they are doing so through the vehicle of regulatory cost-benefit analysis. This Article attempts to narrate this journey, and to signal potential hazardous crossroads.

I. THE SOCIAL COST OF CARBON: A PRACTICAL DESCRIPTION

In recent years in the United States, the SCC has become a standardized number used across agencies and across statutory contexts to monetize the

¹⁹ See, e.g., Gayer & Viscusi, *supra* note 7, at 3–4.

²⁰ IWG REPORT 2010, *supra* note 2, at 10 (“As a matter of law, consideration of both global and domestic values is generally permissible; the relevant statutory provisions are usually ambiguous and allow selection of either measure.”). The report does not expand further upon this legal claim. See *id.*

damage caused per ton of CO₂ emitted.²¹ This number—currently \$37/metric ton of CO₂—represents the average monetized “global” impact of each ton of CO₂ emitted, as calculated by three independent and complex scientific models (called DICE, FUND, and PAGE).²² The calculation of this number presents a number of puzzles and ambiguities, which are discussed in Part II.²³

This Part begins by describing some important features of the institutional and political context in which the SCC was created. It then describes how the SCC is calculated, how it is used, and what it includes, and delves into the calculation of the SCC to describe the way that it manages foreign impacts. Finally, it compares the approach the SCC uses to monetize foreign impacts to the practices agencies use in other regulatory contexts.

A. *The Institutional Context of the Development of the SCC*

Casual observers might be forgiven for believing that the United States has no policy on climate change. After all, it is only a few years since the United States formally conceded that action against climate change is needed,²⁴ and the United States has still not ratified any international climate change treaty. Moreover, although Congress continues to be inundated with bills related in some way to climate change,²⁵ it has yet to sign into law any bill that creates a national climate policy.

Yet, despite the demurral from multilateral climate treaties and the lack of any coherent legislative policy, the United States has in recent years developed

²¹ See IWG REPORT 2010, *supra* note 2, at 1. This figure is also used to monetize the impacts of other greenhouse gases, such as methane, although that requires conversion between impacts of different gases. See *id.* at 12; IWG REPORT 2013, *supra* note 2, at 9.

²² See IWG REPORT 2013, *supra* note 2, at 2–3. Note that, while the SCC guidance provides multiple estimates of the SCC based on differing discount rates, it identifies the number based on the 3% rate as the “central value.” *Id.* at 12. This is the number provided here, and is the one on which agencies typically base their analyses. See, e.g., Clean Power Plan Proposed Rule, *supra* note 6, at 34,839 n.12.

²³ See *infra* Part II (discussing the difference between global scope and global economic standing, and analyzing the relationship between global and future impacts).

²⁴ See generally Conference of the Parties, U.N. Framework Convention on Climate Change, Copenhagen, Den., Dec. 7–19, 2009, *Report of the Conference of the Parties on its Fifteenth Session*, U.N. Doc. FCCC/CP/2009/11/Add.1 (Mar. 30, 2010).

²⁵ The 113th Congress (2013–2014) proposed nearly 230 bills focusing on climate change. For a helpful list, see *Legislation in the 113th Congress Related to Global Climate Change*, CTR. FOR CLIMATE & ENERGY SOLUTIONS, <http://perma.cc/UK4C-TU97>. These bills address a wide variety of subject matters. Some are quite targeted on particular climate change impacts. See, e.g., Salmon Solutions and Planning Act, H.R. 4097, 113th Cong. (2014) (attempting to require the Army Corp of Engineers to update its reporting practices to account for the impacts of climate change on juvenile salmon in the lower Snake River). Others are designed to constrain administrative discretion in developing regulatory policies on climate change. See, e.g., No Carbon Tax Act of 2013, H.R. 1486, 113th Cong. (2013) (attempting to prohibit the Secretary of the Treasury and the EPA Administrator from devising or implementing a carbon tax). Several would address the foreign impacts of climate change directly. See, e.g., Global Partnerships Act of 2013, H.R. 1793, 113th Cong. (2013) (proposing foreign assistance for climate change mitigation and adaptation and establishing a scheme to exchange debt for environmental projects that address climate change); H.R. Con. Res. 7, 113th Cong. (2013) (recognizing the impact of climate change on foreign countries and citizens).

an ambitious and cohesive climate change policy through the offices of the President. In the absence of any significant legislative action, the President's Climate Action Plan,²⁶ along with a series of other executive orders and guidance,²⁷ provides what is arguably the most important basis for current U.S. climate change policy. A foundational aspect of this policy is the requirement for U.S. administrative agencies to incorporate the SCC—or a measure of the monetized damages associated with an incremental increase in carbon emissions—into regulatory cost-benefit analyses.²⁸

Despite continued criticism from skeptics,²⁹ and a frank recognition of challenges even from many supporters,³⁰ cost-benefit analysis continues to play a central role in the process of U.S. regulatory rulemaking. This is particularly the case for major rulemakings out of executive agencies, as these must pass through the executive Office of Information and Regulatory Affairs (“OIRA”) before they may be promulgated.³¹ Under the Obama Administration, two executive orders provide the basis for this requirement: Executive Order 12,866, which has been continuously in place since it was issued at the beginning of the

²⁶ See generally EXEC. OFFICE OF THE PRESIDENT, THE PRESIDENT'S CLIMATE ACTION PLAN (2013) [hereinafter PRESIDENT'S CLIMATE ACTION PLAN], <http://perma.cc/RM22-U2LE>.

²⁷ See generally Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Oct. 4, 1993) [hereinafter Exec. Order No. 12,866]; Exec. Order No. 13,514, 75 Fed. Reg. 52,117 (Oct. 5, 2009); Exec. Order No. 13,653, 77 Fed. Reg. 66,817 (Nov. 1, 2013); Exec. Order No. 13,677, 79 Fed. Reg. 58,229 (Sept. 23, 2014); Exec. Order No. 13,690, 80 Fed. Reg. 6425 (Jan. 30, 2015); Exec. Order No. 13,693, 80 Fed. Reg. 15,869 (Mar. 19, 2015); IWG REPORT 2010, *supra* note 2; IWG REPORT 2013, *supra* note 2.

²⁸ See IWG REPORT 2010, *supra* note 2, at 2; IWG REPORT 2013, *supra* note 2, at 4.

²⁹ See, e.g., Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection*, 150 U. PA. L. REV. 1557, 1578–81 (2001) (arguing that cost-benefit analysis ignores values that cannot be easily quantified, deals inappropriately with hard-to-monetize values, and tends to overestimate costs, and that discounting methodologies undervalue future benefits).

³⁰ See, e.g., Masur & Posner, *supra* note 2, at 1560–63 (arguing that cost-benefit is a poor instrumental fit for problems with certain characteristics, as where there is radical uncertainty about costs and benefits); RICHARD REVESZ & MICHAEL LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH 11 (2008) (identifying multiple ways in which cost-benefit analysis tends to be biased against regulation, along with potential methods for rectifying those biases); Cass R. Sunstein, *The Real World of Cost-Benefit Analysis: Thirty-Six Questions (and Almost as Many Answers)*, 114 COLUM. L. REV. 167, 168–78 (2014) (identifying challenges and responses); see also generally MATT ADLER, WELL-BEING AND FAIR DISTRIBUTION: BEYOND COST-BENEFIT ANALYSIS (2011) (recognizing that cost-benefit analysis is alone unable to manage problems of distributional equity, and constructing a nuanced account of a potentially complementary method for managing equitable distributions).

³¹ This is pursuant to several executive orders, including Executive Order 12,866, *supra* note 27, and Executive Order 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011) [hereinafter Exec. Order No. 13,563], as well as, at least in theory, the Regulatory Flexibility Act, 5 U.S.C. §§ 601–12 (2012), and the Paperwork Reduction Act, 44 U.S.C. §§ 3501–21 (2012). The appropriate role of cost-benefit analysis at independent agencies remains a topic of ongoing debate. See, e.g., Administrative Conference of the United States, Benefit-Cost Analysis at Independent Regulatory Agencies (Comm. on Regulation Draft Recommendation, 2013), <https://perma.cc/DX3A-VJ8A>. Traditionally, executive guidance has been directed only at executive agencies. See, e.g., Exec. Order No. 12,291, 46 Fed. Reg. 13,193 (Feb. 17, 1981); Exec. Order No. 12,866, *supra* note 27. A recent executive order on “Regulation and Independent Regulatory Agencies,” Executive Order 13,579, says that independent agencies “should” follow the analytical principles set forth in Executive Order 13,563. Exec. Order No. 13,579, 76 Fed. Reg. 41,587 (July 11, 2011).

Clinton Administration,³² and Executive Order 13,563, which President Obama issued in 2011 to supplement the prior order.³³ Under these orders, agencies are required—to the extent permitted by law—to “assess both the costs and benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.”³⁴ This institutional context was so central to the creation of the SCC that the IWG report itself is titled in reference to the key executive order: it is called “Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.”³⁵

Questions of valuation, including quantification and monetization, arise routinely within the context of regulatory cost-benefit analysis. To understand how the SCC was calculated, it may be helpful first to consider how nonmonetary regulatory impacts are generally valued, quantified, and monetized. Typically, regulators quantify impacts in an analytical document called the Regulatory Impact Analysis (“RIA”).³⁶ This involves counting whatever can be counted, and discussing “unquantifiable” benefits separately.³⁷ Once impacts are quantified, agencies do their best to monetize them.³⁸ Theories of monetization vary, but as a general matter, regulators monetize nonmonetary regulatory impacts by trying to determine people’s³⁹ willingness to pay (“WTP”) in money either to avert a bad, related outcome or to secure a good one.⁴⁰

Agencies use a variety of strategies to determine how much money people would pay to avert a harm or secure a benefit. To monetize mortality risks, for

³² See Exec. Order No. 12,866, *supra* note 27. Although this order has been in place since 1993, it has been periodically amended throughout succeeding administrations. See Exec. Order No. 13,258, 67 Fed. Reg. 9385 (Feb. 26, 2002) (amending Exec. Order No. 12,866); Exec. Order No. 13,422, 72 Fed. Reg. 2763 (Jan. 18, 2007) (same); Exec. Order No. 13,497, 74 Fed. Reg. 6113 (Jan. 30, 2009) (revoking those amendments); see also Exec. Order No. 13,563, *supra* note 31 (supplementing the requirements of Exec. Order No. 12,866).

³³ See generally Exec. Order No. 13,563, *supra* note 31.

³⁴ See IWG REPORT 2010, *supra* note 2, at 1 (citing Exec. Order No. 12,866, *supra* note 27).

³⁵ See *id.*

³⁶ See Exec. Order No. 13,563, *supra* note 31, at 3821 (requiring agencies “to quantify anticipated present and future benefits and costs as accurately as possible”).

³⁷ For a valuable discussion of regulatory practice and opportunities for managing unquantified impacts, see generally Cass R. Sunstein, *The Limits of Quantification*, 102 CALIF. L. REV. 1369 (2014).

³⁸ See *id.* at 1373–75; Arden Rowell, *The Cost of Time: Haphazard Discounting and the Undervaluation of Regulatory Benefits*, 85 NOTRE DAME L. REV. 1505, 1510–12 (2010).

³⁹ Who are the “people” whose preferences regulators elicit? This is the primary question underlying the problem of “economic standing,” which is discussed in more detail *infra* Part II.A.

⁴⁰ See OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, REGULATORY IMPACT ANALYSIS: A PRIMER 9 (2011) [hereinafter OMB PRIMER ON RIA], <https://perma.cc/75RK-C5FR> (explaining that agencies “should, to the extent feasible, estimate the monetary value of the benefits and costs of each regulatory alternative considered. Both benefits and costs are measured by the value that individuals place on the change resulting from a particular regulatory alternative. This value is typically and most easily measured in terms of the amount of money the individual would pay (‘willingness to pay’ (WTP)) or require as compensation (‘willingness to accept’ (WTA)), so that the individual is indifferent between the current state of the world (baseline), on the one hand, and the consequences of the regulatory alternative along with the monetary amount, on the other hand.”).

example, regulators generally look to two kinds of studies: revealed preference studies, such as those that measure how much people receive in wages to compensate for increased mortality risk on the job, and stated preference studies, such as surveys that ask people how much they would be willing to pay for reduced risks like improved road safety.⁴¹ Agencies then aggregate estimates from multiple studies into a single figure, which is used to represent the amount of money people are presumed to be willing to pay per life saved—the “Value of a Statistical Life” (“VSL”). Different agencies use different VSLs, and agencies routinely use VSLs within regulatory cost-benefit analyses to calculate the benefits of life-saving interventions. At EPA, for instance, this figure is currently \$8.7 million.⁴² For purposes of cost-benefit analysis, a policy that had the sole impact of immediately saving ten lives would therefore have a monetized benefit of \$87 million. If the proposed policy cost only \$70 million to implement, it would pass a cost-benefit test, since \$70 million is less than \$87 million.

As this example may suggest, many cost-benefit practices are relatively routinized. That said, executive agencies’ cost-benefit practices are also subject to executive direction. Executive control of agency decision-making can take many forms, ranging from informal persuasive telephone calls to the public firing of agency heads.⁴³ Regulatory analyses rely not only on formal executive orders,⁴⁴ but also on slightly less formal guidance like circulars, which are instructions or information issued by the Office of Management and Budget (“OMB”) for federal agency use. For cost-benefit analysis, the most important of these circulars is Circular A-4 on “Regulatory Analysis.”⁴⁵

⁴¹ See generally Lisa A. Robinson, *How US Government Agencies Value Mortality Risk Reductions*, 1 REV. ENVTL. ECON. & POL’Y 283 (2007) (providing a valuable overview of valuation methodologies); Rowell, *supra* note 38, at 1524–32 (discussing mortality risk studies relied upon by EPA). For an example of a wage-risk study incorporated into many agency estimates of the Value of a Statistical Life (“VSL”), see generally Michael J. Moore & W. Kip Viscusi, *The Quantity-Adjusted Value of Life*, 26 ECON. INQUIRY 369 (1988). For an example of a stated preference study incorporated into EPA VSLs, see generally TED MILLER & JAGADISH C. GURIA, *THE VALUE OF STATISTICAL LIFE IN NEW ZEALAND: MARKET RESEARCH ON ROAD SAFETY* (1991).

⁴² See EPA, EPA 240-R-10-001, *GUIDELINES FOR PREPARING ECONOMIC ANALYSIS 7-11* (2010) [hereinafter EPA, *GUIDELINES FOR ECONOMIC ANALYSIS*], <http://perma.cc/GSR8-739F> (identifying a central estimate of \$7.9 million in 2008 dollars, which adjusts to \$8.7 million in 2014 dollars).

⁴³ For a valuable overview of the relationship between various forms of executive control and agency decision-making, which emphasizes the reciprocal nature of the executive/agency relationship, see generally Jennifer Nou, *Agency Self-Insulation Under Presidential Review*, 126 HARV. L. REV. 1755 (2013). For more background on various executive instruments of control, see generally HAROLD C. RELYEA, CONG. RESEARCH SERV., 98-611, *PRESIDENTIAL DIRECTIVES: BACKGROUND AND OVERVIEW* (2008).

⁴⁴ See RELYEA, *supra* note 43, at 5.

⁴⁵ See OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, CIRCULAR A-4, at 1 (2003) [hereinafter OMB CIRCULAR A-4], <https://perma.cc/L44T-CGWP> (explaining that the circular “provides the Office of Management and Budget’s (OMB’s) guidance to Federal agencies on the development of regulatory analysis as required under Section 6(a)(3)(c) of Executive Order 12866, ‘Regulatory Planning and Review,’ the Regulatory Right-to-Know Act, and a variety of related authorities”). Another important circular regarding cost-benefit analysis is OMB Circular A-94. OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, CIRCULAR A-94, *GUIDE-*

The President also has the authority to direct and create guidance on more specific topics. That is what the Obama Administration chose to do in 2010, when the OMB convened an IWG to create guidance for agencies on how to manage SCC calculations.⁴⁶ This IWG was responsible for creating the SCC agencies use today.

How did the United States end up with a climate change policy implemented through the domestic regulatory system, when it has yet to develop any cohesive foreign policy on the same issue? One answer—the political answer—is that President Obama made a political decision to craft policy in this way. But this account obscures the historical and institutional context in which President Obama's decisions about the SCC—and the decisions of his successors—take place. Another way to understand the implementation of the SCC is to look at the way the policy developed institutionally, at the interstices of executive and judicial power. On this account, the SCC was created in response to judicial requirements in the implementation of the executive direction for agencies to use cost-benefit analysis when statutorily permitted to do so.

To tell this story, we need cast our minds less than a decade backwards, to 2007, when the National Highway Traffic Safety Administration (“NHTSA”) faced a judicial challenge to its fuel economy standards for light trucks,⁴⁷ issued pursuant to its authority under EPCA.⁴⁸ To set the standards, NHTSA had performed a quantified and monetized cost-benefit analysis, analyzing the expected human health, environmental, and economic impacts of setting the fuel economy standards at various levels.⁴⁹ Based on the marginal differences between these different cost-benefit scenarios, the Agency then set the fuel economy standards at the level it considered to be the “maximum feasible,” the standard set out in the statute.⁵⁰ Although its final rule did include monetized estimates of the impacts of criteria pollutants like ozone and particulate matter

LINES AND DISCOUNT RATES FOR BENEFIT-COST ANALYSIS OF FEDERAL PROGRAMS (1992) [hereinafter OMB CIRCULAR A-94], <https://perma.cc/D542-MV58>.

