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Taxing Luxury Emissions

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TAXING LUXURY EMISSIONS

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Recent economic and sociological studies have documented the rising challenge of carbon inequality—that is, extreme class disparities in carbon emissions both within the United States and globally. These studies show an alarming divide, with the top 10% of emitters producing half of all emissions and the top 1% alone producing 17% of emissions. Meanwhile, the bottom 50% of the world produces only 10% of carbon emissions. These disparities are driven by "luxury emissions" produced by the carbon-intensive lifestyles of the rich, which too often include private jets, yachts, and multiple mansions.

Climate change law has been slow to react to the reality of carbon emissions inequality—even as public and media outrage has mounted. Perhaps discouraged by decades of slow progress on both wealth redistribution and carbon consumption policy, policymakers and legal scholars have yet to put forward any serious proposals for how the law might, or should, account for class-based emissions disparities.

This Article builds the case for embracing efforts to parse luxury and non-luxury emissions in climate policy design. Luxury carbon is, we assert, distinguishable on multiple salient grounds, including morally, socially, and politically. In a world facing a grave need to parsimoniously consume our remaining "carbon budget" to avoid catastrophic warming, carbon-intense luxury consumption is condemnable in ways that the quotidian—and often structurally constrained—consumption choices of the masses are not. Luxury consumption also drives broader consumption patterns through social dynamics that multiply the effects of policies to reduce high-end emissions while also potentially activating class politics to build supportive political coalitions. After drawing out these distinctions, we

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explore how to design a carbon tax to target luxury emissions, considering potential tax bases, rates, and revenue uses. We thus provide a blueprint to spark debate and discussion around how the law might appropriately account for pernicious class divisions in climate culpability.

INTRODUCTION

In June 2022, Kim Kardashian offered fans a peek inside her new private jet, gushing over the floor-to-ceiling cashmere detailing.[1] Critics pounced on the extreme inequality exposed

[1] Ali Condon, *Kim Kardashian Unveils New All Cashmere Plane*, UNILAD (June 2, 2022), https://www.unilad.co.uk/celebrity/kim-kardashian-new-cashmere-plane-20220602 [https://perma.cc/2H5N-JW9X].

by this absurd feature, but it was arguably *not* the most offensive manifestation of Kardashian's consumption tastes. Kardashian regularly uses the jet not only for cross-country flights but also locally, including one April 2022 flight that lasted seventeen minutes and covered just thirty-five miles.[2] That single flight emitted an estimated two tons of carbon, which is more than the annual per-capita emissions of residents of eighty-five countries.[3] Commentators have responded to Kardashian and others with similar private jet habits with sharp critiques of both the extreme inequality that this kind of luxury consumption evidences, as well as the outsized carbon emissions the ultrarich produce.[4] Our contention in this Article, in brief, is that it is time to directly target this type of behavior in climate law and policy—and that there will be cascading gains from doing so.

In recent years, scholars have charted a dramatic and accelerating increase in high-end inequality and have begun to devote renewed attention to its socially corrosive results.[5] This trend, in turn, has fed a growing body of legal scholarship on

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[2] Dan Roberts, *'DISGUSTING!' Kim Kardashian Slammed for Taking '17 Minute Flight' in $150M Private Jet as Plane Used '2 TONS' of Carbon Dioxide*, U.S. SUN (Apr. 30, 2022), https://www.the-sun.com/entertainment/5238245/kim-kardashian-slammed-flight-private-plane-carbon-dioxide/ [https://perma.cc/TF5U-RT7W].

[3] Calculated from data at *CO2 Emissions per Capita*, WORLDOMETER, https://www.worldometers.info/co2-emissions/co2-emissions-per-capita/ [https://perma.cc/75HC-SWNC].

[4] Kardashian's flights are apparently illustrative of billionaire celebrity private flight habits. *See, e.g.*, Ariel Zilber, *Elon Musk's 9-Minute Jet Flight from San Jose to San Francisco Sparks Outrage*, N.Y. POST (Aug. 22, 2022), https://nypost.com/2022/08/22/elon-musk-planes-9-minute-35-mile-flight-sparks-outrage/ [https://perma.cc/G2U7-FNHV]; Caroline Blair, *Kylie Jenner Called 'Climate Criminal' After 17-Minute Private Jet Flight*, PAGE SIX (July 18, 2022), https://pagesix.com/2022/07/18/kylie-jenner-called-climate-criminal-after-17-minute-jet—flight/ [https://perma.cc/A7AV-FEQL]; Brittany Miller, *Taylor Swift's Jet Beats Out Kylie Jenner's in Carbon Emissions: Study*, N.Y. POST (July 29, 2022), https://nypost.com/2022/07/29/taylor-swifts-jet-beats-out-kylies-in-carbon-emissions-study/ [https://perma.cc/ZM3P-JAYT] (noting that "Taylor Swift's private jet rides have emitted 8,293.54 metric tons of carbon in 2022").

[5] The top 1% in the United States owned about 25% of wealth in the late 1970s compared to around 40% by 2021, and this growing inequality has had negative effects on social mobility and political action. Olivier Blanchard & Dani Rodrik, *Introduction: We Have the Tools to Reverse the Rise in Inequality*, *in* COMBATTING INEQUALITY: RETHINKING GOVERNMENT'S ROLE xi–xii, xv–xvi (2021); *see also* Emmanuel Saez & Gabriel Zucman, *The Rise of Income and Wealth Inequality in America: Evidence from Distributional Macroeconomic Accounts*, 34 J. ECON. PERSPS. 3, 3, 11 (2020) (finding that whereas in 1980 the average member of the top 1% owned approximately 60 years' worth of the average U.S. income, by 2020 that amount was 200 years).

wealth taxes and high-end income taxes,[6] along with redistributive tax policy proposals.[7] Still, efforts to stem inequality in the United States over the last quarter century have largely failed.[8]

Over that same period, climate change has emerged as an accelerating planetary emergency. Scientists widely credit industrialization as the driver of runaway greenhouse gas emissions that cause climate change[9]—creating a natural and long-standing focus in climate law scholarship on parsing culpability for these emissions by country, with emphasis on the developed-versus-developing-country divide.[10] More recently, however, economists and sociologists have turned their attention to the highly class-stratified nature of emissions, even within countries. By one estimate, the bottom 50% of individual carbon emitters produce only 10% of global carbon emissions, while the top 10% globally account for nearly half of all emissions.[11] The United Nations recently reported that the top 1% of carbon-emitting households globally produce 17% of carbon emissions.[12] Another study found that the top 1%

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6 *E.g.*, Ari Glogower, *A Constitutional Wealth Tax*, 118 MICH. L. REV. 717 (2020); Emmanuel Saez & Gabriel Zucman, *Progressive Wealth Taxation*, BROOKINGS PAPERS ON ECON. ACTIVITY at 437 (Fall 2019); THOMAS PIKETTY, CAPITAL IN THE TWENTY-FIRST CENTURY 663–99 (2014) (proposing a global wealth tax of at least the difference between the rate of economic growth and the rate of return on capital as necessary in order to stem growing wealth inequality).

7 *See, e.g.*, Kemberley Washington & Korrena Bailie, *Biden Calls for New Taxes on the Wealthy*, FORBES (Apr. 5, 2022), https://www.forbes.com/advisor/taxes/biden-billionaire-income-tax/ [https://perma.cc/3RRC-W7F2]; *Ultra*-Millionaire *Tax*, WARREN FOR SENATE, https://elizabethwarren.com/plans/ultra-millionaire-tax [https://perma.cc/2E54-56WD]; Lily L. Batchelder & David Kamin, Taxing the Rich: Issues and Options (Sept. 11, 2019) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3452274 (assessing various options for raising revenue from the "most affluent" Americans).

8 *See* Saez & Zucman, *supra* note 5, at 21 (showing that U.S. tax policy has become less progressive over this time period); MICHAEL J. GRAETZ & IAN SHAPIRO, DEATH BY A THOUSAND CUTS: THE FIGHT OVER TAXING INHERITED WEALTH (2005) (describing efforts by the well-resourced to eliminate the estate tax).

9 *See* Intergovernmental Panel on Climate Change, *Summary for Policymakers*, *in* CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS 3, 5 n.9, 6 (Valérie Masson-Delmotte et al. eds., 2021); *id.* at 4 n.2; Kyoto Protocol to the United Nations Framework Convention on Climate Change art. 3.3, Dec. 11, 1997, 2303 U.N.T.S. 162 (adopted in 1997 and entered into force in 2005) (dividing responsibility according to development status).

10 *See infra* Part I.

11 Benedikt Bruckner, Klaus Hubacek, Yuli Shan, Honglin Zhong & Kuishuang Feng, *Impacts of Poverty Alleviation on National and Global Carbon Emissions*, 5 NATURE SUSTAINABILITY 311, 313 (Apr. 2022), https://www.nature.com/articles/s41893-021-00842-z [https://perma.cc/2KDQ-WB58].