⁴⁶ See IWG REPORT 2010, *supra* note 2, at 1 (discussing the process used to develop SCC estimates); see also *supra* notes 26–28 and accompanying text. The IWG converged on estimates that vary significantly—as with all climate disruption quantifications—based on the discount rate chosen. IWG REPORT 2010, *supra* note 2, at 48–49; see also *supra* notes 26–28 and accompanying text. These estimates were updated in May and November 2013. See IWG REPORT 2013, *supra* note 2, at 1.

⁴⁷ See generally *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172 (9th Cir. 2008).

⁴⁸ Energy Policy and Conservation Act of 1975, 49 U.S.C. §§ 32901–19 (2012) (as modified by the Energy Independence and Security Act of 2007).

⁴⁹ See Average Fuel Economy Standards for Light Trucks; Model Years 2008–2011, 70 Fed. Reg. 51,414, 51,424 (proposed Aug. 30, 2005) (to be codified at 49 C.F.R. pts. 523, 533, 537).

⁵⁰ The statute directs the Secretary of Transportation to set Corporate Average Fuel Economy (“CAFE”) standards at “the maximum feasible average fuel economy level that the Secretary decides the manufacturers can achieve in that model year.” 49 U.S.C. § 32902(a). To determine the “maximum feasible average fuel economy level,” the statute directs the Secretary to “consider technological feasibility, economic practicability, the effect of other motor vehicle standards of the Government on fuel economy, and the need of the United States to conserve energy.” *Id.* § 32902(f).

emitted during gasoline refining, NHTSA chose not to monetize any of the benefits of reducing CO₂ emissions.⁵¹

NHTSA's use of cost-benefit analysis formed the basis for a judicial challenge, which was brought by several states, large cities, and environmental groups.⁵² The petitioners argued (unsuccessfully) that the statute precluded reliance on cost-benefit analysis, and (successfully) that, if the Agency chose to rely on cost-benefit analysis, it was required to monetize the benefits of carbon emissions reductions.⁵³ The court held, in fact, that NHTSA's failure to monetize the standard's impacts on climate change was arbitrary and capricious.⁵⁴ Although the Agency had the discretion to apply cost-benefit analysis under the statute,⁵⁵ failing to monetize the benefits of reduced carbon emissions impermissibly "put a thumb on the scale by undervaluing the benefits and overvaluing the costs of more stringent standards."⁵⁶ While the court recognized that the Agency faced significant uncertainty in monetizing the impacts of carbon emissions, it rejected the Agency's argument that this uncertainty justified omitting the impacts entirely: "while the record shows that there is a range of values, the value of carbon emissions reduction is certainly not zero."⁵⁷ The court then remanded the decision to the Agency.⁵⁸

NHTSA responded by becoming the first agency to monetize the impact of carbon emissions. In 2008, it used a value of \$7/ton of CO₂ in its proposed fuel economy standards for passenger cars and light trucks.⁵⁹ Other agencies began to follow suit, although the figures they developed varied: the Department of Energy experimented with a range of \$0–20,⁶⁰ while EPA used \$40 and \$68.⁶¹ NHTSA then decided to take its monetization practices one step further by

⁵¹ See Average Fuel Economy Standards for Light Trucks Model Years 2008–2011, 71 Fed. Reg. 17,566, 17,589 (Apr. 6, 2006) (to be codified at 49 C.F.R. pts. 523, 533, 537); see also *Ctr. for Biological Diversity*, 538 F.3d at 1192.

⁵² Petitioners also successfully challenged NHTSA's decision not to prepare an environmental impact assessment under the National Environmental Policy Act. See *Ctr. for Biological Diversity*, 538 F.3d at 1227.

⁵³ *Id.* at 1196–98.

⁵⁴ *Id.* at 1200.

⁵⁵ See *id.* at 1197. This holding was consistent with the Supreme Court's subsequent decision in *Energy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208, 226 (2009).

⁵⁶ *Ctr. for Biological Diversity*, 538 F.3d at 1198.

⁵⁷ *Id.* at 1200. The court went on to identify several additional reasons that NHTSA's decision-making was arbitrary and capricious under EPCA. It concluded that "[i]n sum, there is no evidence to support NHTSA's conclusion that the appropriate course was not to monetize or quantify the value of carbon emissions reduction at all." *Id.* at 1200–01.

⁵⁸ *Id.* at 1227.

⁵⁹ See Average Fuel Economy Standards, Passenger Cars and Light Trucks; Model Years 2011–2015, 73 Fed. Reg. 24,352, 24,414 (May 2, 2008) (to be codified at scattered parts of 49 C.F.R.). The Agency also used a range of values (\$0–14) in its sensitivity analysis. *Id.*

⁶⁰ See Commercial Standard Sized Packed Terminal Air Conditioners and Packed Terminal Heat Pumps, 73 Fed. Reg. 58,772, 58,814 (Oct. 7, 2008) (to be codified at 10 C.F.R. pt. 431) (estimating an SCC but declining to use it in its cost-benefit analysis, since the rule passed a cost-benefit test without incorporating the impacts of carbon emissions).

⁶¹ See Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44,354, 44,416 (proposed July 30, 2008) (to be codified at 40 C.F.R. ch. I) (estimating global mean values of \$40 for a 3% discount rate and \$68 for a 2% discount rate); see also IWG REPORT 2010, *supra* note 2, at 3 (referring to EPA's estimates).

disaggregating domestic and global impacts. In its final fuel economy standards rule in 2009, it used both a domestic SCC of \$2 (representing domestic impacts) and a global SCC of \$33 (representing global impacts).⁶²

B. How Was the Current SCC Calculated?

In response to the multiplicity of SCC figures following the Ninth Circuit's decision in *Center for Biological Diversity v. National Highway Traffic Safety Administration*,⁶³ the Obama Administration assembled an IWG, with the express purpose of creating a standard SCC to be used across all agencies.⁶⁴ This standardized SCC was intended "to allow agencies to incorporate the social benefits of reducing carbon dioxide emissions into cost-benefit analyses of regulatory actions that impact cumulative global emissions."⁶⁵

Composed of twelve federal agencies and bodies, the IWG for the SCC initially convened from 2009 to 2010.⁶⁶ It produced its first report in February 2010, an updated report in May 2013, and then a slightly revised draft in November 2013.⁶⁷ The group did not undertake any original research; rather, it considered its job to be integrating existing literature on the expected impacts of climate change on agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services.⁶⁸

The group faced a significant challenge even without attempting any new research: it had to determine how to quantify, and preferably monetize, all of the impacts of climate change traceable to a single unit of domestic emissions. To approach these issues, the IWG identified three pre-existing Integrated Assessment Models ("IAMs"), all of which provided mathematical models of the relationships between emissions abatement, economic activity, and environmental outcomes. Scholars bent on modeling the impacts of climate change had already independently created each of these three models⁶⁹—DICE,⁷⁰ FUND,⁷¹

⁶² Average Fuel Economy Standards, Passenger Cars and Light Trucks Model Year 2011, 74 Fed. Reg. 14,196, 14,346 (Mar. 30, 2009) (to be codified at scattered parts of 49 C.F.R.). The Agency then performed a sensitivity analysis to determine whether the choice of SCC value impacted the final rule, and determined that it did not. *Id.*

⁶³ 538 F.3d 1172.

⁶⁴ See IWG REPORT 2010, *supra* note 2, at 1.

⁶⁵ IWG REPORT 2013, *supra* note 2, at 2. For at least some IWG participants, the specter of multiple competing VSLs, calculated individually by different agencies for the past few decades, provided a hazardous counterpoint if no standardized SCC was selected.

⁶⁶ *Id.* at 4. For the list of agencies, see *supra* note 3.

⁶⁷ See IWG REPORT 2013, *supra* note 2, at 1–2.

⁶⁸ See *id.* at 2.

⁶⁹ *Id.* at 5 ("These models are frequently cited in the peer-reviewed literature and used in the [International Panel on Climate Change] assessment. Each model is given equal weight in the SCC values developed through this process, bearing in mind their different limitations . . .").

⁷⁰ William Nordhaus initially developed the Dynamic Integrated Climate and Economy ("DICE") model on the basis of a series of energy models. IWG REPORT 2010, *supra* note 2, at 9 n.5. For the IWG's analysis of DICE, see *id.* at 6–7.

⁷¹ Richard Tol initially developed the Climate Framework for Uncertainty, Negotiation, and Distribution ("FUND") model to study international capital transfers. *Id.* at 5 n.2. For the IWG's analysis of FUND, see *id.* at 7–8.

and PAGE.⁷² Although each model is informed by the same set of scholarly literature on climate change impacts, each is constructed based on varying assumptions about processes and relationships that remain uncertain.⁷³ As a result, the models predict differing impacts for the same emissions behaviors.⁷⁴

This left the IWG with something of a conundrum: given that the different IAMs predicted different monetized impacts, how should the IWG calculate a single, standardized SCC? One option, of course, would have been to create multiple SCCs representing the predicted outcomes of each model. However, that would have defeated much of the purpose of having a single, focal SCC. Instead, lacking any principled mechanism for distinguishing between the models, the IWG decided to simply average them. This had the effect of weighting each model as one third of the SCC.⁷⁵

Another key puzzle the IWG faced was the technical but fundamental question of how to manage discount rates. Discounting is the process of making monetary amounts comparable through time.⁷⁶ It allows agencies—and businesses, economists, and individuals—to compare present and future costs against benefits on a level playing field, once they have all been monetized.⁷⁷ When done correctly, discounting accounts for the “time value” of money, or the notion that it is better to have a dollar today than a dollar in a hundred years, in ten years, or even a single year from now.⁷⁸

But *how much* better is it to have a dollar today than a dollar in a year? The “discount rate,” the rate at which money gains (or loses) value over time,

⁷² Chris Hope developed the Policy Analysis of the Greenhouse Effect (“PAGE”) model for use by European policymakers in assessing the impacts of carbon emissions. *Id.* at 5 n.2. For the IWG’s analysis of PAGE, see *id.* at 10–12.

⁷³ For a discussion of the differing assumptions underlying the models, see generally Richard Tol & Samuel Frankenhauer, *On the Representation of Impact in Integrated Assessment Models of Climate Change*, 3 ENVTL. MODELING & ASSESSMENT 63 (1998).

⁷⁴ For several persuasive arguments that all of the models omit several important sources of climate change damage, see Richard Revesz et al., *Global Warming: Improve Economic Models of Climate Change*, 508 NATURE 173, 174–75 (2014) (arguing that existing models predict too low of an impact per unit of emissions, because they underestimate weather impacts; do not account for damages to labor productivity, productivity growth, and the value of capital stock; assume wrongly that ecosystem services will maintain a constant value over time; and apply a constant discount rate instead of a declining rate).

⁷⁵ This approach has not been met with universal approval. See, e.g., Pizer et al., *supra* note 1, at 1189 (describing the questions of whether and how the models should be weighted as “difficult”). A more complex weighting of the models, however, would require some principled method for distinguishing the probability of one model versus another—a tall order, when these models already represent the best current science, and are all based on plausible assumptions.

⁷⁶ For a helpful overview, see generally Geoffrey Heal, *Discounting: A Review of the Basic Economics*, 74 U. CHI. L. REV. 59 (2007).

⁷⁷ For a symposium providing multiple legal perspectives on discounting, see generally *Symposium, Intergenerational Equity and Discounting*, 74 U. CHI. L. REV. 1 (2007).

⁷⁸ For a discussion of agency discounting of regulatory benefits, see Rowell, *supra* note 38, at 1510–15. Some commentators also advocate for other uses of discounting, most notably as a method for implementing ethical distributions. See generally Tol & Frankenhauer, *supra* note 73; Revesz et al., *supra* note 74. Cass Sunstein and this author have argued elsewhere that discounting is not the best way to implement obligations to future people. See generally Cass R. Sunstein & Arden Rowell, *On Discounting Regulatory Benefits: Risk, Money, and Intergenerational Equity*, 74 U. CHI. L. REV. 171 (2007). From a practical perspective, agencies’ current practice is to discount based on time-value. See OMB CIRCULAR A-94, *supra* note 45, at 8.

represents the answer to this question. There are multiple methods of calculating a discount rate, but a key economic approach focuses on trying to predict the investment opportunities that would be available if the dollar were invested and allowed to grow.⁷⁹ Under this view, if you could expect to get 5% a year on investments, the discount rate would be 5%.

What does all of this have to do with climate change, or the calculation of the SCC? A great deal. As David Weisbach and Cass Sunstein explained in a paper written just before Sunstein became head of OIRA, “[s]ome of the most important disagreements about how aggressively to respond to the threat of climate change turn on the choice of the discount rate.”⁸⁰ The reason is the uneven distribution of costs and benefits across time. The costs of abating emissions will be borne immediately, or relatively so. In contrast, people who have yet to be born will feel the vast majority of the benefits of reducing climate change impacts. From a discounting standpoint, this means that the benefits of climate change must be discounted over years, decades, and even centuries, before they can be compared to immediate costs. This has an enormous impact on how large the benefits look in comparison to the costs.

Discounting has this impact because it is the flipside of compound interest. An investor who invests \$1,000 on her twentieth birthday at a 10% yearly return will find that, fifty years later, she has \$117,391—even if she has made no other investments for retirement. Similarly, the present value of getting \$117,391 in fifty years is only \$1,000—if we believe that the correct discount rate is 10%. But what if it is not? Suppose that, instead of receiving 10% a year back on her investment, our investor receives only a 3% yearly return. In that case, her carefully hoarded \$1,000 will be worth only \$4,384 in fifty years. Thus, whether she can expect to receive 3% or 10% on her investments is the difference between her walking into the bank on her seventieth birthday to withdraw \$4,384 or \$117,391.

Discounting plays the same game with the future benefits of regulatory policies: the benefits look hugely different depending upon how much we expect to get back on our investments over the relevant time period. This effect grows exponentially as the relevant time periods grow longer and longer. The

⁷⁹ See generally OMB CIRCULAR A-94, *supra* note 45.

⁸⁰ David A. Weisbach & Cass R. Sunstein, *Climate Change and Discounting the Future: A Guide for the Perplexed* (Reg-Markets Center, Working Paper No. 08-19, 2008). Because of the massive impacts of discount rate choice, debates over the proper discount rate continue to proliferate. One key recent aspect of this debate is over the use of so-called “declining discount rates” for long-term impacts like climate change. Many prominent economists now agree that it is preferred to use declining—rather than constant—rates over long time periods, because doing so acts as a hedge against uncertainty. See generally Kenneth Arrow et al., *Should Governments Use a Declining Discount Rate in Project Analysis?*, 8 REV. ENVTL. ECON. & POL’Y 145 (2014) (concluding that the arguments in favor of a declining discount rate are compelling). All SCC estimates are currently calculated on the basis of constant discount rates. Because so many of the impacts of climate change are in the distant future, recalculation using a declining rate would likely increase the SCC significantly, making emissions limitations significantly more stringent, at least on the margins.

IWG, guided by Cass Sunstein, was well aware of this fact.⁸¹ At the same time, the selection of a discount rate remains enormously controversial even among economists who agree that opportunity cost is the appropriate mechanism for setting the rate:⁸² there is just too much variation in what economies might do over long time-scales, made even more complex by the fact that climate change itself may well affect future investment opportunities. In light of this, and despite its commitment to otherwise choosing only a single focal SCC, the IWG opted to create multiple SCC values representing the current monetized impact of one ton of carbon emissions, discounted at various rates.⁸³

The IWG's first estimates, released in interim fashion absent public comment, relied on two discount rates: 3% and 5%.⁸⁴ These interim values were used in several proposed and final rules before the IWG came out with final estimates.⁸⁵ The final estimates added a third discount rate—2.5%—as well as a “95th percentile” estimate to represent the expected impacts from carbon emissions in the higher end of the probability distribution.⁸⁶ These rates were chosen to capture three different approaches to setting the rate in the discounting literatures: the notion that it should be set at a market rate, the notion that the rate should be set to reflect uncertainty in rates over time, and the notion that it would be appropriate to use below-market rates to avoid burdening future generations.⁸⁷ Interestingly, in choosing these rates, the group decided to divert from typical agency practice, which is to prepare cost-benefit analyses with 3% and 7% rates.⁸⁸

Based on its selection of discount rates and the choice to identify a bad-case estimate, the February 2010 IWG report thus identified four different SCCs at three different discount rates: \$4.7/ton (5%), \$21.4/ton (3%), \$35.1/ton

⁸¹ See IWG REPORT 2010, *supra* note 2, at 17–23 (“The choice of a discount rate, especially over long periods of time, raises highly contested and exceedingly difficult questions of science, economics, philosophy, and law. Although it is well understood that the discount rate has a large influence on the current value of future damages, there is no consensus about what rates to use in this context.”).

⁸² See Weisbach & Sunstein, *supra* note 80, at 441–49.

⁸³ See IWG REPORT 2010, *supra* note 2, at 1, 25–26. None of these values were calculated with declining discount rates, although given recent support for doing so by prominent economists, such an estimate could make its way into future revisions. See *supra* note 80.

⁸⁴ In fact, the IWG issued five interim estimates: two using a 3% rate, two using a 5% rate, and one calculated as a central value. See IWG REPORT 2010, *supra* note 2, at 4. The IWG issued two different estimates at both discount rates because it prepared the estimates with and without a method used for adjusting for uncertainty in a discount rate. See *id.*

⁸⁵ See, e.g., *id.* EPA and the Department of Transportation proposed rules for fuel economy and CO₂ tailpipe emissions. See *id.*

⁸⁶ See *id.* at 25.

⁸⁷ See *id.* at 17–23.

⁸⁸ Agencies typically discount at 3% and 7%, the rates set forth in OMB Circular A-4, which provides well-established executive guidance to agencies performing cost-benefit analysis. See OMB CIRCULAR A-4, *supra* note 45, at 33–34. For the IWG report discussion of this decision, see IWG REPORT 2010, *supra* note 2, at 17–18 (noting that Circular A-4 recognizes that intergenerational problems can raise distinctive challenges for discounting policy, and explaining that it adapts and revises the A-4 process “[f]or the specific purpose of developing the SCC”).

(2.5%), and \$64.9/ton (3%, 95th percentile).⁸⁹ It also included additional values to allow these estimates to grow over time, to reflect the predictions of the IAMs on which the estimates were based.⁹⁰ Although the final report emphasized the “importance and value of considering the full range of values,” it also chose a “central estimate:” \$21.4/ton, or the averaged estimate at a 3% discount rate.⁹¹ It is this (now-updated) central value that regulators, commentators, and policy-makers typically refer to as “the SCC.”⁹²

Even as it set these initial estimates, the IWG included a formal recognition that the numbers were likely to change over time “as the science and economic understanding of climate change and its impacts improves.”⁹³ It set a “preliminary goal” of revisiting the values within two years “or at such time as substantially updated models become available.”⁹⁴ The IWG followed this approach by reconvening in 2013 to account for changes in the underlying IAMs.⁹⁵ It maintained its basic assumptions from the prior estimates,⁹⁶ but used the newer data now available in the IAMs, and developed a schedule around four new estimates:⁹⁷ \$11/ton (5%), \$32/ton (3%), \$51/ton (2.5%), and \$89/ton (3%, 95th percentile), with the \$32/ton (3%) estimate again serving as its central value.⁹⁸ The group convened once again in November 2013 to revise the estimates in light of an unintentional error within the FUND model, although this revision resulted in only a minimal change in the SCC estimates.⁹⁹ The updated central value of \$32 thus became, at least colloquially, the “SCC.” Adjusted using the Consumer Price Index, this gives us an SCC of \$37 in 2014 dollars.

C. What Is Included in the SCC?

The \$37/ton figure incorporates estimates of impacts out to 2300—a significantly longer time scale than is generally included in such analyses, which do not typically extend further than fifty years.¹⁰⁰ Importantly, the SCC also incorporates an unusual *geographic* scope for its impact assessment: unlike

⁸⁹ See IWG REPORT 2010, *supra* note 2, at 1, 25–26 (for 2010, expressed in 2007 dollars). The fourth estimate was created to represent a plausible worst-case scenario. See *id.* at 1.

⁹⁰ *Id.* at 3.

⁹¹ *Id.* at 25.

⁹² *Id.*; see also IWG REPORT 2013, *supra* note 2, at 12.

⁹³ IWG REPORT 2010, *supra* note 2, at 3.

⁹⁴ *Id.*

⁹⁵ The group again included twelve federal agencies and bodies, although the Domestic Policy Council replaced the Office of Energy and Climate Change. Otherwise, the participants were the same as in the initial report. For a list, see IWG REPORT 2013, *supra* note 2, at 1.

⁹⁶ See *id.* at 2 (explaining that it “does not revisit other interagency modeling decisions (e.g. with regard to the discount rate, reference case socioeconomic and emission scenarios, or equilibrium climate sensitivity)”).

⁹⁷ *Id.*

⁹⁸ See *id.* at 3 (providing estimates once again in 2007 dollars).

⁹⁹ See *id.* at 22. The differences between the November 2013 and May 2013 estimates were \$1 or less. *Id.*

¹⁰⁰ See Arden Rowell, *Time in Cost-Benefit Analysis*, 4 U.C. IRVINE L. REV. 1215, 1236 (2014) (discussing the typical time scope used in cost-benefit analyses).

normal regulatory analyses,¹⁰¹ the IWG provides a “global” estimate.¹⁰² Thus, \$37/ton is a best present-value estimate of the amount of monetized harm from each metric ton of CO₂ emitted in the United States, as that harm will be experienced by the entire world over the next 300 years. Although the IWG provides a general range for calculating domestic impacts,¹⁰³ the IWG has chosen affirmatively to recommend that agencies use this global measure, rather than a domestic measure.¹⁰⁴

As noted, the SCC estimate is based on an equally weighted average of the three IAMs on which the IWG chose to rely. The members of the IWG chose these models to help monetize certain kinds of impacts, namely “changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change.”¹⁰⁵ That said, each IAM has its own method for identifying key impacts, and its own method for attaching a dollar “value” to the impacts being modeled.¹⁰⁶

Because the SCC is calculated based on the three IAMs, the valuation methodologies used in those IAMs form the basis of current regulatory policy in the United States regarding climate change. This suggests that detailed analysis and discussion of these models is highly valuable as a policy matter.¹⁰⁷ For purposes of this Article, however, it is helpful to focus on just one aspect of these models’ valuation methodologies: their approach to valuing foreign impacts in terms of money.

As an entrée into these technical but important questions, let us once again turn to the treatment of mortality risks. Recall that U.S. agencies have a well-entrenched method of managing mortality risks: they calculate the amount of money that people are expected to be willing to pay for small (typically 1-in-10,000 to 1-in-100,000) increased risks of dying, and aggregate those figures to determine the amount that this suggests people would be willing to pay per life saved.¹⁰⁸ The resulting figure is the VSL. The VSL remains a primary driver in many health and environmental regulations.

¹⁰¹ For a discussion of typical agency practice in managing foreign impacts, see generally Rowell & Wexler, *supra* note 9, at 524–34.

¹⁰² See IWG REPORT 2010, *supra* note 2, at 10–11; Rowell & Wexler, *supra* note 9, at 532–34 (comparing agency practice in SCC valuations to agency practice in other regulatory analyses).

¹⁰³ IWG REPORT 2010, *supra* note 2, at 11 (“[T]he interagency workgroup determined that a range of values from 7 to 23 percent should be used to adjust the global SCC to calculate domestic effects.”). For the current estimate of \$37/ton for the global SCC, this would result in a domestic SCC of \$3–9.

¹⁰⁴ *Id.* (“[T]he interagency group concluded that a global measure of the benefits from reducing U.S. emissions is preferable.”).

¹⁰⁵ See *id.* at 1.

¹⁰⁶ See *id.* at 5–10 (discussing differences in the models).

¹⁰⁷ For suggestions on mechanisms for instituting periodic and meaningful review of these calculations, see Pizer et al., *supra* note 1, at 1189–90.

¹⁰⁸ EPA explains its process this way in its public “Frequently Asked Questions” about VSLs: “Suppose each person in a sample of 100,000 people were asked how much he or she would be willing to pay for a reduction in their individual risk of dying of 1 in 100,000, or 0.001%, over the next year. Since this reduction in risk would mean that we would expect one fewer death among the sample of 100,000 people over the next year on average, this is sometimes described as ‘one statistical life saved.’ Now suppose that the average response to this hypothetical question was

Mortality risks also constitute a significant portion of the expected negative impacts of CO₂ and other greenhouse gas emissions. In two of the IAMs on which the SCC depends—FUND and DICE—mortality risks are monetized in ways that allow a VSL equivalent to be backed out.¹⁰⁹ In both cases, mortality risks are valued based on countries' or regions' per capita income level.¹¹⁰ This means that the monetized value of preventing a single death varies with the per capita income of the country (or region) where the death would occur. This results in significant differences in the valuations attached to lifesaving in different countries: as an example, it results in VSL equivalents of approximately \$4.7 million per Canadian life saved, but only about \$90,000 per Indian life saved.¹¹¹ Under this approach, an agency would spend approximately \$90 million to save ten Americans,¹¹² \$40 million to save ten Canadians, and \$0.9 million to save ten Indians. Under current practice for the SCC, then, the United States allocates about half as much to save a life if the life is Canadian rather than American, and about 1/100 of the resources to save an Indian life compared to an American life.

Although spending wildly different amounts to save lives in different foreign countries may look bizarre—and indeed, may strike many people as ethically troubling¹¹³—the theory behind adjusting risk valuations to reflect income is well-established within the discipline of benefits transfer. Benefits transfer—a practice familiar to U.S. regulators performing cost-benefit analysis when there are no direct valuations available—is the use of one set of valuations in a different context than where the valuations were originally elicited.¹¹⁴ The basic

\$100. Then the total dollar amount that the group would be willing to pay to save one statistical life in a year would be \$100 a person x 100,000 people, or \$10 million." *Frequently Asked Questions on Mortality Risk Valuation*, NAT'L CTR. FOR ENVTL. ECON., EPA, <http://perma.cc/2JXK-MGH5>. For further discussion of how agencies value mortality risk reductions, see generally Robinson, *supra* note 41.

¹⁰⁹ For an excellent explanation of how to back out VSL figures from FUND and DICE, along with attendant inferred VSL equivalents and a comparison of those equivalents to measured VSL figures around the world, see Ethan Case, *The Value of a Statistical Life and the Social Cost of Carbon 17–21* (Apr. 2013) (unpublished masters project, Nicholas School of the Environment of Duke University), <http://perma.cc/FQ9V-JLNL> (relying on IAM estimates as of the 2010 IWG Report). The third IAM—PAGE—does not appear to have a clear VSL equivalent. *See id.* at 18.

¹¹⁰ *See* WILLIAM NORDHAUS & JOSEPH BOYER, *ROLL THE DICE AGAIN: ECONOMIC MODELS OF GLOBAL WARMING* 32 (1999) (explaining that DICE calculates "Years of Life Lost" on the basis of two years of per capita income in the affected country); *see also* Case, *supra* note 109, at 18–19 (calculating VSL on the basis of "Years of Life Lost" using a country's life expectancy); DAVID ANTHOFF & RICHARD TOL, *FUND—CLIMATE FRAMEWORK FOR UNCERTAINTY, NEGOTIATION AND DISTRIBUTION 2* (2010), <http://perma.cc/Q5X5-S5PR> (explaining that FUND calculates the value of an avoided mortality—an equivalent to VSL—at 200 times per capita income).

¹¹¹ For a helpful chart comparing VSL-equivalents and actual studies, see Case, *supra* note 109, at 20–21.

¹¹² Based on a \$9 million domestic VSL. VSLs vary across agencies, but this is a reasonable rough estimate. EPA, for instance, currently uses \$8.7 million. *See* EPA, *GUIDELINES FOR ECONOMIC ANALYSIS*, *supra* note 42, at 7–11 (identifying a central estimate of \$7.9 million in 2008 dollars, which adjusts to \$8.7 million in 2014 dollars).

¹¹³ For a discussion of plausible reasons to have different valuation methods for lives depending upon where those lives are located, see Rowell & Wexler, *supra* note 9, at 507.

¹¹⁴ For a helpful discussion of benefits transfer in the mortality risk reduction context, see Lisa A. Robinson, James K. Hammitt & Kevin Haninger, *Synthesizing Research for Benefit Transfer: Val-*

observation underlying the practice of adjusting for income is that people who have more money tend to be willing to spend more money to reduce the risks they face; poorer people, by contrast, are willing to spend less.¹¹⁵ This practice thus takes existing resource distributions as its starting point.¹¹⁶

When IAM modelers calculate VSL equivalents based on income-derived measures, then, they are following typical benefits transfer methodology to create an estimate of how much foreign people would be willing to spend *themselves* to avert a risk to themselves, given the resource constraints that they currently face. As poorer people—such as the average person in India—are likely to be willing to allocate fewer of their scarcer resources towards mortality risk reduction, while wealthier people—such as the average person in Canada—are thought to be willing to pay more, the formula used allocates monetized valuations accordingly.

D. Foreign Valuation in Context

The decision to measure foreign impacts using wealth-sensitive measures of damage was not inevitable. There are, in fact, multiple approaches to attaching dollar values to foreign impacts like foreign mortalities averted or foreign property damage. Each of these approaches can result in different valuations, which can in turn result in different policy choices.¹¹⁷

Perhaps the most important of the alternative approaches is the one that agencies have used in their cost-benefit analyses for decades: a “zero valuation” approach.¹¹⁸ This approach ignores foreign impacts, or more precisely, monetizes them at \$0. If the IWG had adopted this approach, the SCC would represent a monetized estimate of the domestic value of the domestic impact of each unit of carbon emissions. In the SCC context, this would involve attaching no value to climate change impacts that occurred outside U.S. borders. The

uing Mortality Risk Reductions (Oct. 3, 2013) (Harvard Ctr. For Risk Analysis, Methods for Research Synthesis: A Cross-Disciplinary Workshop, Working Paper), <http://perma.cc/5YYQ-6BT4>.

¹¹⁵ See *id.* For an influential discussion of the extent to which VSL is affected by wealth, see generally W. Kip Viscusi & Joseph E. Aldy, *The Value of a Statistical Life: A Critical Review of Market Estimates Throughout the World*, 27 J. RISK & UNCERTAINTY 5 (2003). For a more recent discussion of literature on this issue, see generally Hristos Doucouliagos, T.D. Stanley & W. Kip Viscusi, *Publication Selection and the Income Elasticity of the Value of a Statistical Life*, 33 J. HEALTH ECON. 67 (2014).

¹¹⁶ Of course, existing distributions may be unequal and/or unfair. The practice of using WTP does nothing to address pre-existing inequalities and may even help to entrench inequalities more deeply, since it will tend to encourage decision makers to allocate goods towards wealthier persons and away from poorer ones. Unfortunately, incorporating distributional equity into useable valuations is extraordinarily challenging, and at least until recently, appeared to be virtually impossible to do in a principled fashion. Matt Adler’s recent work suggests that such an approach is at least theoretically possible, although fundamental valuation challenges remain. See generally ADLER, *supra* note 30 (providing a principled alternative to cost-benefit analysis that would account for distributional equity); see also Arden Rowell, *Book Review: Well-Being and Fair Distribution*, 33 RISK ANALYSIS 1379, 1379–80 (2013) (identifying continued practical challenges to implementing distributionally weighted valuations).

¹¹⁷ See Rowell & Wexler, *supra* note 9, at 562–63 (describing how changes in the approach chosen to value foreign impacts can affect the results of cost-benefit analyses).

¹¹⁸ See *id.* at 524–35 (discussing U.S. valuation of foreign lives in different regulatory contexts).

IWG does indicate that it expects only 7–23% of the impacts of climate change to be domestic, although it then recommends that agencies rely on global rather than domestic estimates.¹¹⁹ Had it chosen to apply a zero-valuation approach to foreign impacts, its final SCC estimate would have only been between \$3–9/ton—between a twelfth and a fourth of the current estimate.

Another approach would have been to value foreign impacts using some form of an equality principle to treat domestic and foreign impacts the same regardless of location. Under this approach, the IWG could have attached monetized values to foreign impacts based on how much domestic persons would be expected to pay to avoid the same harms to themselves. This is roughly equivalent to the approach that the U.S. military uses in military operations, when it prioritizes risks to foreign civilians at or above risks to U.S. military personnel.¹²⁰ Because the vast majority of the world is significantly poorer than the United States, and poorer countries elicit lower monetized estimates of damages (all else equal) from the IAMs, this approach would have significantly increased the current SCC of \$37/ton.

A third alternative approach would have been to attach distributional weights to impacts that are expected to fall upon less-well-off populations.¹²¹ Under a distributional-weights valuation approach, the SCC would have represented an ethics-driven adjustment to the monetized estimate of the impact of each unit of carbon emissions. In the SCC context, this would have involved attaching additional distributional weights to impacts that are expected to fall on people in poor countries—the exact opposite of the SCC’s actual methodology, which values harms to poorer persons less than the same harms to wealthier persons. The final SCC as calculated would have varied based upon the underlying approach, but could easily have been many factors—and possibly even orders of magnitude—larger than the current estimate of \$37/ton.

It is helpful to contextualize the current SCC calculations against these other valuation methods for at least two reasons. First, putting the selection of the SCC’s foreign-valuation method in context helps reveal the surprising tension between the way that agencies typically value foreign impacts, and the way that foreign impacts are valued for purposes of the SCC. This inconsistency puts agency practice on awkward analytical footing, especially where policies create foreign impacts through both climate change and other means. At the least, agencies would do well to recognize this tension and to explain their reasoning in applying different methods to value the same impacts.

Second, being aware of various valuation methods can help illustrate that different plausible methodologies for calculating impacts could have resulted in very different numbers for the final SCC. The current SCC would have been significantly lower had the IWG chosen to use the zero-valuation approach that

¹¹⁹ See IWG REPORT 2010, *supra* note 2, at 10–11.

¹²⁰ See Rowell & Wexler, *supra* note 9, at 541–48 (discussing U.S. valuation of foreign lives in the context of armed conflict).