12 UNITED NATIONS, THE CLOSING WINDOW: EMISSIONS GAP REPORT 2022, at xviii (2022) [hereinafter THE CLOSING WINDOW 2022], https://www.unep.org/resources/emissions-gap-report-2022 [https://perma.cc/5CTN-PCTN].

emit at levels 175 times higher than those in the bottom 10%.[13] Research further confirms that high household emissions are tightly correlated with high incomes.[14]

Most high-end emissions are wholly unnecessary from a subsistence point of view. They are, instead, "luxury emissions"[15] that accompany the carbon-intensive tastes of the rich for things like private jets, yachts, and multiple mansions.[16] One group of scholars recently observed that "carbon inequality is a mirror to extreme income and wealth inequality experienced at a national and global level today."[17] Concerns about carbon inequality often undergird calls to ensure that climate change policy does not stymie efforts to alleviate extreme poverty, with developing countries reasonably asserting that they need carbon 'headroom' and climate reparations to raise basic standards of living.[18]

Conspicuously missing from the climate policy discourse, however, are significant policy proposals to center carbon inequality by tackling the disproportionate emissions of the affluent.[19] Indeed, economist Lucas Chancel finds that actual climate laws appear to have done the opposite:

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13 Tim Gore, *Extreme Carbon Inequality: Why the Paris Climate Deal Must Put the Poorest, Lowest Emitting and Most Vulnerable People First*, OXFAM (Dec. 2, 2015), at 1; *see also infra* Part I.

14 *See infra* Part I (collecting and discussing relevant studies); *see infra* Figure 1 (showing U.S. per-capita emissions by income percentile).

15 While the term seems to beg a precise definition—and scholars have offered various suggestions that we generally embrace—we believe that any precise circumscribing of luxury emissions should be a product of political inputs, informed by the arguments we present here. *See infra* notes 99–101 and accompanying text (discussing various definitions of luxury emissions); *see infra* Part III.B.2 (discussing additional definitions and proposing several luxury consumption items that we believe are ripe to be targeted).

16 *See* Henry Shue, *Subsistence Emissions and Luxury Emissions*, 15 LAW & POL'Y 39 (1993) [hereinafter Shue, *Subsistence Emissions*]; *see* Henry Shue, *Subsistence Protection and Mitigation Ambition: Necessities, Economic and Climatic*, 21 BRITISH J. POL. & INT'L RELATIONS 251 (2019) [hereinafter Shue, *Subsistence Protection*]; *infra* Part I.

17 Bruckner, Hubacek, Shan, Zhong & Feng, *supra* note 11, at 311.

18 *See, e.g.*, *COP27 Reaches Breakthrough Agreement on New "Loss and Damage" Fund for Vulnerable Countries*, U.N. CLIMATE CHANGE (Nov. 20, 2022), https://unfccc.int/news/cop27-reaches-breakthrough-agreement-on-new-loss-and-damage-fund-for-vulnerable-countries [https://perma.cc/LH2F-CMKH] (describing a recent agreement for countries to establish a climate damages fund).

19 *See* David Schlosberg, *Further Uses for the Luxury/Subsistence Distinction: Impacts, Ceilings, and Adaptation*, 21 BRITISH J. POL. & INT'L RELATIONS 295, 298 (2019) (observing a "lack of bite on luxury emissions," where the potential use of the "luxury emissions" framework "has been underdeveloped"); *see also* DARIO KENNER, CARBON INEQUALITY: THE ROLE OF THE RICHEST IN CLIMATE CHANGE 8–9 (2019) (noting a lack of research on the rich and under-theorizing of their roles in climate

> [C]limate policies over the past decades have often targeted low-income and low-emitter groups disproportionately, while leaving high emitters relatively unaffected. . . . In fact, key climate policy instruments (such as carbon taxes, for instance) have done little to address the vast inequalities in carbon footprints, and may have exacerbated them in some countries.[20]

There are several factors that may explain the lack of policy attention to carbon inequality, even as the media and public appear to find these emissions enraging.[21] It may stem in part from the poor traction that wealth-redistributive policies have obtained in recent years, as well as the political challenges and limited impacts of carbon pricing schemes.[22] In addition, many in the climate policy world have criticized a focus on consumption and individual responsibility in climate policy debates, preferring to focus on the spheres of investment and production as core drivers of the climate crisis.[23]

Despite these well-documented challenges, we believe that a policy focus on luxury emissions would be a useful—and fruitful—addition to U.S. climate mitigation policies aimed at production-side emissions. Additionally, a focus on *carbon* rather than wealth might improve the prospects of redistributive policy in the United States. The aim of this Article is, therefore, to build the case for why scholars, activists, and policymakers should embrace efforts to parse luxury and non-luxury emissions in climate policy design. Luxury carbon is, we

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policy stagnation); LUCAS CHANCEL, THOMAS PIKETTY, EMMANUEL SAEZ & GABRIEL ZUCMAN, WORLD INEQUALITY REPORT 2022 131 (2022) ("One dimension which has been largely left aside by climate policies around the globe is addressing the large carbon footprints of the very wealthy.").