¹²¹ This would be consistent with Matt Adler’s recommendations in WELL-BEING AND FAIR DISTRIBUTION: BEYOND COST-BENEFIT ANALYSIS, *supra* note 30. See also Rowell, *supra* note 116, at 1379–80.

is widely utilized in other regulatory cost-benefit analyses. But the SCC would have been larger—possibly much, much larger—had the IWG chosen to use either the same valuation for impacts regardless of location, or an approach based on distributional weighting. As the next Part explores, similar swings in value can be achieved through even more subtle shifts in valuation methodology.

II. CALCULATING A “GLOBAL” SCC

The choice of valuation methodology can have significant impacts on the value of the SCC. The IWG’s decision to calculate a measure of the global SCC, as opposed to a domestic SCC, is consequential. Yet the undifferentiated label of “global” SCC can obscure technical but constitutive decisions about valuation methodology—decisions that can also have fundamental impacts on the final value attached to the SCC.

Critics of the SCC have recently argued that, in calculating a global estimate, the SCC inappropriately incorporates foreign people’s preferences into domestic policy.¹²² If true, such a practice could exceed agencies’ authority under some statutes, as is discussed in more detail in Part III.¹²³ Yet, there are at least two different ways that estimates of impacts might be “global.” One way is indeed that agencies could use a global measure of *whose preferences* are considered in the analysis—a measure known in economic circles as “economic standing.” But another way estimates may be global is in their description of the *location* of considered impacts—a measure it is more accurate to think of as “scope.”

Conflating scope and economic standing adds confusion to what is already an incredibly complex question. Distinguishing between the two may help presidents, agencies, and other policymakers identify the actual policy levers underlying calculation of the SCC. It may also help inform agencies’ statutory authority: some statutes may allow for consideration of globally scoped impacts, even if they do not allow for incorporation of global preferences into domestic regulations.

In furtherance of these purposes, this Part begins by distinguishing between calculations of scope and calculations of economic standing. It then analyzes current practice of SCC calculation, and finds that thus far neither the IWG nor agencies have explicitly disentangled the two considerations. It concludes that, although the valuation methodologies underlying “global” SCC calculations remain largely undifferentiated, the current SCC effectively adopts a global scope while leaving the treatment of economic standing ambiguous.

¹²² See Gayer & Viscusi, *supra* note 7, at 4.

¹²³ See *infra* Part III.

A. *Distinguishing Scope and Economic Standing*

Within the institutional context of regulatory cost-benefit analysis, agencies have historically and consistently used a *domestic* scope.¹²⁴ “Circular A-4” directs agencies performing cost-benefit analysis to limit their geographic “Scope of Analysis” in this way: “Your analysis should focus on benefits and costs that accrue to citizens and residents of the United States. Where you choose to evaluate a regulation that is likely to have effects beyond the borders of the United States, these effects should be reported separately.”¹²⁵ In interpreting this guidance, agencies routinely (albeit implicitly) exclude potential foreign impacts entirely from their cost-benefit analysis, functionally monetizing those foreign impacts as having zero value.¹²⁶ So, under traditional cost-benefit valuation approaches, EPA would value saving ten lives at \$87 million if those lives were in Buffalo, New York, but would value saving ten lives across the Canadian border at \$0. In fact, agencies attach zero value to foreign impacts in their cost benefit analyses even where they have explicitly recognized the possibility of trans-boundary impacts, as was the case when EPA addressed the National Ambient Air Quality Standard for ozone.¹²⁷ For purposes of most regulatory risks, then, U.S. regulatory agencies have a clear policy in setting the scope of their cost-benefit analyses: they look at a domestic—and only domestic—scope of impacts.

Economic standing also has an intellectual pedigree in economic analysis in general and in scholarship on cost-benefit analysis more particularly.¹²⁸ In the context of cost-benefit analysis, the concept of economic standing is meant to capture the question of whose preferences count in the analysis. Cost-benefit structures built on WTP, for instance, only incorporate human preferences into their decision-making: nonhuman animals and the rest of nature are not included as potential sources of value, and thus have no economic standing.¹²⁹ Particularly where a given action has externalities, the question of whose harms and pleasures count in the analysis can often be outcome determinative. That said, agencies have not and do not routinely address questions of economic standing in their cost-benefit analyses.

¹²⁴ See Rowell & Wexler, *supra* note 9, at 526–32.

¹²⁵ OMB CIRCULAR A-4, *supra* note 45, at 15.

¹²⁶ See Rowell & Wexler, *supra* note 9, at 526–32 (describing the treatment of foreign impacts in the seven largest regulations of 2011).

¹²⁷ See *id.* at 527–29; see generally EPA, RIA FOR FINAL NAAQS FOR OZONE, *supra* note 12.

¹²⁸ See generally Dale Whittington & Duncan MacRae, Jr., *The Issue of Standing in Cost-Benefit Analysis*, 5 J. POL'Y ANALYSIS & MGMT. 665 (1986); William N. Trumbull, *Who Has Standing in Cost-Benefit Analysis?*, 9 J. POL'Y ANALYSIS & MGMT. 201 (1990); Dale Whittington & Duncan MacRae, Jr., *Comment: Judgments About Who Has Standing in Cost-Benefit Analysis*, 9 J. POL'Y ANALYSIS & MGMT. 536 (1990); William N. Trumbull, *Reply to Whittington and MacRae*, 9 J. POL'Y ANALYSIS & MGMT. 548 (1990); Richard O. Zerbe, Jr., *Comment: Does Cost-Benefit Analysis Stand Alone? Rights and Standing*, 10 J. POL'Y ANALYSIS & MGMT. 96 (1991).

¹²⁹ See generally Seth Baum, *Value Typology in Cost-Benefit Analysis*, 21 ENVTL. VALUES 499 (2012) (discussing the general anthropocentrism of most forms of cost-benefit analysis).

Although it is easy to confuse the question of scope and the question of economic standing,¹³⁰ the two are in fact distinct from one another, and can be combined in different ways to produce different valuation policies premised upon different underlying assumptions. Consider this chart as an aid to distinguishing scope and standing:

FIGURE 1: SCOPE VERSUS ECONOMIC STANDING

		Economic Standing		
		<i>Whose preferences are included in the analysis?</i>		
		Domestic	Foreign	Global
Scope	<i>domestic</i>	Dd Domestic persons' preferences regarding domestic impacts.	Fd Foreign persons' preferences regarding domestic impacts.	Gd (Dd + all Fd) All persons' preferences regarding domestic impacts.
	<i>foreign</i>	Df Domestic persons' preferences regarding foreign impacts.	Ff Foreign persons' preferences regarding foreign impacts.	Gf (Df + all Ff) All persons' preferences regarding all foreign impacts.
	<i>global</i>	Dg Domestic persons' preferences regarding all (d+f) impacts.	Fg Foreign persons' preferences regarding all (d+f) impacts.	Gg (Dd + all Fd + Df + all Ff) All persons' preferences regarding all impacts.

One could imagine calculating a different SCC for each of these cells.¹³¹ Perhaps the most straightforward way to do so would be to directly elicit actual

¹³⁰ See, e.g., Gayer & Viscusi, *supra* note 7, at 13, 16–17 (assuming that the global SCC creates foreign standing). Note that Gayer and Viscusi do discuss altruism- and reciprocity-based preferences separately from economic standing. See *id.* at 14. One advantage of focusing on the question of scope is that it does not necessarily require the analyst to disentangle the basis of preferences in order to determine people's WTP. Domestic preferences about foreign impacts might therefore be altruism-based, reciprocity-based, based on selfish use value (as for persons who trade or travel to foreign countries), based on option value, or based on any combination of these reasons. All of these reasons can be integrated, either by individuals themselves, or through an internalization factor, as discussed *infra* Part II.B.

¹³¹ One could also imagine a similar chart for future valuation that distinguished between scope ("when are the considered impacts?") and economic standing ("whose preferences matter: present persons' or future persons'?). It would even be possible to combine the two, and to consider (for

preferences from actual persons. Given the valuation context of monetized cost-benefit analysis, these preferences would be most useful in monetized form. As already discussed, the norm in such cases would be to use a WTP metric.¹³² Different approaches to economic standing would then result in different populations' preferences being elicited: under a domestic standing approach, only domestic persons would have their preferences elicited, while under a global standing approach, foreign persons would also have their preferences elicited.¹³³ Similarly, different approaches to scope would result in different ranges of impact: under a domestic scope, the targeted group would be encouraged to monetize their preferences regarding domestic impacts only, while under a global scope, the targeted group would be encouraged to monetize their preferences regarding global impacts. Any such study would require an up-front decision about which of these approaches was most suited to a valuation context, because the choice of approach would obviously dictate both who was asked and what they were asked. Precisely because of this, anyone evaluating a valuation process based on such studies would have little difficulty distinguishing which valuation method was used.

Unfortunately, such studies are costly, particularly when run well, and in any case have yet to be run with any robustness.¹³⁴ Yet the IAMs on which the IWG relied to calculate the SCC still identify monetized impacts. If there are vanishingly few preference studies distinguishing domestic and foreign preferences and scope, on which of the possible approaches to calculating an SCC did the IAMs base their figures? Or in other words, who is it that the IWG believes would value emissions reduction at \$37/ton, and where are the impacts the SCC is intended to value?

The IWG does not explicitly disentangle these issues. That said, a \$37/ton SCC could reasonably be interpreted either as an estimate of global WTP to prevent all global impacts, or as an estimate of domestic WTP to prevent all global impacts, depending upon what assumptions are made about domestic persons' interests in preventing harm to foreign persons.

To see this, one can look at the relationship between the different boxes in the chart. First, in the absence of actual preference elicitations, an estimate of global impacts may be a reasonable estimate for global WTP to avert those impacts. This is because the global impact estimate points to the amount of harm that the entire world will experience as a result of the emission of a single

example) present domestic persons' preferences about future global impacts. Such an analysis would be valuable, but is beyond the scope of this Article.

¹³² See *supra* Part I.A.

¹³³ Note that it is also possible to imagine a "foreign" standing approach that looked only at foreign preferences, and which excluded domestic preferences. The author has omitted this from the table for simplicity's sake.

¹³⁴ The vast majority of VSL studies, for instance, have been run in developed countries, and disproportionately in the United States. Attempts to calculate the domestic WTP for global climate change impacts are vanishingly rare, but for an intriguing exception, see generally David A. Dana, *Valuing Foreign Lives and Civilizations in Cost-Benefit Analysis: The Case of the United States and Climate Change Policy* (Northwestern Univ. Sch. of Law, Faculty Working Paper No. 196, 2009). For a sophisticated treatment of the alternatives agencies face when dealing with limited data, see generally Robinson, *supra* note 41.

ton of CO₂. A fully rational, fully informed, and fully self-interested global population might then be assumed to be willing to pay up to that amount of money to prevent accrual of that level of harm. Putting transaction costs aside, this suggests that Gg is reasonably estimated—assuming that damage estimates themselves are sound—at \$37/ton.

Following the same reasoning, and again in the absence of actual preference elicitations, we can also create an estimate for Dd—for the amount we should reasonably expect domestic persons to be willing to spend to avert domestic impacts. Using domestic impacts as an estimate for this figure assumes domestic persons would be willing to pay to prevent at least the costs that they themselves would otherwise bear. This is the IWG's own \$3–9/ton estimate. It was the assumption that this number was necessarily \$0 that led to NHTSA's cost-benefit analysis being overturned as arbitrary and capricious in *Center for Biological Diversity*, and which led to agencies being judicially required to account for some estimate of the SCC in their cost-benefit analyses.¹³⁵ Or another way to put this point is that, as a doctrinal legal matter, it appears that Dd cannot be \$0.

Now let us consider Dg, or the presumed domestic WTP to avert global impacts. What can we learn from the figures we have already filled in on the table? It would be unreasonable to assume that the domestic population would pay *less* to prevent all global impacts than to prevent domestic impacts. So Dd (presumed domestic WTP to avert domestic impacts) looks like a floor for Dg: $Dd \leq Dg$.

Similarly, it would be unreasonable to assume that the domestic population would be willing to pay *more* per unit of emissions reduction than the entire world—including itself—would be willing to pay for the same reduction. So Gg (presumed global WTP to avert global impacts) looks like a ceiling for Dg: $Dg \leq Gg$.

This leaves us with a range for Dg (presumed domestic WTP to avert global impacts) between Dd (presumed domestic WTP to avert domestic impacts) and Gg (presumed global WTP to avert global impacts): so a range for Dg of \$3–37 ($Dd \leq Dg \leq Gg$). This is a pretty large range. Again absent actual preference elicitations, is there reason to think that domestic WTP to avert the global impacts of climate change is more like domestic WTP to avert domestic impacts, or global WTP to avert global impacts?

One way to answer this question is to consider the category of Gd—the presumed WTP of the entire global community to prevent climate change impacts within the United States. This number should be no less than Dd, since the United States' preferences would be summed into it. But would it ever exceed Dd?

The answer depends upon our assumptions about foreign persons' preferences about the United States. Do any foreign people have any preferences or interests tied in any way to the United States? Do any foreign persons have trading partners, vacation plans, friends, family, or other values that would be

¹³⁵ See *supra* notes 47–62 and accompanying text.

harmful if climate change negatively impacts the United States? If the answer is “no,” then Dd and Gd will be the same. If the answer is “yes,” then Gd will be greater than Dd.

We can ask the same kind of questions about domestic preferences regarding foreign impacts. Do any domestic persons have any preferences or interests tied in any way to any place, species, plan, or person outside the borders of the United States? If the answer is “no,” or even “not much,” then domestic willingness to avert global impacts (Dg) is essentially the same as Dd—the amount we would spend ourselves to reduce harm to ourselves. But if the answer is “of course,” then we should expect Dg to be significantly higher. How much higher? Not, presumably, higher than Gg—than the sum total monetized impact of emissions on the entire world—but possibly closer to Gg than to Dd.

A way to state this more precisely is to say that, to determine where Dg should fall in the range between Dd and Gg, policymakers need to estimate the amount they would expect people in the United States to internalize the harms of their emissions to the rest of the world. Call this the “internalization factor.” Domestic WTP to prevent global emissions impacts could then be calculated based on expected domestic impacts, expected foreign impacts, and the internalization factor:

$$\begin{array}{c} \text{Domestic WTP for Global SCC} \\ = \\ \text{domestic impacts} + \text{internalization factor} * \text{foreign impacts} \end{array}$$

Obviously, selection of an internalization factor is challenging, because it requires a determination of the level at which domestic policies should internalize foreign harms. Yet, whether or not calculation of the factor is explicit, this is exactly the challenging question that is posed by calculation of an SCC by reference to domestic preferences regarding global impacts.

Note that this approach—based on domestic WTP—can result in outcomes anywhere in the range between Dd and Gg, depending upon which internalization factor is chosen. Suppose, for instance, that we believed that the internalization factor was “zero,” such that the United States internalizes 0% of foreign harms. If zero were the correct internalization factor, it would mean that U.S. persons would be willing to pay \$0 to prevent foreign persons from experiencing the harms of U.S. emissions. In that case, the resulting domestic WTP for a global SCC would be equal to Dd: just the domestic impacts of each ton of carbon emissions.

Similarly, suppose that we believed that the appropriate internalization factor was “one,” such that the United States internalizes all of the foreign impacts of its emissions. If this were the correct internalization factor, U.S. persons would be willing to pay as much to prevent foreign persons from being exposed to harm as those foreign persons would pay to protect themselves. In that case, Dg would be exactly equal to Gg: to the amount that all persons would pay to avoid being exposed to additional U.S. emissions.

B. The Current SCC Adopts a Global Scope, But Its Treatment of Economic Standing Is Ambiguous

Now that we have some idea of how these different valuation approaches relate both to one another and to the bare calculation of impacts, let us consider how this relates to the IWG's actual decision to choose \$37/ton as the central estimate for agencies to use in calculating the SCC. Which of these varying approaches is embodied in the IWG's practice?

On first glance, the IWG treatment of foreign impacts looks to be transparent in its reasoning. In its section on global impacts, the IWG report explains its choice to focus on global impacts by reference to "the distinctive nature of the climate change problem."¹³⁶ It affirmatively recognizes that this "represents a departure from past practices," although it refers only to prior practices of SCC calculation.¹³⁷ The report makes no explicit reference to the fact that its chosen methodology is also a departure from past practices in non-climate-change contexts, although it does note that "[u]nder current OMB guidance contained in Circular A-4, analysis of economically significant proposed and final regulations from the domestic perspective is required, while analysis from the international perspective is optional."¹³⁸ The IWG provides two reasons for its departure from past practices: first, that climate change is a global externality, and second, that climate change requires multilateral action.¹³⁹

The IWG has thus been explicit about its decision to adopt a global *scope* for its analysis of climate change, and this decision is a significant departure from the domestic scope used regularly throughout other cost-benefit analyses, as noted.¹⁴⁰ The IWG has not, however, explicitly addressed the question of economic standing—of whether the monetized global impacts of climate

¹³⁶ IWG REPORT 2010, *supra* note 2, at 10. The report went on to note: "This approach is the same as that taken for the interim values, but it otherwise represents a departure from past practices, which tended to put greater emphasis on a domestic measure of SCC (limited to impacts of climate change experienced within U.S. borders)." *Id.*

¹³⁷ *Id.*; cf. Rowell & Wexler, *supra* note 9 (describing other foreign-valuation contexts).