20 Lucas Chancel, *Global Carbon Inequality over 1990–2019*, 5 NATURE SUSTAINABILITY 931, 935 (2022) [hereinafter Chancel, *Global Carbon Inequality*].

21 *See, e.g.*, Gabriel Geiger, *We Need to Tackle the Carbon Emissions of the Wealthy, New Report Says*, VICE (Dec. 11, 2020), https://www.vice.com/en/article/akd73k/we-need-to-tackle-the-carbon-emissions-of-the-wealthy-new-report-says [https://perma.cc/G548-V3C6]; Sara Schonhardt, *Rich Americans Have Higher Carbon Footprints Than Other Wealthy People*, SCI. AM. (Dec. 8, 2021), https://www.scientificamerican.com/article/rich-americans-have-higher-carbon-footprints-than-other-wealthy-people/ [https://perma.cc/6ELZ-WRLM]; Laura Paddison, *How the Rich are Driving Climate Change*, BBC (Oct. 27, 2021), https://www.bbc.com/future/article/20211025-climate-how-to-make-the-rich-pay-for-their-carbon-emissions [https://perma.cc/GZ2G-N4X3].

22 *See infra* Section II.C.

23 *See* Felix Creutzig et al., *Demand, Services, and Social Aspects of Mitigation*, *in* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2022: MITIGATION OF CLIMATE CHANGE 527–46 (2022) (distinguishing production-side and consumption-side focuses); *infra* Section II.C.

assert, distinguishable from general consumption-based carbon emissions on salient moral, social, and political grounds.

From a moral angle, luxury emissions are distinct from the carbon we each presently need to subsist or have a decent life.[24] In a world facing a grave need to parsimoniously consume our remaining "carbon budget" to avoid catastrophic warming,[25] carbon-intense luxury consumption is condemnable in ways that the quotidian—and often structurally constrained[26]—consumption choices of the masses are not.[27] Although there are thorny boundary questions about where need ends and luxury begins, we argue that there is a category of irredeemably superfluous emissions that should be distinguished from other emissions.[28] Pervasive liberal tendencies to shy away from regulating household behavior must give way when these choices have devastating consequences that fall most heavily on the poorest and most marginal communities.[29]

Second, there is an important social component to luxury emissions. In a line of reasoning harkening back to the well-known *Veblen* effect,[30] we argue that luxury emissions are particularly worthy targets because of their social reverberations.

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24 *See infra* Part I (discussing and defining "decent life" emissions).

25 *See infra* notes 106–08 and accompanying text; *Global Carbon Budget*, GLOBAL CARBON PROJECT (Nov. 11, 2022), https://www.globalcarbonproject.org/carbonbudget/ [https://perma.cc/3D5B-PFUB]; Piers Forster, Debbie Rosen, Robin Lamboll & Joeri Rogelj, *Guest Post: What the Tiny Remaining 1.5C Carbon Budget Means for Climate Policy*, CARBON BRIEF (Nov. 11, 2022), https://www.carbonbrief.org/guest-post-what-the-tiny-remaining-1-5c-carbon-budget-means-for-climate-policy/ [https://perma.cc/VNT5-XX97].

26 *See* CHANCEL, PIKETTY, SAEZ & ZUCMAN, *supra* note 19, at 132 ("Carbon consumers, especially from low and middle income groups are often constrained in their energy choices, because they are locked-in carbon intensive infrastructures systems.").

27 *See id.*; *see also* Jared Starr, Craig Nicolson, Michael Ash, Ezra M. Markowitz & Daniel Moran, *Assessing U.S. Consumers' Carbon Footprints Reveals Outsized Impact of the Top 1%*, 205 ECOLOGICAL ECON. 1, at 4 (2023) (finding that the carbon intensity of low-income household expenditures is higher because "their consumption is dominated by carbon intensive necessities").

28 *See infra* Section II.A.

29 *Cf.* Cary Coglianese, *Implications of Liberal Neutrality for Environmental Policy*, 20 ENV'T ETHICS 41, 45–46 (1998) (explaining liberal endorsement of the "harm principle," which "justifies government intervention to prevent some individuals from encroaching on the liberty of others"); Dale Jamieson & Marcello Di Paola, *Climate Change, Liberalism, and the Public/Private Distinction*, *in* PHILOSOPHY AND CLIMATE CHANGE 370 (Mark Budolfson, Tristram McPherson & David Plunkett eds., 2021) ("Climate change puts pressure on a distinction that is at the heart of liberal theory: that between the public and the private.").