¹³⁸ IWG REPORT 2010, *supra* note 2, at 10. This is technically an accurate description of the portion of Circular A-4 that deals with the scope of analysis, although it leaves out two aspects that are likely to strike even a casual reader reviewing the provision. See OMB CIRCULAR A-4, *supra* note 45, at 15 ("Scope of Analysis. Your analysis should focus on benefits and costs that accrue to citizens and residents of the United States. Where you choose to evaluate a regulation that is likely to have effects beyond the borders of the United States, these effects should be reported separately."). First, domestic impacts are not simply "required" under A-4: the Circular affirmatively directs agencies to "focus on" impacts on citizens and residents of the United States. *Id.* Second, foreign impacts are not just "optional": the Circular affirmatively directs agencies to report those effects "separately." *Id.* The IWG's choice of a standardized global SCC thus deviates from this guidance in two important ways: in focusing on foreign impacts, and in encouraging agencies to value, calculate, and make decisions based upon a global SCC that does not require any separate identification, much less consideration, of domestic impacts.

¹³⁹ IWG REPORT 2010, *supra* note 2, at 10–11 (noting that "[w]hen these considerations are taken as a whole, the interagency group concluded that a global measure of the benefits from reducing U.S. emissions is preferable").

¹⁴⁰ This departure may be justifiable insofar as climate change impacts are distinctive from other types of regulated risks. That said, the departure may have institutional implications even if justifiable. See *infra* Part III.

change are to be incorporated into U.S. cost-benefit analyses because they represent an estimate of *domestic preferences* or *global preferences* (i.e., the sum of domestic and foreign preferences). With the distinction between scope and economic standing in mind, it should be clear that knowing the scope of the analysis the IWG chose does not necessarily tell us the standing presumption as well: a globally scoped analysis might fall into any of the boxes at the bottom of Figure 1.

Given the analysis above, this would leave an objective analyst undetermined about what particular approach the United States is currently relying upon to calculate the global SCC. This is because D_g approaches G_g as the presumed internalization factor increases. Without any explicit discussion by the IWG of either the economic standing issue or the choice of internalization factor, the decision to calculate the SCC on the basis of estimates of foreign persons' WTP to avoid harm might be either an attempt to estimate F_g (so that it can then be added to D_g to calculate G_g), or it might simply reflect the presumed 100% internalization of foreign impacts into domestic preferences.

In other words, so long as we believe damage-impact methodologies to be otherwise reasonable, \$37/ton would be a reasonable estimate of G_g : of the total amount that the global community might reasonably spend to avert global impacts. But as we have seen, this is also the figure that would result from D_g if the internalization factor were one: it is the amount we would expect domestic persons to be willing to pay to avert global impacts, if domestic persons are assumed to internalize all foreign harms. Purely from observing the IWG's choice of \$37/ton, then, we cannot determine whether the IWG is basing its estimates on domestic or global economic standing. Nor does the IWG's discussion distinguish between these two approaches.¹⁴¹

Both domestic and global standing approaches could result in a \$37/ton SCC, so the mere selection of that figure does not reveal the IWG's standing

¹⁴¹ The report does explicitly reject using a "weighted" approach to valuation, which is a form of ethics-driven valuation. IWG REPORT 2010, *supra* note 2, at 11. The initial technical support document notes that "a number of analysts," including David Anthoff, one of the authors of FUND, use equity weighting, which adjusts valuations to reflect the fact that a reduction in wealth in a poor country may cause more suffering than a reduction in wealth in a wealthy country. Under this approach, "[a] per-capita loss of \$500 in GDP, for instance, is weighted more heavily in a country with a per-capita GDP of \$2,000 than in one with a per-capita GDP of \$40,000." *Id.* The IWG affirmatively rejects this approach, saying that it "would not be appropriate for estimating a SCC value used in domestic regulatory analysis" because "development of the appropriate 'equity weight' is challenging." *Id.* The document includes a footnote explaining its opinion that equity weighting is inappropriate, which reads in its entirety: "It is plausible that a loss of \$X inflicts more serious harm on a poor nation than on a wealthy one, but development of the appropriate 'equity weight' is challenging. Emissions reductions also impose costs, and hence a full account would have to consider that a given cost of emissions reductions imposes a greater utility or welfare loss on a poor nation than on a wealthy one. Even if equity weighting—for both the costs and the benefits of emissions reductions—is appropriate when considering the utility or welfare effects of international action, the interagency group concluded that it should not be used in developing an SCC for use in regulatory policy at this time." *Id.* at 11 n.7. This is a very difficult issue, but it is worth noting Adler's thorough and serious attempt to explain how equity weighting might be performed in the context of cost-benefit analysis. See generally ADLER, *supra* note 30.

methodology, or more specifically, whether the IWG adopted its estimates on the assumption that domestic populations are willing to pay to internalize all the impacts of their carbon emissions, or because it has granted economic standing to foreign persons. Furthermore, despite recent scholarship arguing that the IWG has implicitly granted economic standing to foreign persons,¹⁴² there appears to be nothing in the SCC documents themselves that eliminates that ambiguity.¹⁴³ Certainly, there is no explicit adoption of either valuation method—either a domestic-WTP or a foreign-WTP approach to valuing foreign impacts—and it may be that the IWG simply did not consider the potential distinction between the methods. As a result, it remains unclear whether the current SCC is an estimate based on domestic or global preferences, as the current figure appears to be consistent with two different forms of foreign valuation.

What *should* agencies do to determine which of these approaches to use? While there may be various reasons for adopting different approaches to foreign valuation in non-climate-change contexts,¹⁴⁴ two specific inquiries may be helpful in thinking through the appropriate approach to use in climate-change contexts.

First, agencies can ask whether impacts are easily severable by where they can be expected to occur. If they are easily severable, they should be segregated, as different policy prescriptions might plausibly follow from the exist-

¹⁴² See Gayer & Viscusi, *supra* note 7, at 12–13.

¹⁴³ There are several places in the initial document that a close reader might initially believe to be informative as to what the IWG believed itself to be doing, but at least on this they are all ultimately ambiguous as to how the IWG justifies its valuations. See generally IWG REPORT 2010, *supra* note 2. For the very interested reader, though, allow this author to discuss several of these spots.

First, the initial document does distinguish the recommended approach from prior practices of calculating the SCC that were limited to measures of climate change impacts experienced within U.S. borders. *Id.* at 10. This might make a casual reader lean towards the assumption that the IWG was adopting—in contrast to prior practice—a foreign-WTP approach that thus grants some form of foreign standing. But the approach of limiting monetized impacts to domestic impacts is functionally a zero-valuation approach to foreign impacts. This is therefore another example of where the IWG rejects a zero-valuation approach. That said, this does not necessarily illuminate the IWG's choice between domestic and foreign WTP, except to suggest that if the IWG is adopting a domestic-WTP approach, it is not adopting a zero internalization factor.

The initial IWG document also distinguishes between what it calls the “global SCC,” by which it refers to its final estimate, and the “domestic SCC,” which it directs agencies to use “to calculate domestic effects.” *Id.* at 11. “Reported domestic values,” it directs tersely, “should use this range.” *Id.* These effects are presumably direct effects only—that is, they presumably do not incorporate any positive externalization factor—because they are set at a range of 7–23% of global impacts (calculated as described above), and the 23% is set explicitly as “proportional to the U.S. share of global GDP, which is currently about 23 percent.” *Id.* Yet the remainder of the treatment of this issue is ambiguous as to the question of whether the domestic SCC is merely a calculation of domestic impacts, or whether it ought instead to be interpreted as an alternative estimate to the global SCC, with the distinction falling in whether domestic or foreign persons are the relevant valuers.

¹⁴⁴ See Rowell & Wexler, *supra* note 9, at 507–21 (identifying political, philosophical, psychosocial, and practical reasons that foreign-valuation practices might vary across contexts); Colleen Murphy, *Differentiating Moral Duties*, U. OF ILL. L. REV. SLIP OPINIONS 5, 5–11 (2015) (arguing that moral duties to value foreign risks may differ across contexts).

tence of near and distant impacts. If the impacts are not easily severable, however, they may need to use an aggregate—i.e., global—measure to avoid being misleading. This is particularly applicable in the context of global public goods, which cannot be meaningfully disaggregated. Insofar as climate change is a global public good, and/or insofar as the IAMs remain limited in their ability to disaggregate highly localized geographic impacts, this is a strong reason to use a global, aggregated measure in considering climate change impacts.

Second, agencies should ask whether preferences are independent of one another. If yes, they should segregate for transparency purposes. If no, it may be easier and more meaningful to calculate an aggregate equilibrium than to try to count preferences independently. This is also a reason to use a global aggregated measure in considering climate change impacts.

III. IMPLICATIONS OF THE GLOBAL VALUATION OF CLIMATE CHANGE

The IWG has created an estimate of climate change impacts that is based on a global scope—and on some account of economic standing that has yet to be articulated. Even without articulating one specific approach to economic standing, however, this practice creates tension with agency practice in other cost-benefit arenas. How can agencies resolve this global focus with existing executive direction to use domestic scopes in their analyses, and with the past practice of focusing only on domestic impacts?

In answering this question, agencies must satisfy different requirements from different branches of government. Executive agencies in particular are answerable to the executive for their policy decisions, and thus subject to various forms of executive control.¹⁴⁵ Agencies are also typically answerable to the judiciary for meeting minimum standards of non-arbitrariness and rationality.¹⁴⁶ Courts also ensure that agencies follow the dictates of the legislatively enacted statutes that agencies administer and of the Constitution.¹⁴⁷ Perhaps unsurprisingly, these different obligations sometimes conflict with one another.

Yet even this tension does not fully represent the complexity of the tasks agencies routinely face. Even within a single branch, agencies must often resolve multiple levels and types of guidance. Within the executive branch, for instance, valuation policy requires incorporating, at a minimum: the executive

¹⁴⁵ For an excellent treatment of forms of executive control, and agencies' potential responses to those forms of control, see generally Nou, *supra* note 43.

¹⁴⁶ See Administrative Procedure Act, 5 U.S.C. § 706(2)(A) (2012) (allowing courts to review agency rules and actions that are "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law"); *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) ("The scope of review under the 'arbitrary and capricious' standard is narrow and a court is not to substitute its judgment for that of the agency. Nevertheless, the agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.' In reviewing that explanation, we must 'consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment.'" (internal citations omitted)).

¹⁴⁷ See 5 U.S.C. § 706 (2)(B)–(C).

orders that deal directly with regulatory planning and review, the most important of which are Executive Order 12,866 and 13,563;¹⁴⁸ the key circulars from the OMB that direct executive agencies in performing cost-benefit analysis, the most relevant of which are Circulars A-4 and A-94;¹⁴⁹ any other executive guidance that bears on their particular project, as well as any future revisions to any of the above; and any more informal guidance from the executive. Furthermore, all of this complexity arises before agencies even reach the actual challenges involved in measuring, quantifying, and assessing the multiple impacts of any particular proposed rule.

This is a tall order, and although it is a tall order that agencies routinely fill, it is worth considering how the addition of the IWG reports¹⁵⁰—which adopt a new global approach to valuation within regulatory cost-benefit analysis—should affect agencies’ balancing of these multiple forms of guidance.

At a fundamental level, the IWG reports do not change the fact that agencies must have *statutory* authority for their actions: the fact that the executive has directed agencies to use a globally scoped SCC does not and cannot release them from their legislatively created statutory obligations. If a statute prohibits consideration of a global scope of impacts, the IWG’s direction to use a global SCC is moot. In other words, IWG guidance applies only when agencies are not prevented from adopting a global scope by the individual statute being administered. Only when the underlying statute permits consideration of the globally scoped SCC may agencies exercise their discretion—such as it is—to manage the multiple levels of executive guidance on the SCC,¹⁵¹ although even then agencies must continue to be mindful of potential procedural challenges in the courts.

Because the executive cannot change legislative limitations on agency authority, the remainder of this Part focuses on agencies’ statutory authority to follow the IWG’s recommendations to use a globally scoped SCC. It argues that—contrary to their practice thus far—agencies should begin their decisions of how to scope climate change impacts by reference to the individual statutes they are administering, not by reference to the IWG reports or to the executive’s decision to promote a particular SCC. This Part then reviews two important statutes that agencies have already used to issue multiple rules based upon a global SCC, and concludes that both of them would easily support an SCC based upon a domestic scope, but that application of the globally scoped SCC as currently calculated puts multiple rules on shaky statutory ground.

¹⁴⁸ See generally Exec. Order No. 12,866, *supra* note 27; Exec. Order No. 13,563, *supra* note 31.

¹⁴⁹ See generally OMB CIRCULAR A-4, *supra* note 45; OMB CIRCULAR A-94, *supra* note 45.

¹⁵⁰ See generally IWG REPORT 2010, *supra* note 2; IWG REPORT 2013, *supra* note 2.

¹⁵¹ In such instances, it would be reasonable for agencies to treat the IWG reports as “overruling” prior executive guidance in Circular A-4 to focus on domestic impacts, but only for purposes of climate change policy. Absent any more general statement from the executive, or a revision of Circular A-4, agencies should otherwise continue to use a domestic scope in the portion of their analyses that address non-climate-change impacts.

Any shift in valuation policy—and particularly a shift as significant as the decision to incorporate a global scope for climate change impacts—implicates important institutional relationships between agencies, the executive, the legislature, and courts. Agencies are allowed to change their valuation approaches, within reasonability constraints, and are in fact required by the executive to do so in the current instance. However, they should be aware that such shifts could test—and in some cases exceed—the limits of their authority in implementing the statutes they administer.

A. *Agencies' First Responsibility Is to Implement Statutes*

The SCC was developed to be an estimate of emissions impacts that could be used uniformly across the many agencies that address regulatory issues related to climate change. Indeed, the point of convening an interagency working group to identify an SCC was in large part to avoid the kind of cross-agency variance that has dogged other valuation practices, and particularly the valuation of mortality risks and the calculation of the VSL. So perhaps it should not be surprising that agencies with differing goals and internal structures, administering different statutes, now widely use a single uniform number for the SCC: the IWG's central estimate of the *globally scoped* impact of each unit of carbon emissions.¹⁵²

The statutes agencies administer are extraordinarily diverse. Yet incorporation of the SCC into cost-benefit analysis appears to be almost automatic—and certainly agencies seem to have no routine practice of examining whether the statutes they administer permit the use of a global scope for some or all of the impacts analyzed.

When *do* agencies actually have the authority to perform globally scoped—or even partially globally scoped—cost-benefit analyses? The answer is in part determined by agencies' authority to perform cost-benefit analysis at all. This issue has most recently been argued and addressed in a series of cases culminating in the Supreme Court case of *Entergy Corp. v. Riverkeeper, Inc.*¹⁵³ That case addressed whether EPA was permitted to rely on cost-benefit analysis in setting national performance standards for cooling water intake structures, where the relevant (and highly obscure) provision of the Clean Water Act was silent as to cost-benefit analysis. The Court held that, under *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*,¹⁵⁴ EPA's view of the statute as permitting cost-benefit analysis "governs if it is a reasonable interpretation of the statute—not necessarily the only possible interpretation, nor even the interpretation deemed most reasonable by the courts."¹⁵⁵ Because the statute did not "unambiguously preclude cost-benefit analysis,"¹⁵⁶ the Agency was "permit-

¹⁵² See *supra* note 6.

¹⁵³ 556 U.S. 208 (2009).

¹⁵⁴ 467 U.S. 837 (1984).

¹⁵⁵ *Entergy Corp.*, 556 U.S. at 226.

¹⁵⁶ *Id.* at 220.

ted” to use it—a permission that, in practice, amounts to a requirement under Executive Orders 12,866 and 13,563.¹⁵⁷

Cost-benefit analysis has thus been established as what Cass Sunstein has called a “default principle.”¹⁵⁸ In the face of statutory uncertainty, agencies are permitted to perform cost-benefit analyses.¹⁵⁹ To overcome the presumption of permission to use cost-benefit analysis, a statute must give some indication that it prohibits cost-benefit analysis. Academics continue to debate whether this presumption is desirable,¹⁶⁰ even as agencies implement the default presumption by performing cost-benefit analyses in most statutory contexts.

Even in the face of this presumption, however, not all statutory provisions have been interpreted to permit cost-benefit analysis.¹⁶¹ The most important exception to this general permission is probably EPA’s implementation of the National Ambient Air Quality Standards (“NAAQS”). Section 109 of the Clean Air Act requires EPA to set NAAQS at a level “requisite to protect the public health” with an “adequate margin of safety.”¹⁶² In 2001, in *Whitman v. American Trucking Ass’n, Inc.*,¹⁶³ the Supreme Court held unanimously that this language precluded any consideration of costs in setting the standards.¹⁶⁴ The Court noted that Congress had made specific reference to costs in related provisions of the statute, and concluded that the consideration of costs was too important to be authorized “in vague terms or ancillary provisions”: Congress “does not, one might say, hide elephants in mouseholes.”¹⁶⁵ In light of this, and in the absence of any textual commitment of authority to EPA to consider costs, the Court held that EPA was not only *not required* to consider costs, but that it was in fact *prohibited* from doing so.¹⁶⁶

How does this opinion fit with *Entergy*? The Court in *Entergy* declined to overrule *American Trucking*; rather, Justice Scalia, the author of both opinions, explained that *American Trucking* stands for the proposition that “sometimes

¹⁵⁷ See generally Exec. Order No. 12,866, *supra* note 27 (requiring CBA where not prohibited by statute).