30 *See* THORSTEIN VEBLEN, THE THEORY OF THE LEISURE CLASS (Penguin Books, 1994) (1899); *see also infra* Section III.B.

A large body of social science research shows that people establish their social position via their spending and that conspicuous displays of wealth and leisure are used to convey status to others, who in turn evaluate their own material status in relative terms.[31] Social media seems to amplify these patterns by giving the ultra-wealthy easy platforms on which to flaunt their excessive consumption with admiring—and aspiring—followers.[32] Drawing on these dynamics, we argue that (1) behavior changes by the ultra-wealthy have particular potential to drive more widespread societal shifts in consumption patterns, as well as to prompt investments in zero-carbon technologies and products; and (2) irrespective of the degree of ultra-wealthy response to luxury emissions policy, luxury carbon regulation would broadly signal a democratic disapproval of such excesses that could help tamp down exuberant expressions of superfluous consumption.[33] These dynamics render a focus on the consumption patterns of the top 1% a surprisingly efficient and effective way to drive broader changes.

Third and finally, we see a synergistic political economy arising from a focus on luxury emissions. We openly acknowledge that the politics of targeting luxury emissions appear challenging: people who generate these emissions are wealthy, often extraordinarily so, and wealthy people may have the capability to defeat or undermine our proposals in a variety of ways. Moreover, despite scientists' increasing insistence that consumption practices of the affluent will indeed have to shift to avoid catastrophic warming,[34] consumption-focused climate policies are deeply unpopular:[35] think, for example, of the threats that they're coming to "take away your hamburgers" that greeted Congressional proposals for a "Green New Deal."[36]

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31 *See infra* Section II.B.

32 *See, e.g.*, *Keeping Up with the Kardashians*; Kylie Jenner (@kyliejenner), INSTAGRAM, https://www.instagram.com/kyliejenner/ [https://perma.cc/R8JA-5WUM] (380 million followers).

33 *See infra* Section II.B.

34 *See* Thomas Wiedmann, Manfred Lenzen, Lorenz T. Keyßer & Julia K. Steinberger, *Scientists' Warning on Affluence*, NATURE COMMC'NS (2020); Creutzig et al., *supra* note 23, at 527–70; *infra* Section II.C.

35 *See* MATTHEW T. HUBER, CLIMATE CHANGE AS CLASS WAR: BUILDING SOCIALISM ON A WARMING PLANET 12–17 (2021).

36 *See* Katie Shepherd, *Biden's Climate Plan Doesn't Ban Meat. But Baseless Claims Left Republicans Fuming: 'Stay Out of My Kitchen.'*, WASH. POST (Apr. 26, 2021), https://www.washingtonpost.com/nation/2021/04/26/republicans-meat-biden-climate-plan/ [https://perma.cc/4M2J-UUH8]; Joshua Specht, *Hamburgers Have Been Conscripted into the Fight over the Green New Deal.*

We take these challenges seriously but outline several reasons to believe that luxury-emissions-focused proposals can generate more political momentum than either bare carbon consumption or wealth redistribution policies. By parsing luxury emissions—and *targeting them specifically*—luxury emissions policy can focus exclusively on high-end, carbon-intensive consumption practices that are widely perceived as outrageous, where no structural constraints prevent change.[37] At the same time, focusing only on morally condemnable uses of wealth—rather than targeting the wealthy as a general status category—should bolster majoritarian support for carbon-specific wealth redistribution policies.[38]

For all of these reasons, we seek to inject into both academic and policy debates more consideration of carbon emissions as a class-differentiated phenomenon that deserves legal responses sensitive to this reality. After making this case, we take our analysis one step further to consider potential design options.[39] For reasons of political feasibility and administrability, we focus our analysis on a luxury emissions tax, although we do not intend to foreclose discussion of other means of luxury emissions regulation.[40] We make the case for a targeted tax on high-emitting goods clearly perceived as luxuries, and we argue for high tax rates to potentially alter the carbon consumption behavior of the ultra-wealthy.[41] We also trace how the political feasibility of such a tax could be bolstered by using

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The History of American Beef Shows Why, TIME (May 7, 2019), https://time.com/5583986/green-new-deal-beef-history/ [https://perma.cc/P6DE-TEQ2].

37 Exactly which emissions fall in this category is a difficult and malleable question—and one that we take up *infra* Section II.B.