¹⁵⁸ CASS R. SUNSTEIN, *THE COST-BENEFIT STATE* 59–60 (2002); see CASS R. SUNSTEIN, *RISK AND REASON: SAFETY, LAW, AND THE ENVIRONMENT* 202–05 (2002); see generally Cass R. Sunstein, *Cost-Benefit Default Principles*, 99 MICH. L. REV. 1651 (2001). Note that, prior to *Entergy*, academics were not unanimous in describing courts as having adopted a default rule of permitting cost-benefit analysis. Cf. Amy Sinden, *Cass Sunstein’s Cost-Benefit Lite: Economics for Liberals*, 29 COLUM. J. ENVTL. L. 191, 240 (2004) (arguing, pre-*Entergy*, that courts had seemed “to endorse, if anything, a default principle *disfavoring* CBA”).

¹⁵⁹ Debate over what constitutes statutory uncertainty continues. Consider, for example, the pending Supreme Court case reviewing EPA’s decision to set mercury and air toxics rules without reference to cost, under a statutory provision that requires that the EPA Administrator find actions to be “necessary and appropriate.” See *Michigan v. EPA*, No. 14–46 (U.S. argued Mar. 25, 2015).

¹⁶⁰ See generally Jonathan Cannon, *The Sounds of Silence: Cost-Benefit Canons in Entergy Corp. v. Riverkeeper, Inc.*, 34 HARV. ENVTL. L. REV. 425 (2010) (providing a careful analysis of the treatment of cost-benefit presumptions pre-*Entergy*, and some conservative predictions about *Entergy*’s impacts).

¹⁶¹ See generally *id.*

¹⁶² 42 U.S.C. § 7409(b)(1) (2012).

¹⁶³ 531 U.S. 457 (2001).

¹⁶⁴ *Id.* at 471.

¹⁶⁵ *Id.* at 468.

¹⁶⁶ *Id.* at 468–71.

statutory silence, when viewed in context, is best interpreted as limiting agency discretion.¹⁶⁷ This distinction has been criticized on a variety of grounds, not least of which is that it appears to offer little guidance for the conditions under which silence should be construed as permission.¹⁶⁸ Still, one might note at least one important distinction between the regulatory context in *Entergy* and that of *American Trucking*: the relative importance of the topic under consideration. *American Trucking* involved the construction of the NAAQS, the centerpiece of what is arguably the United States' most important environmental statute—a statute that has had trillions of dollars of impact since its enactment.¹⁶⁹ The opinion's famous “elephants in mouseholes” observation underscores the importance of this topic: the point of the observation was to emphasize the incongruity of assuming that Congress would implicitly delegate as massive an issue as the consideration of costs in air pollution.¹⁷⁰ *Entergy*, by contrast, involved construction of an incredibly obscure provision of the Clean Water Act—one that applies quite narrowly to technology-based standards for the water intake structures that power plants use for cooling, and where the primary risk being managed was that of the inadvertent squashing of aquatic life.¹⁷¹ Perhaps, then, it is more reasonable to think that Congress might have intended its silence to implicitly delegate discretion to EPA to address the question of cost in an obscure and narrow statutory provision with relatively limited impact, while remaining cautious about such an assumption when the question would apply to a central mechanism of a critical statute.

With that possibility in mind, it is now worth revisiting the question of when agencies have the discretion to incorporate a globally scoped SCC into their cost-benefit analyses. Under current doctrine, agencies are permitted to rely on cost-benefit analysis unless prohibited by statute, or unless there is some reason to believe that silence in the statute should be construed as prohibition. Are agencies allowed a coextensive discretion in determining the geographic scope of these analyses?

This is an example of what has been called the “second generation” of cost-benefit questions: a shift from asking whether cost-benefit analysis should be required, and towards inquiring into the ways cost-benefit analysis should be performed¹⁷²—a shift from “whether” cost benefit should be performed to “how.”

Where the agency doing the interpretation is also responsible for administering the statute (which appears so far to be true for all the uses of the globally scoped SCC),¹⁷³ and where it is taking actions that have the force of law (like

¹⁶⁷ *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208, 222 (2009).

¹⁶⁸ See Cannon, *supra* note 160, at 450–51.

¹⁶⁹ See EPA, THE BENEFITS AND COSTS OF THE CLEAN AIR ACT, 1970 TO 1990, at 53 (1997), <http://perma.cc/8D86-AUFV> (finding \$22 trillion of impacts during just the twenty-year period between 1970 and 1990).

¹⁷⁰ See *Whitman v. Am. Trucking Ass'ns, Inc.*, 531 U.S. 457, 468 (2001).

¹⁷¹ See *Entergy Corp.*, 556 U.S. at 213.

¹⁷² See Sunstein, *supra* note 158, at 1716.

¹⁷³ If an agency were to use the SCC in applying a statute it was not responsible for administering, it could receive the less-deferential *Skidmore* standard of review, which would look not to whether

the notice-and-comment rulemaking for which the SCC was initially developed, and for which it has thus far exclusively been used),¹⁷⁴ agency interpretations will be evaluated by a court using the famous two-part *Chevron* test:

First, always, is the question of whether Congress has directly spoken to the precise question at issue. If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress. If, however, the court determines that Congress has not directly addressed the precise question at issue, the court does not simply impose its own construction on the statute, as would be necessary in the absence of an administrative interpretation. Rather if the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency's answer is based on a permissible construction of the statute.¹⁷⁵

Courts consider a variety of factors in determining whether Congress has “directly spoken to the precise question at issue,” a question that is now commonly referred to as *Chevron* Step One. *Chevron* itself directed (in a footnote) that reviewing courts should address this issue by employing “traditional tools of statutory construction.”¹⁷⁶ This would include considerations of plain meaning and the stated purpose of the statute. Most courts have also taken *Chevron* Step One to include a consideration of legislative history,¹⁷⁷ although that determination remains somewhat controversial.¹⁷⁸

If an agency interpretation passes Step One, it proceeds to Step Two: whether the agency interpretation is “permissible.”¹⁷⁹ This requires a limited form of review: “the court need not conclude that the agency construction was the only one it permissibly could have adopted to uphold the construction, or even the reading the court would have reached if the question initially had

the interpretation was permissible, but whether it was persuasive to the court. See *Skidmore v. Swift & Co.*, 323 U.S. 134, 140 (1944).

¹⁷⁴ See *United States v. Mead Corp.*, 533 U.S. 218, 226–27 (2001). For further discussion of the intricacies of this step in the analysis, see generally Cass R. Sunstein, *Chevron Step Zero*, 92 VA. L. REV. 187 (2006). If an agency chose to use the global SCC in a less formal context, where its action did not have the “force of law,” it would be due only lesser *Skidmore* deference. See *supra* note 173.

¹⁷⁵ *Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 842–43 (1984).

¹⁷⁶ *Id.* at 843 n.9.

¹⁷⁷ See JOHN F. DUFFY & MICHAEL HERZ, A GUIDE TO POLITICAL AND JUDICIAL REVIEW OF FEDERAL AGENCIES 63 (2005) (noting that “[m]ost judges will consider legislative history at step one”).

¹⁷⁸ For a discussion of the “textualist-intentionalist” divide in the Court on this issue, see Linda Jellum, *Chevron's Demise: A Survey of Chevron from Infancy to Senescence*, 59 ADMIN. L. REV. 725, 728 (2007). See also *Zuni Pub. Sch. Dist. No. 89 v. Dep't of Educ.*, 550 U.S. 81, 94 (2007) (noting that “neither the legislative history nor the reasonableness of the Secretary's method would be determinative if the plain language of the statute unambiguously indicated that Congress sought to foreclose the Secretary's interpretation,” but choosing to rely on legislative history “because of the technical nature of the language in question”). Justice Steven's concurrence and Justice Scalia's dissent in this case explicitly debate the question of the appropriate role of legislative history within the *Chevron* framework. *Id.* at 106–23.

¹⁷⁹ *Chevron*, 467 U.S. at 843.

arisen in a judicial proceeding.”¹⁸⁰ As a practical matter, once a court reaches this step in the analysis, it typically upholds agency action.¹⁸¹ Still, this step provides some additional check on agency action to ensure that the agency’s decisions are reasonably related to the objectives of the underlying statute.

In this sense, the second step of *Chevron* has significant overlap with the procedural question of whether an agency action was “arbitrary and capricious” under the Administrative Procedure Act.¹⁸² In determining whether a given agency action is arbitrary and capricious, courts are particularly attuned to the reasons the agency has given for its action, and to whether those reasons align with the statutory factors that must—and must not—be considered.¹⁸³ An agency action is arbitrary and capricious if it fails to consider “relevant factors” identified in the statute; it is also arbitrary and capricious if it relies on “impermissible” factors that Congress has not intended it to consider.¹⁸⁴ To survive arbitrary and capricious review, “the agency must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.”¹⁸⁵ Generally, an agency fails to meet this standard if it has “[1] relied on factors which Congress has not intended it to consider, [2] entirely failed to consider an important aspect of the problem, [3] offered an explanation for its decision that runs counter to the evidence before the agency, or [4] is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.”¹⁸⁶ Importantly, any reasons for an agency’s action must be provided by the agency itself: the court is not permitted to supplement the agency’s reasoning with its own analysis.¹⁸⁷

Return, at this point in the analysis, to *Center for Biological Diversity*, which was responsible for kick-starting the executive development of a universal SCC.¹⁸⁸ In that case, the court rejected the petitioners’ argument that EPCA prohibited consideration of cost-benefit analysis, although it warned that “[w]hatever method it uses, NHTSA cannot set fuel economy standards that

¹⁸⁰ *Id.* at 843 n.11.

¹⁸¹ See Orin S. Kerr, *Shedding Light on Chevron: An Empirical Study of the Chevron Doctrine in the U.S. Courts of Appeals*, 15 *YALE J. ON REG.* 1, 31 (1998) (finding that agencies win 89% of the time when courts reach the second step of *Chevron*).

¹⁸² See 5 U.S.C. § 706(2)(A) (2012); *Indep. Petroleum Ass’n of Am. v. Babbitt*, 92 F.3d 1248, 1258 (D.C. Cir. 1996) (“As we have noted in the past, ‘*Chevron* review and arbitrary and capricious review overlap’” (quoting *Arent v. Shalala*, 70 F.3d 610, 615 (D.C. Cir. 1995))). Several notable scholars have argued that this is the appropriate analysis. See, e.g., RICHARD J. PIERCE, JR., *ADMINISTRATIVE LAW TREATISE* 219 (2010).

¹⁸³ See *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (articulating the classic standard for arbitrary and capricious review).

¹⁸⁴ See *id.* at 42–43.

¹⁸⁵ *Id.* at 43 (citing *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962)).

¹⁸⁶ *Id.*

¹⁸⁷ See *id.* (noting that the reviewing court “‘may not supply a reasoned basis for the agency’s action that the agency itself has not given’” (quoting *SEC v. Chenery Corp.*, 332 U.S. 194, 196 (1947))).

¹⁸⁸ See *supra* notes 47–62 and accompanying text (describing the decision in *Center for Biological Diversity* in more detail).

are contrary to Congress's purpose."¹⁸⁹ In light of the particular statutory purpose in question—energy conservation¹⁹⁰—NHTSA's failure to include any measure of the SCC in its fuel economy standards was overturned as arbitrary and capricious, despite the Agency's claim that the benefits of emission reductions were too uncertain to quantify.¹⁹¹ The court emphasized that the Agency's own presentation of "a scientifically-supported range of values that does not begin at zero" showed "that it is possible to monetize the benefit of carbon emissions reduction."¹⁹² This led the court to conclude that, "while the record shows that there is a range of values, the value of carbon emissions reduction is certainly not zero."¹⁹³

The *Center for Biological Diversity* court was not asked to address the relevant geographic scope of the impacts that the court required NHTSA to monetize.¹⁹⁴ Nevertheless, if the *Center for Biological Diversity* analysis were extended to agencies' calculation of domestic impacts, it suggests at least two things that should worry agencies given the current practice of unreflective implementation of the globally scoped SCC. First, it suggests that courts are willing to dig relatively deep into agency SCC-valuation practice when it appears that the practice may be consequential to the adopted rule.¹⁹⁵ This willingness seems consistent with the relative importance of the question of how to handle climate change impacts. Second, the court's reasoning in *Center for Biological Diversity* suggests that any agency claim that it faces too much uncertainty in calculating a domestically scoped SCC, even as it continues to apply a globally scoped figure, is likely to be met with significant judicial suspicion, especially in light of the IWG's inclusion of \$7–23 as an estimate of domestic impact.¹⁹⁶

Overall, this analysis suggests that, when selecting the scope of the SCC to be used in the cost-benefit analysis for a rule, agencies should begin by turning to the language of the statute itself. After examining the general statutory purpose, which may provide clues about the intended scope of the statute, they should look particularly for language relating to "the precise question at issue."¹⁹⁷ For purposes of the scope of the SCC, this question is whether the agency may consider foreign as well as domestic impacts—and, if so, how.¹⁹⁸

¹⁸⁹ *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1197 (9th Cir. 2008).

¹⁹⁰ *See id.* at 1194–97 (emphasizing Congress's purpose "in enacting the EPCA" as "energy conservation").

¹⁹¹ *Id.* at 1200–01 (holding that "there is no evidence to support NHTSA's conclusion that the appropriate course was not to monetize or quantify the value of carbon emissions reduction at all").

¹⁹² *Id.* at 1200.

¹⁹³ *Id.*

¹⁹⁴ *See id.*

¹⁹⁵ *See id.* at 1195–1201.

¹⁹⁶ *See* IWG REPORT 2010, *supra* note 2, at 11.

¹⁹⁷ *See* *Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 842–43 (1984).

¹⁹⁸ On the economic standing question, agencies might similarly consider whether the language addresses the intended beneficiaries of the statute, and specifically, whether those beneficiaries appear to be exclusively domestic.

B. *The IWG Reports Elide Over Agencies' Statutory-Specific Authority*

If agencies may only apply a globally scoped SCC when the relevant statute permits them to consider a globally scoped measure of impacts, we might expect that the IWG and agencies would be highly sensitive to the specifics of each statute under which the SCC is applied. But this has not been the case. The IWG's treatment of statutory authority can be summarized in a single breezy sentence: "[a]s a matter of law," the group grandly claims in its 2010 report, "consideration of both global and domestic values is generally permissible; the relevant statutory provisions are usually ambiguous and allow selection of either measure."¹⁹⁹ Perhaps emboldened by this general dismissal of statutory constraints, agencies using the globally scoped SCC have appeared to ignore the question of statutory authority entirely.

It is a risky move on the part of agencies to adopt the global SCC without doing individual statutory analysis to show that the particular statute being analyzed permits a global scope. Even if the IWG were correct in its legal contention that most statutes permit use of either global or domestic values—a claim discussed in more detail below—the IWG claims only that consideration of global or domestic values is "generally" permissible. This leaves room for a less-general case where the relevant statute *does* constrain agency choice. How will an agency know which category it falls into unless it analyzes the statute being implemented?

Furthermore, there appears to be no systematic support for the IWG's claim that most statutes permit consideration of either global or domestic values when addressing climate change impacts. The IWG does not expand beyond this bare legal conclusion: it does not even explain which statutory provisions it sees as "relevant," much less why it claims that they are usually ambiguous.²⁰⁰ Nor are there any publicly available judicial, legislative, administrative, or scholarly resources analyzing when or whether most statutes make it permissible for agencies to consider both global and domestic values. In fact, so far as the author is aware, this Article is the first legal resource to address this question at all. And, as discussed in more detail below, this Article's conclusions fall far from the assumptions imbedded in the IWG report: this Article concludes that even a basic review of a few highly relevant statutes shows that agency implementation of a globally scoped estimate will frequently be statutorily vulnerable, especially when that implementation is justified only by a generic claim about permissibility.

It is true that all federal statutes are thus far silent on the direct issue of climate change impact calculations, and that statutory silence is typically construed to grant agency discretion. However, the question here is not whether agencies may incorporate climate change impacts into their analyses at all (which in the face of statutory silence on climate change, we might generally

¹⁹⁹ See IWG REPORT 2010, *supra* note 2, at 10. The report does not expand upon this legal claim. See *id.*

²⁰⁰ See *id.* at 10.

assume to be permitted), but rather whether agencies may incorporate the foreign impacts of climate change as well as the domestic impacts. Here we might think that statutory language addressing the scope of the intended statutory impact has a direct bearing.²⁰¹ Thus, in considering whether a statute permits agencies to consider the global impacts of climate change, agencies do not exhaust their responsibility by concluding that they are permitted to consider climate change impacts. They must also conclude—and conclude reasonably—that the climate change impacts they consider may be global in scope.

Nor does the general default acceptance of cost-benefit methodologies resolve the question of whether agencies may use a particular (e.g., global) cost-benefit methodology to calculate the SCC. Under *Chevron*, courts should assume that agencies are permitted to adopt any reasonable interpretation of the statutes they administer.²⁰² But it would be premature to conclude that any statute that permits some form of cost-benefit analysis permits any cost-benefit methodology an agency might adopt.²⁰³ Geographic scope may be a prime example of this principle. As we have seen in the calculation of the global SCC, where foreign impacts account for as much as 93% of the total impact,²⁰⁴ the selection of the scope for an analysis can be *the* determining factor in the quantity of benefits assessed, and in whether a particular rule appears to be cost-benefit justified.²⁰⁵ In other words, even where a statute is reasonably read to permit cost-benefit analysis, it might not be reasonably read to permit a globally scoped cost-benefit analysis.

C. *Evaluating Agencies' Specific Statutory Authority to Implement a Globally Scoped SCC*

The existence of a uniform SCC makes it tempting for agencies to incorporate that SCC without performing statute-by-statute and provision-by-provision analysis of their authority. However, the executive's adoption of a uniform SCC does not change the constitutional balance of powers, and agencies are still bound to follow the dictates of the statutes they administer. The nature of a uniform SCC encourages the use of a single figure by a multitude of agencies working with diverse statutory mandates. Already multiple agencies administering multiple statutes have promulgated various rules based at least in part on

²⁰¹ However, if we were analyzing the economic standing question, we might look to the intended beneficiaries of the statute, to determine whether it appears to intend the statute to accrue to the benefit only of Americans or also to foreign persons.

²⁰² See *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208, 218 (2009) (holding that, under *Chevron*, an agency interpretation “governs if it is a reasonable interpretation of the statute—not necessarily the only possible interpretation, nor even the interpretation deemed *most* reasonable by the courts”).

²⁰³ See, e.g., *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201, 1218–19 (5th Cir. 1991), *opinion clarified* (Nov. 15, 1991) (holding impermissible an agency's approach to calculating the benefits and costs of a regulation, in this case on the basis of applying different discounting policies to costs and benefits).

²⁰⁴ See IWG REPORT 2010, *supra* note 2, at 11 (describing estimated domestic impacts as between 7–23%, making estimated foreign impacts at most 93% of the total).

²⁰⁵ See, e.g., *Clean Power Plan Proposed Rule*, *supra* note 6.

the SCC; this diversity of uses and applications will only increase over time, as the SCC will be invoked wherever agencies take action that may affect carbon emissions.²⁰⁶ In the future, before agencies include the global SCC in their cost-benefit analyses, they should begin with an analysis of what scope is permitted by the statutory provision they are administering. Only after determining that they have the authority to use a global scope for climate change impacts should they proceed to incorporating the global SCC.

The remainder of this Part examines two important statutes that agencies are already administering using the globally scoped SCC: the Energy Policy and Conservation Act (“EPCA”) (including as amended by the Energy Independence and Security Act) and the Clean Air Act (“CAA”). None of the agencies administering these statutes appear to have done any substantive analysis of statutory authority regarding the scope of impacts to be considered. The absence of analysis is even more striking because, for each statute, there are plausible arguments that the statute does *not* permit agency rulemaking to be based on foreign impacts. To be fair, in no case are these arguments so compelling that a court would certainly overturn agency rulemakings under *Chevron* Step One. That said, given the repeated lack of analysis provided to the question of whether foreign impacts may be permissibly considered, multiple agencies may face real challenges in establishing that their adoption of the globally scoped SCC was not arbitrary and capricious.

1. *Energy Policy and Conservation and Energy Independence and Security Acts*

EPCA is one of the most important statutes under which agencies have already—with no apparent systematic examination—incorporated a globally scoped SCC.²⁰⁷ Recall that EPCA was the statute that gave rise to the initial development of the IWG process and to the SCC in use today. Under this statute, the Ninth Circuit overturned NHTSA’s decision to exclude all climate change impacts from its cost-benefit analysis.²⁰⁸ The court held that, while the Act permitted NHTSA to perform a cost-benefit analysis, NHTSA’s failure to incorporate any of the costs associated with CO₂ emissions made its cost-benefit analysis arbitrary and capricious under the Act. Because NHTSA had opted not to include any measure of costs for carbon emissions, the question of the appropriate scope to use in calculating those impacts did not arise. The court

²⁰⁶ See IWG REPORT 2010, *supra* note 2, at 1 (“The purpose of the ‘social cost of carbon’ (SCC) estimates presented here is to allow agencies to incorporate the social benefits of reducing carbon dioxide (CO₂) emissions into cost-benefit analyses of regulatory actions that have small, or ‘marginal,’ impacts on cumulative global emissions.”).

²⁰⁷ 49 U.S.C. §§ 32901–32919 (2012) (as modified by the Energy Independence and Security Act of 2007).

²⁰⁸ See *Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1203 (9th Cir. 2008); *supra* notes 47–62 and accompanying text.

simply noted that, “while the record shows that there is a range of [possible] values, the value of carbon emissions reduction is certainly not zero.”²⁰⁹

Before turning to a specific example of a recent rule issued under this statute, it may be helpful to evaluate the legislative history of the statute, focusing on the reasons for its proposal and the context of its passage. The interest here is primarily in examining whether the purpose or context of the Act might foreclose a global (or for that matter a domestic) scope of analysis.

EPCA’s legislative history presents an interesting example for these purposes, as it suggests that the Act was passed with a distinctively domestic focus. EPCA was enacted in the aftermath of the 1973 energy crisis created by the Mideast oil embargo.²¹⁰ Congress, concerned about U.S. dependence on foreign oil, passed EPCA with a series of provisions designed to promote energy independence and energy security, including a ban on all exports of U.S. oil and the creation of the Strategic Petroleum Reserve.²¹¹ “The time has come,” President Gerald Ford opined upon signing the bill, “to end the long debate over national energy policy in the United States and to put ourselves solidly on the road to energy independence.”²¹²

Nor is the domestic focus of EPCA limited to the legislative history: it also comes out in the general language in the first section of the Act, which explains that the Act’s purpose is “[t]o increase domestic energy supplies and availability; to restrain energy demand; to prepare for energy emergencies; and for other purposes.”²¹³ The Act created a number of conservation programs, including the Energy Conservation Program for Consumer Products²¹⁴ and the Corporate Average Fuel Economy (“CAFE”) standards²¹⁵ at issue in *Center for Biological Diversity*. The purpose of these statutory provisions is affirmatively ascribed to a domestic need to reduce U.S. dependence on foreign oil.²¹⁶ Indeed, throughout the statute, the emphasis remains on the *national* nature of energy policy, and on the goal of domestic “independence” from foreign interests.

If the legislative history of EPCA ended in 1976, one could argue that the Act’s stated purpose along with its legislative history simply forecloses any interpretation that is non-domestic in scope. As it happens, however, Congress amended and modified EPCA in the Energy Independence and Security Act of

²⁰⁹ *Ctr. for Biological Diversity*, 538 F.3d at 1200. The court went on to identify several additional reasons that NHTSA’s decision-making was arbitrary and capricious under EPCA. It concluded that “[i]n sum, there is no evidence to support NHTSA’s conclusion that the appropriate course was not to monetize or quantify the value of carbon emissions reduction at all.” *Id.* at 1201.

²¹⁰ *See id.* at 1182.

²¹¹ *See* Energy Policy and Conservation Act, Pub. L. No. 94-163, tit. I pt. B, 89 Stat. 871 (1975) (codified at 42 U.S.C. § 6201 (2012)).

²¹² Gerald Ford, President of the United States, Remarks Upon Signing the Energy Policy and Conservation Act (Dec. 22, 1975), <http://perma.cc/58TM-AYSF>.

²¹³ Energy Policy and Conservation Act § 1.

²¹⁴ *Id.* tit. V pt. B (Energy Conservation Program for Consumer Products Other Than Automobiles).

²¹⁵ *Id.* tit. V pt. A (Automotive Fuel Economy).

²¹⁶ *See, e.g.*, 49 U.S.C. § 32902(f) (2012) (referencing “the need of the United States to conserve energy”).

2007 (“EISA”).²¹⁷ Although this Act is also silent as to the specific question of whether administering agencies are permitted to incorporate foreign impacts into their decision-making, it does explicitly address both climate change and the relationship among greenhouse gas reductions, foreign policy, and energy security.²¹⁸ For instance, one portion of EISA created an “International Clean Energy Foundation,” and explained that, in establishing the foundation, “[i]t is the intent of Congress . . . to create an entity that serves the long-term foreign policy and energy security goals of reducing global greenhouse gas emissions.”²¹⁹ This language cuts two ways: while it shows that reducing global greenhouse gas emissions can count as furthering “long-term foreign policy and energy security goals,” the creation of a separate foundation to address the foreign policy and security implications of greenhouse gas emissions could be read as foreclosing such consideration by other institutions.²²⁰ Still, this section of the Act provides a statutory hook for an agency that seeks to incorporate some version of an SCC into EPCA/EISA-based rules, as it creates an affirmative connection between greenhouse gas emissions and the purposes of the Act.

Of course, the reasonability of including climate change emissions in the scope of EPCA/EISA implementations does not necessarily convert to reasonability in using a global geographic scope in evaluating those emissions. EISA, like EPCA, is silent as to the issue of geographic scope. This might lead one to expect that agencies proposing rules under EPCA/EISA would address their statutory authority carefully. Yet, while various agencies have proposed a number of rules under EPCA/EISA since the IWG released its SCC estimates,²²¹ and the analyses in these rules are based on globally scoped SCC values,²²² this author can find no rule that addresses the question of whether the globally scoped value the IWG recommends is consistent with the provision of the statute being administered, or even with the general purpose or history of the statute. In fact, the only reason the author has found provided for the use of the globally scoped estimate is that it is “preferred” by the IWG.²²³ This is a rea-

²¹⁷ 42 U.S.C. §§ 17001–17386.

²¹⁸ *Id.*

²¹⁹ *See id.* § 17352(a)(3).

²²⁰ A similar ambiguity applies to another portion of EISA that deals with climate change, and which creates the Office of Climate Change and Environment within the Department of Transportation. *See* 49 U.S.C. § 102(g)(1). The Office was created “to plan, coordinate, and implement—(A) department-wide research, strategies, and actions *under the Department’s statutory authority* to reduce transportation-related energy use and mitigate the effects of climate change; and (B) department-wide research strategies and actions to address the impacts of climate change on *transportation systems and infrastructure.*” *Id.* (emphasis added). A plain reading of these provisions would suggest that the Office is directed to use existing statutory authority, not being entrusted with new authority, and the emphasis on impacts on transportation systems and infrastructure further suggests a domestic scope in line with the Department of Transportation’s generally domestic authority over transportation systems and infrastructure.

²²¹ *See generally, e.g.,* Energy Conservation Program: Energy Conservation Standards for Walk-In Coolers and Freezers, 78 Fed. Reg. 55,782 (proposed Sept. 11, 2013) (to be codified at 10 C.F.R. pt. 431) [hereinafter Energy Conservation Standards for Walk-In Coolers and Freezers].

²²² *See, e.g., id.* at 55,844–45.

²²³ *See, e.g., id.* at 55,844 (commenting that “the interagency group determined that a range from 7 percent to 23 percent should be used to adjust the global SCC to calculate domestic effects, al-

sonable reading of the IWG guidance, but it is the agency administering the statute, not the IWG, who is responsible for determining whether any particular analysis is consistent with the underlying statute. Yet agencies appear to routinely fail in performing this analytical responsibility.

To illustrate, consider a recently proposed rule under EPCA/EISA regarding energy standards for refrigerators.²²⁴ The statute directs the Department of Energy to prescribe energy conservation standards for a range of consumer products and industrial equipment by requiring “the maximum improvement in energy efficiency . . . [that] is technologically feasible and economically justified.”²²⁵ To determine what counts as “economically justified,” the Agency is presented with a list of seven factors to evaluate “whether the benefits of the standard exceed its burdens.”²²⁶ The statute does not explicitly define whether the scope of the entire cost-benefit analysis is domestic or global, although one of the factors listed does make explicit reference to a national scope, by directing the Secretary to consider “the need for national energy and water conservation.”²²⁷ Importantly, the last of the factors is a discretionary clause that refers to “other factors the Secretary considers relevant.”²²⁸

Like other recently proposed rules issued under this statute, the rule on refrigerator energy standards relies on the globally scoped SCC. Strikingly, however, at no point in the rule does the Department of Energy point to any reason for this reliance. In fact, there appears to be no claim of any kind that the reliance on the globally scoped estimate is within the statutory discretion of the Secretary.²²⁹ This is particularly striking in light of the discretionary clause in the statute that allows the Agency to consider any “other factors the Secretary considers relevant.” If the Secretary considered the foreign impacts of climate

though preference is given to consideration of the global benefits of reducing CO₂ emissions” (internal citations omitted).

²²⁴ See *id.* at 55,782.

²²⁵ 42 U.S.C. § 6295(o)(2)(A).

²²⁶ See *id.* § 6295(o)(2)(B)(i) (“In determining whether a standard is economically justified, the Secretary shall, after receiving views and comments furnished with respect to the proposed standard, determine whether the benefits of the standard exceed its burdens by, to the greatest extent practicable, considering—(I) the economic impact of the standard on the manufacturers and on the consumers of the products subject to such standard; (II) the savings in operating costs throughout the estimated average life of the covered product in the type (or class) compared to any increase in the price of, or in the initial charges for, or maintenance expenses of, the covered products which are likely to result from the imposition of the standard; (III) the total projected amount of energy, or as applicable, water, savings likely to result directly from the imposition of the standard; (IV) any lessening of the utility or the performance of the covered products likely to result from the imposition of the standard; (V) the impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the imposition of the standard; (VI) the need for national energy and water conservation; and (VII) other factors the Secretary considers relevant.”).

²²⁷ *Id.* § 6295(o)(2)(B)(vi). From a statutory construction standpoint, of course, it is possible to interpret this as supporting either the belief that the other factors are global in scope (since they do not explicitly limit their scope to national concerns), or as evidence that the other factors are domestic in scope (to be consistent with this factor).

²²⁸ *Id.* § 6295(o)(2)(B)(vii).

²²⁹ This absence is particularly notable in section II.A of the proposed rule, which purports to set out the Agency’s statutory authority for its action. See Energy Conservation Standards for Walk-In Coolers and Freezers, *supra* note 221, at 55,788–89.

emissions relevant to the determination of what counts as “economically justified,” this clause provides a firmly seated statutory hook for choosing to incorporate a globally scoped SCC into the proposed rule. But the Agency explicitly disclaims this approach: in the section of the proposed rule addressing the “other factors” clause, it rejects any factors other than those already incorporated into the statutory analysis under the other six prongs of the statutory test.²³⁰

This inattention to statutory authority is even more notable because the Agency explicitly notes that domestic estimates were available,²³¹ and even comments on the calculation of those benefits.²³² But after explicitly recognizing the possibility of calculating domestic impacts, the Agency suddenly and inexplicably jumps to “considering the potential global benefits resulting from reduced CO₂ emissions,” with no reason of any kind given for the selection of the global estimate over the domestically scoped estimate it has just recognized.²³³ Furthermore—and somewhat misleadingly—the resulting benefits estimates are then presented in the summary of the proposed rule under the heading “National Benefits,” along with the *domestically* scoped impacts from reducing other air pollutants like nitrogen monoxide.²³⁴ At another point in the proposed rule, the Agency actually refers to a separate graph with domestic estimates included in the supplemental Technical Support Document.²³⁵ But it still uses the global estimates (without explanation), even when it is analyzing statutory factors with an explicitly national focus, such as the “Need of the Nation to Conserve Energy.”²³⁶

2. Clean Air Act

Now consider the relationship between a globally scoped SCC and the CAA. The CAA charges EPA with regulating air pollutants emitted from both stationary sources (like factories) and mobile sources (like automobiles).²³⁷

EPA has attempted to regulate greenhouse gases as “pollutants” under the Act since the Supreme Court’s decision in *Massachusetts v. EPA*²³⁸ in 2007. Yet

²³⁰ See *id.* at 55,871 (“Consistent with the EPCA, DOE examined whether other factors might be relevant in determining whether the proposed standards are economically justified . . . DOE identified none other than those discussed above.”).

²³¹ See *id.* at 55,844 (“[T]he interagency group determined that a range of values from 7 percent to 23 percent should be used to adjust the global SCC to calculate domestic effects, although preference is given to consideration of the global benefits of reducing CO₂ emissions.”).

²³² See *id.* at 55,844 n.27 (“It is recognized that this calculation for domestic values is approximate, provisional, and highly speculative. There is no a priori reason why domestic benefits should be a constant fraction of net global damages over time.”).

²³³ See *id.* at 55,845.

²³⁴ *Id.* at 55,787–88.

²³⁵ See *id.* at 55,869.

²³⁶ See *id.* at 55,868–69.

²³⁷ See 42 U.S.C. §§ 7401–7671q (2012).