38 *See* Philippe Benoit, *A Luxury Carbon Tax to Address Climate Change and Inequality: Not All Carbon is Created Equal*, ETHICS & INT'L AFFS. (Mar. 11, 2020), https://www.ethicsandinternationalaffairs.org/online-exclusives/a-luxury-carbon-tax-to-address-climate-change-and-inequality-not-all-carbon-is-created-equal [https://perma.cc/U45N-23TU] (arguing for an "extravagant activities" carbon tax on these grounds); *see also infra* Section III.C.

39 *See* KENNER, *supra* note 19, at 22 (observing the existence of "difficult" policy questions but declining to engage with them). The one short exploration of luxury emissions tax design we found is Benoit, *supra* note 38. Chancel and Piketty develop an alternative proposal for a "global progressive carbon tax on all world emitters," but do not develop out a strategy for luxury-focused carbon emissions. LUCAS CHANCEL & THOMAS PIKETTY, PARIS SCH. ECON., CARBON AND INEQUALITY: FROM KYOTO TO PARIS: TRENDS IN THE GLOBAL INEQUALITY OF CARBON EMISSIONS (1998-2013) & PROSPECTS FOR AN EQUITABLE ADAPTATION FUND 35–39 (Nov. 3, 2015).

40 *See infra* Section III.A.

41 *See infra* Section III.B.

revenue generated to tackle widespread structural constraints to low-carbon lifestyles.[42]

The Article proceeds as follows. Part I introduces the challenge of carbon inequality and collates emerging data on luxury emissions. Part II details three normative arguments for targeting luxury emissions, focusing on their moral, social, and political differentiators. Part III examines design possibilities and challenges, introducing a menu of considerations to help move luxury emissions from an abstract rallying cry into concrete tax policy. A final part concludes.

I
Carbon Inequality and Luxury Emissions

We begin by tracing the emergence of the concept of luxury emissions and the burgeoning research on their nature and scope. Under present technological and social conditions, some carbon emissions are, of course, necessary to meet basic human needs. But though everyone emits carbon, all people do not contribute equal amounts. The carbon attributable to any single individual, often expressed in terms of carbon dioxide equivalents or CO_2e,[43] derives from the nature of their home and household, their eating and travel habits, their leisure pursuits, and each person's broader positioning in the system of capital and labor—including their potential ownership or management of assets that themselves contribute carbon.[44]

For many decades, the tendency in academic and policy conversations was to parse consumption patterns by country.[45]

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42 *See infra* Section III.C.

43 *What Are CO2e and Global Warming Potential (GWP)?*, The Guardian (Apr. 27, 2011), https://www.theguardian.com/environment/2011/apr/27/co$_2$e-global-warming-potential [https://perma.cc/QYE4-DA8Y] ("CO2e, or carbon dioxide equivalent, is a standard unit for measuring carbon footprints. The idea is to express the impact of each different greenhouse gas in terms of the amount of CO_2 that would create the same amount of warming.").

44 *See* Chancel & Piketty, *supra* note 39, at 20–22; Sivan Kartha, Eric Kemp-Benedict, Emily Ghosh, Anisha Nazareth & Tim Gore, The Carbon Inequality Era: An Assessment of the Global Distribution of Consumption Emissions among Individuals from 1990 to 2015 and Beyond 4 (Joint Rsch. Rep., Stockholm Env't Inst. & Oxfam 2020).

45 *See* Kyoto Protocol, *supra* note 9 (dividing emissions reductions responsibilities based on country development status); Shoibal Chakravarty et al., *Sharing Global CO2 Emissions Reductions Among One Billion High Emitters*, 106 Proc. Nat'l Acad. Scis. 11884, 11884 (2009) (calling for a shift from developed-developing country division of emissions responsibility to a system "derived from a fairness principle based on the 'common but differentiated responsibilities' of individuals, rather than nations"); Thomas Boudreau, Ph.D., *The Earth's Atmosphere as a*

As numerous scholars have observed, the largest and most developed countries have historically produced carbon emissions that far outpace less industrialized nations; conversely, the worst effects of climate change will be felt by some of the most economically vulnerable countries and communities in the world.[46] Following these observations, the legal structure of early climate regimes grouped countries according to their development status. In particular, the 1997 Kyoto Protocol assigned each country to either Annex I (industrialized nations) or non-Annex I (developing nations) and placed emissions reduction targets only on countries in Annex I.[47]

There is much logic to this state-centric way of viewing carbon inequality. Because industrialization has largely driven climate change, and fossil fuels have largely driven industrialization, development status has been a reasonable proxy for a state's emissions over time.[48] However, these linkages break down when it comes to present and future emissions: China now leads the world in emissions, while India emits more greenhouse gases annually than the European Union

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Global Trust: Establishing Proportionate State Responsibility to Maintain, Restore and Sustain the Global Atmosphere, 7 BARRY L. ENV'T & EARTH L.J. 39, 46 (2017) (arguing for "proportionate state responsibility" in international law); Albert Mumma & David Hodas, *Designing a Global Post-Kyoto Climate Change Protocol that Advances Human Development*, 20 GEO. INT'L ENV'T L. REV. 619, 621 (2008) (advancing a "proposed formula for a post-Kyoto Protocol climate change regime, which takes account of the different circumstances of the various country groupings"); Justin Lee, *Rooting the Concept of Common but Differentiated Responsibilities in Established Principles of International Environmental Law*, 17 VT. J. ENV'T L. 27, 29 (2015) (tracing the practice of differentiating countries based on development status); Christopher D. Stone, *Common but Differentiated Responsibilities in International Law*, 98 AM. J. INT'L L. 276, 279–80 (2004) (similar). *But see* John Copeland Nagle, *How Much Should China Pollute?*, 12 VT. J. ENV'T L. 591, 596 (2011) (arguing against a developing country "right to pollute"); Eric A. Posner & Cass R. Sunstein, *Climate Change Justice*, 96 GEO. L.J. 1565, 1567 (2008) (arguing against contributions based on historical responsibility).

46 Disproportionate climate impacts by class occur both internationally and domestically. *See* Suzanne Goldenberg, *Climate Change: The Poor Will Suffer Most*, THE GUARDIAN (Mar. 30, 2014), https://www.theguardian.com/environment/2014/mar/31/climate-change-poor-suffer-most-un-report [https://perma.cc/V6AG-EYBY]; Press Release, U.S. Env't Prot. Agency, *EPA Report Shows Disproportionate Impacts of Climate Change on Socially Vulnerable Populations in the United States* (Sept. 2, 2021), https://www.epa.gov/newsreleases/epa-report-shows-disproportionate-impacts-climate-change-socially-vulnerable [https://perma.cc/L8HW-5N42].

47 *See* Kyoto Protocol, *supra* note 9, at, art. 3 & annex B.

48 *See* CHANCEL & PIKETTY, *supra* note 39, at 15 (tracing historical responsibility for post-industrialization emissions).

despite lagging considerably on most development metrics.[49] Moreover, development status has not proven a politically feasible way to structure climate law. The United States Senate famously rejected the putatively binding Kyoto Protocol 98-0 because it did not impose any emissions reduction requirements on rapidly developing economies.[50] In recent years, the developed-developing country distinction has thus given way to an international regime based on bottom-up pledges from all nations, wherein countries self-generate climate commitments and report them to the international governing body.[51] Contemporaneously, some attention has shifted to the ways in which a country-based focus may have obscured vast disparities in emissions within countries[52]—with some emissions stemming from subsistence needs but others falling into the category of "luxury emissions."

As best we can tell, Henry Shue introduced the term "luxury emissions" in a 1993 article titled "Subsistence Emissions and Luxury Emissions."[53] This article made important strides in suggesting that all carbon emissions are not morally equivalent, asserting that "elementary fairness" dictates that "those living in desperate poverty ought not to be required to restrain their emissions, thereby remaining in poverty, in order that those living in luxury should not have to restrain their emissions."[54] But in keeping with the focus of the times, Shue centered most of his attention on subsistence emissions and their relationship to apportionment among nations.[55] His

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49 Kate Larsen, Hannah Pitt, Mikhail Grant & Trevor Houser, *China's Greenhouse Gas Emissions Exceeded the Developed World for the First Time in 2019*, RHODIUM GRP. (May 6, 2021), https://rhg.com/research/chinas-emissions-surpass-developed-countries/ [https://perma.cc/656D-PNVK]; *see also* CHANCEL & PIKETTY, *supra* note 39, at 33.

50 *See* Byrd-Hagel Resolution, S. Res. 98, 105th Cong. (1997).

51 *See* Daniel Bodansky, *The Legal Character of the Paris Agreement*, 25 REV. EUR. CMTY. & INT'L ENV'T L. 9, 11 (2016). Still, common-but-differentiated responsibilities remain a cornerstone of climate diplomacy—ostensibly reflected in the stringency and timelines of various country pledges. *See* Pieter Pauw, Kennedy Mbeva & Harro van Asselt, *Subtle Differentiation of Countries' Responsibilities Under the Paris Agreement*, 5 PALGRAVE COMMC'NS 1, 1 (2019).

52 *See, e.g.*, Bruckner, Hubacek, Shan, Zhong & Feng, *supra* note 11, at 313.