²³⁸ See 549 U.S. 497, 534 (2007) (holding that EPA erred in interpreting the Act to preclude treating greenhouse gases as pollutants). That said, EPA has discretion to interpret the term “pollutant” in the statute contextually, so that greenhouse gases need not be regulated under all provisions of the Act that refer to “pollutants.” See *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427,

EPA has struggled to craft successful strategies for managing greenhouse gases under the Act, which Congress drafted before climate change was a salient political issue. Most recently, the Supreme Court struck down the Agency's attempts to regulate greenhouse gases for new power plants by "tailoring" portions of the statute to the specifics of greenhouse gas emissions as exceeding the Agency's statutory authority.²³⁹ Conceding that "[i]n this respect (as in countless others), the Act is far from a *chef d'oeuvre* of legislative draftsmanship," the Court nevertheless held that the Agency's interpretation was impermissible even under *Chevron's* highly permissive standards.²⁴⁰ "[R]easonable statutory interpretation," the Court lectured EPA, "must account for both the specific context in which [the] language is used and the broader context of the statute as a whole [A]n agency interpretation that is inconsistent with the design and structure of the statute as whole . . . does not merit deference."²⁴¹ Against this cautionary backdrop, this section first considers the broad context of the CAA, before moving on to the specific context of the portions of the Act that have thus far grounded key rules regarding the globally scoped SCC.

The CAA begins with a series of findings that led to its adoption, almost all of which reference the local, state, regional, and/or national nature of air pollution, and none of which explicitly reference international or foreign impacts.²⁴² The Act then identifies four of its purposes.²⁴³ These are no less domestic in focus than the findings: the first (and most frequently cited) purpose is "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population."²⁴⁴ A natural reading of this purpose might lead one to conclude that the Act should be administered to promote the public health and welfare of "the Nation's" population—that is, in furtherance of limiting the scope of cost-benefit analysis to negative *domestic* impacts.

That said, for agencies to entirely ignore the foreign impacts of air pollution would mistake congressional intent. Consider the legislative history of the

2441 (2014) ("*Massachusetts* does not strip EPA of authority to exclude greenhouse gases from the class of regulable air pollutants under other parts of the Act where their inclusion would be inconsistent with the statutory scheme").

²³⁹ See *Util. Air Regulatory Grp.*, 134 S. Ct. at 2445.

²⁴⁰ *Id.* at 2441–42.

²⁴¹ *Id.* at 2442 (alteration and citations omitted).

²⁴² See 42 U.S.C. § 7401(a) (referring to the "Nation's population;" urban areas that "generally cross the boundary lines of local jurisdictions and often extend into two or more States;" the "responsibility of States and local governments;" and the finding "that Federal financial assistance and leadership is essential for the development of cooperative Federal, State, regional, and local programs to prevent and control air pollution").

²⁴³ *Id.* § 7401(b).

²⁴⁴ *Id.* The other three purposes are "(2) to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution; (3) to provide technical and financial assistance to State and local governments in connection with the development and execution of their air pollution prevention and control programs; and (4) to encourage and assist the development and operation of regional air pollution prevention and control programs." *Id.* The next section goes on to add that, "[a] primary goal of this chapter is to encourage or otherwise promote reasonable Federal, State, and local governmental actions, consistent with the provisions of this chapter, for pollution prevention." *Id.* § 7401(c).

Act: as early as 1965, a Senate report on the Act stated that “[i]t is important that we, in the interest of international amity and in fairness to the people of other countries, afford them the benefits of protective measures,” and a House report claimed that the “United States cannot in good conscience decline to protect its neighbors from pollution which is beyond their legal control.”²⁴⁵ Nor did Congress restrict its concern about international air pollution to its reports. Unusually, and strikingly, Congress crafted the concern underlying these statements into a specific statutory provision in the Act that addresses international impacts: § 115, titled “International air pollution.”²⁴⁶

This short section—which comprises fewer than 300 words in a statute that runs over 450 pages—identifies a procedure for the EPA Administrator to use whenever s/he “has reason to believe that any air pollutant or pollutants emitted in the United States cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare in a foreign country”²⁴⁷ The scope of this provision is explicitly foreign: it applies (only) to air pollution that endangers “public health or welfare in a foreign country.”²⁴⁸ Here, then—at last—is a statutory provision that has an explicit geographic scope attached to it. Section 115 of the CAA specifically applies to foreign impacts, so any other interpretation of the scope of § 115 would be unreasonable.

Does this section mean that EPA may safely use a globally scoped SCC for calculating the impacts of carbon emissions, on the grounds that such emissions “endanger public health or welfare in a foreign country”? Well, yes—so long as EPA is administering § 115. Somewhat awkwardly, however, EPA has yet to utilize § 115 in any way.

Most likely EPA has not utilized § 115 because, even when the Agency finds foreign health or welfare endangered, the section only provides the Administrator with a cumbersome and limited form of authority. In such circumstances, the statute says, the Agency’s response should be essentially informational: “the Administrator shall give formal notification thereof to the Governor of the State in which such emissions originate.”²⁴⁹ The state emitting the pollution must then revise its State Implementation Plan (“SIP”) to address the foreign impact, and must allow the impacted foreign country to appear at any public hearings associated with the plan revision.²⁵⁰ And even this milquetoast procedural right is cabined by a critical caveat: a reciprocity provision, which directs that “[t]his section shall apply only to a foreign country which the Administrator determines has given the United States essentially the same

²⁴⁵ S. REP. NO. 89-192, at 6 (1965); H.R. REP. NO. 89-899, at 3613 (1965). The author thanks Jason Schwartz for bringing her attention to this legislative history.

²⁴⁶ 42 U.S.C. § 7415.

²⁴⁷ *Id.* § 7415(a).

²⁴⁸ *Id.*

²⁴⁹ *Id.*

²⁵⁰ *Id.* § 7415(b).

rights with respect to the prevention or control of air pollution occurring in that country as is given that country by this section.”²⁵¹

In light of these constraints, does § 115 provide statutory authority for EPA to use the globally scoped SCC that the IWG prefers? Not without a determination of reciprocity, and even then possibly only for the purposes of directing SIP revisions.

Consider application of the reciprocity requirement first. Before § 115 applies, the EPA Administrator must “determine” that all other countries have “given the United States essentially the same rights with respect to the prevention or control of air pollution” as the United States gives them in § 115.²⁵² Without such a finding, the globally scoped SCC would run afoul of the reciprocity provision: as calculated, the SCC incorporates the impacts for every country on the planet, and § 115 only allows the Agency to incorporate the impacts for countries with reciprocal policies. Some commentators believe that EPA has met the requirements for §115 for at least one country: Canada.²⁵³ But EPA has yet to make any formal finding of reciprocity even about Canada, or indeed to invoke § 115 in any form. Even with the significant discretion the Act grants the EPA Administrator in determining what qualifies as “reciprocal,” it is questionable whether the Agency could in good conscience claim that countries like China have already granted the United States reciprocal protections.

To implement the reciprocity provision within the SCC, EPA would have to calculate a new form of “reciprocal SCC” to take into account only domestic impacts and foreign impacts in countries that satisfy the reciprocity provision. Such a calculation is not obviously foolish as a matter of foreign policy; it would simply condition U.S. spending on climate reductions on foreign WTP to protect Americans.²⁵⁴ But such a calculation would look very different from the fixed, globally scoped SCC that the IWG promotes, and on which EPA has repeatedly relied.

Even if the EPA Administrator calculated a reciprocal SCC that was defensible under the reciprocity provision, § 115 still poses a real puzzle for statutory interpretation. We are left with a statute that seems generally to be domestic in focus, but which provides one limited procedural section that is directed towards international impacts. How should this individual provision be read in light of the overall statute? It seems hard to resist the implication that Congress has indicated the way that foreign impacts are to be managed within the CAA: through § 115. If that is correct, however, then a global—or even a “reciprocal”—SCC can only apply through § 115. Moreover, § 115 appears to only provide foreign countries with rights regarding SIPs. Under this interpreta-

²⁵¹ *Id.* § 7415(c).

²⁵² *Id.*

²⁵³ See, e.g., Inst. for Policy Integrity, N.Y. Univ. Sch. of Law, Petition for Rulemakings and Call for Information under Section 115, Title VI, Section 111, and Title II of the Clean Air Act to Regulate Greenhouse Gas Emissions, at 7–8 (Feb. 19, 2013), <http://perma.cc/DG8H-N9EJ>.

²⁵⁴ For an intriguing discussion of the complex opportunities afforded by reciprocity-based commitments, see James Coleman, *Environmental Matching Commitments* (draft on file with author).

tion of the Act, EPA would be justified in using the globally scoped SCC *only* for purposes of SIP-related analyses, and even then only where it had determined that the reciprocity provision was met. In all other circumstances, EPA would be limited to a domestically scoped SCC that focused on domestic impacts (although such an interpretation might well still leave room for domestic preferences to internalize at least some portion of foreign impacts).

This analysis of § 115 is hardly inevitable, as the section has literally no history to point to as an aid in interpreting it. Nevertheless, this analysis suggests that there are real statutory puzzles about whether and when EPA is permitted to implement the CAA using a globally scoped SCC. These puzzles are more than sufficient to call for EPA's attention when it administers the CAA.

With that in mind, let us turn to an incredibly important rule EPA recently promulgated under its CAA authority: the Clean Power Plan introduced at the beginning of this Article, which would limit CO₂ emissions from the nation's power plants.²⁵⁵ Recall that the rule depends upon the use of a globally scoped SCC to pass cost-benefit analysis: with the globally scoped SCC (on which the Agency relies), the rule should cost \$7.3 billion and should provide climate benefits of \$30 billion.²⁵⁶ With a domestically scoped SCC, at an estimated 7–23% of the global SCC, the rule would provide a benefit of only \$2–7 billion—less than the cost.

So, how did EPA analyze its own statutory authority to perform a globally scoped impact analysis in this historic rule that will certainly be challenged in court? The notice of proposed rulemaking goes into significant detail on EPA's understanding of its statutory authority,²⁵⁷ and the Agency has provided a 104-page legal memorandum with additional explanation.²⁵⁸ Yet, not only does EPA not mention § 115, it presents no analysis whatsoever on the question of why the Agency believes itself to have the statutory authority to implement a rule using a globally scoped measure of benefits.

This is only a notice of a proposed rulemaking, and EPA may well develop some statutory basis for its calculation of benefits based upon a globally scoped SCC before it issues a final rule. Nevertheless, the complete silence on the question of statutory authority is troubling. EPA must “ground its reasons for action or inaction in the statute,”²⁵⁹ as much when it analyzes the impacts of climate change as in any other context. For whatever reason, it has thus far failed to do so in rules regarding the SCC.

3. *Corporate Average Fuel Economy Standards*

Finally, this section considers the combination of the two statutes discussed above by examining how agencies have approached the SCC in setting

²⁵⁵ Clean Power Plan Proposed Rule, *supra* note 6, at 34,830.

²⁵⁶ *See id.* at 34,840–41 tbl.2 (2030 dollars).

²⁵⁷ *See id.* at 34,852–55.

²⁵⁸ *See generally* EPA, Legal Memorandum for Proposed Carbon Pollution Emission Guidelines for Existing Electric Utility Generating Units (2014), <http://perma.cc/3KVC-U6VY>.

²⁵⁹ *Massachusetts v. EPA*, 549 U.S. 497, 535 (2007).

CAFE standards for vehicles. Analyzing recent application of the SCC for CAFE standards provides a third example of agencies ignoring the question of whether they have the statutory authority to perform globally scoped analyses, and it provides an opportunity to consider the implications of statutory silence for agency discretion on this issue.

These standards implicate two agencies and both statutes just discussed: NHTSA is obligated under EPCA/EISA, and EPA is obligated under the CAA. The Secretary of Transportation is required to set fuel economy standards for automobiles at “the maximum feasible average fuel economy level that the Secretary decides the manufacturers can achieve in that model year.”²⁶⁰ To determine the “maximum feasible average fuel economy” level, the Secretary is directed to “consider technological feasibility, economic practicability, the effect of other motor vehicle standards of the Government on fuel economy, and the need of the United States to conserve energy.”²⁶¹ At the same time, § 202(a) of the CAA requires EPA to establish standards for the emissions of pollutants from new motor vehicles, when those emissions “cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.”²⁶² EPA is directed to consider technical feasibility, cost, and available lead-time in setting these standards.²⁶³

Although some provisions of EPCA/EISA do address foreign impacts,²⁶⁴ and there is an entire section devoted to addressing the United States’ responsibilities in implementing the international energy plan,²⁶⁵ the CAFE standards themselves do not explicitly require, permit, or prohibit consideration of foreign impacts. Yet it might be misleading to characterize the CAFE provisions as being “silent” regarding geographic scope, given the general domestic focus of EPCA, which Congress enacted as a key portion of a statute designed to protect domestic energy independence: upon “the need of *the United States* to conserve energy.”²⁶⁶ In the past—before climate change became a salient national and international issue—the Agency interpreted this to mean “the consumer cost, national balance of payments, environmental, and foreign policy implications of our need for large quantities of petroleum, especially imported petroleum.”²⁶⁷ After *Center for Biological Diversity* and the convention of the

²⁶⁰ 49 U.S.C. § 32902(a) (2012).

²⁶¹ *Id.* § 32902(f).

²⁶² See Clean Air Act, 42 U.S.C. § 7521 (2012); see also *Massachusetts*, 549 U.S. at 533–35 (holding that EPA must ground its reasons for action or inaction in the statute).

²⁶³ 42 U.S.C. § 7521(a)(2).

²⁶⁴ See *id.* § 6391(a) (directing agencies to “give consideration to the need to foster reciprocal and nondiscriminatory treatment by foreign countries of United States citizens engaged in commerce in those countries”).

²⁶⁵ See *id.* § 6276(d)(1)(A) (creating an interagency working group that is directed to “establish a program to inform foreign countries of the benefits of policies that would increase energy efficiency or would allow facilities that use renewable energy to compete effectively with producers of energy from nonrenewable sources”).

²⁶⁶ 49 U.S.C. § 32902(f) (emphasis added).

²⁶⁷ See, e.g., Nonpassenger Automobile Average Fuel Economy Standards Model Years 1980–81, 42 Fed. Reg. 63,184, 63,188 (proposed Dec. 15, 1977) (to be codified at 49 C.F.R. pts. 523, 533) (defining “the need of the Nation to conserve energy” under EPCA in these terms).

IWG on the SCC, however, this morphed into current practice, which is now to incorporate a global scope for calculating the impacts of the standards, at least for purposes of climate change.²⁶⁸

Recent CAFE standards explicitly adopt the IWG's preferred global SCC, rather than the IWG's estimate of domestically scoped impacts.²⁶⁹ But this adoption has occurred absent any articulated statutory basis in either the CAA or EPCA/EISA for adopting the global measure. Rather, the decision to regulate on the basis of global impacts has been justified purely on the IWG's policy judgments—that “[greenhouse gases] involve a global externality [so that] to address the global nature of the climate change problem, the SCC must incorporate the full (global) damages caused by [greenhouse gas] emissions.”²⁷⁰ These policy concerns may be sensible, but that does not mean that the relevant statutes authorize the agencies in question to regulate based upon them. Yet there is no analysis of why, or even whether, the statutes permit this decision to regulate on the basis of global rather than domestic impacts in any CAFE standard.²⁷¹

What has led agencies to so wholeheartedly adopt the globally scoped SCC, to the point that they are not even bothering to perform statute-specific analyses of their own authority? One answer may be that, in light of the IWG's reassuring generality about the authority of agencies to promulgate either global or domestically focused rules, it simply has not occurred to agencies like the Department of Energy, EPA, and NHTSA that there is any question of statutory authority to address when they choose to use the IWG's preferred global SCC. Or in other words, in asserting that “consideration of both global and domestic values is generally permissible” and that “the relevant statutory provisions are usually ambiguous and allow selection of either measure,”²⁷² the IWG may have obscured the underlying, and often quite individualized, statutory question about which scope *is* actually permissible. The result is a series of agency analyses where the agencies have effectively abdicated their responsibility to analyze the statutes they administer.

CONCLUSION

Current U.S. domestic policy regarding climate change is largely founded upon the use of the SCC, a monetized estimate of the quantity of damage caused by each ton of domestic CO₂ emissions. Somewhat surprisingly, the current U.S. approach to the SCC monetizes both foreign and domestic im-

²⁶⁸ See 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,624, 62,629 (Oct. 15, 2012) (to be codified at 40 C.F.R. pts. 85, 86, 600) [hereinafter 2017 and Later CAFE Standards].

²⁶⁹ See *id.*

²⁷⁰ See Gayer & Viscusi, *supra* note 7, at 16.

²⁷¹ Cf. 2017 and Later CAFE Standards, *supra* note 268, at 62,627 (explaining the statutory authority under which the CAFE standards are issued, which includes NHTSA's authority under EPCA/EISA, and EPA's authority under the CAA).

²⁷² IWG REPORT 2010, *supra* note 2, at 10.

pacts, calculating the monetized value of foreign impacts by reference to foreign wealth. This inclusion of foreign impacts into domestic policy stands in stark contrast to regulatory policy in other contexts, where the United States routinely excludes foreign impacts from domestic analyses. Whether or not this shift is desirable as a policy matter, as a legal matter the statutes agencies administer limit their authority. Unfortunately, thus far, agencies have repeatedly erred in failing to address—and possibly even to consider—the statutory bases for their authority to use a global scope in analyzing climate change impacts. Future uses of the globally scoped SCC in U.S. regulatory analyses should be undertaken only after agencies have examined the limits of their statute-specific authority for basing their decisions on impacts that accrue on foreign soil.