53 Shue, *Subsistence Emissions*, *supra* note 16. Shue credits earlier work of Agarwal and Narain as helping spark this line of argument. Shue, *Subsistence Protection*, *supra* note 16, at 251; *see also* Anil Agarwal & Sunita Narain, *Global Warming in an Unequal World—A Case of Environmental Colonialism*, 3 ENV'T & URBANIZATION 166 (1991).

54 Shue, *Subsistence Emissions*, *supra* note 16, at 42.

55 *See id.*; *see also* Narasimha D. Rao & Paul Baer, *"Decent Living" Emissions: A Conceptual Framework*, 4 SUSTAINABILITY 656, 657 (2012) (articulating a

discussion of reducing luxury emissions mainly related to the idea that wealthy nations, as such, must reduce emissions.[56]

In the decades since Shue's initial analysis, economic inequality, and particularly high-end inequality, has increased significantly in the United States and globally. By 2018, the top 10% of taxpayers in the United States owned nearly 78% of wealth, up from 68% in 1989, and the top 1% owned 38%, up from 28% in 1989.[57] For China, Europe, and the United States collectively, the wealth owned by the top 1% has increased from 28% in 1980 to 33% today, while the wealth owned by the bottom 75% has stayed steady at around 10%.[58] Globally, it appears that billionaires have sustained a significantly higher annual rate of growth (perhaps 7% to 8%) than the rest of the world population (2.5% for the middle class, higher for those at the very bottom but still well below the wealthiest group).[59] These estimates paint a stark picture of accelerating high-end inequality but very possibly underestimate the separation between the top and the rest, as "financial globalization" makes it increasingly hard to measure wealth at the top.[60]

Increasing economic inequality has—quite predictably—exacerbated the prevalence of luxury emissions and carbon inequality. A 2015 study by Lucas Chancel and Thomas Piketty finds "a clear increase in within country CO2e emissions inequalities."[61] Some empirical work on carbon inequality has included emissions related to both consumption and investment—that is, emissions that the wealthy produce in their personal lives and those they induce via their investment decisions.[62] For our purposes, it is more useful to parse these categories, given that investment

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"conceptual framework to quantify the energy and emissions associated with a defensible account of a 'decent life' for all").

56 *See, e.g.*, Shue, *Subsistence Emissions*, *supra* note 16, at 42–43.

57 Saez & Zucman, *supra* note 5, at 9.

58 Gabriel Zucman, *Global Wealth Inequality*, 11 ANN. REV. ECON. 109, 111 (2019).

59 *Id.*

60 *Id.*; *see, e.g.*, Annette Alstadsæter, Bluebery Planterose, Gabriel Zucman & Andreas Økland, *Who Owns Offshore Real Estate? Evidence from Dubai* 1 (EU Tax Observatory Working Paper No. 1, May 2022) (noting that "[a] major blind spot of existing economic statistics is the lack of data on cross-border real estate" and estimating that nearly $150 billion of foreign wealth is invested in real property in Dubai).

61 CHANCEL & PIKETTY, *supra* note 39, at 9, 33 ("In 1998, one third of global CO_2e emissions inequality was accounted for by inequality within countries. Today, within-country inequality makes up 50% of the global dispersion of CO_2e emissions.").

62 *See* CHANCEL, PIKETTY, SAEZ & ZUCMAN, *supra* note 19, at 132; Chancel, *Global Carbon Inequality*, *supra* note 20, at 934.

emissions do not neatly fit into the "luxury" category that can be controlled via consumption-based regulation. One 2022 study attempting to understand the investment-consumption breakdown among the extremely wealthy finds that for the global top 10%, around 50% of emissions come from investments.[63] That means half of high-end emissions come from consumption—predominantly, as discussed below, air travel, cars, housing, food, apparel, and services.[64]

Although it is challenging to accurately measure the stratification of consumption and consumption-related emissions by class, emerging methods are producing some eye-popping findings.[65] We break these down by findings related to the top 10%, 1%, 0.1%, and 0.01%.

The Top 10%. A 2020 joint investigation by Oxfam International and the Stockholm Environment Institute revealed that between 1990 (around when international climate negotiations began in earnest) and 2015, the world's richest 10% of households by income contributed 52% of global consumption-based carbon emissions, while the poorest 50% contributed just 7%.[66] The richest households use "around 45% of all the energy linked to land transport, and around 75% of all energy linked to aviation, compared with just 10% and 5% respectively for the poorest 50%."[67]

This disparity holds domestically as well as internationally.[68] In 2022, humanity produced around 7.35 tons of carbon

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63 *See* Chancel, *Global Carbon Inequality*, *supra* note 20, at 935 (showing that about 20% more of top 1%'s emissions come from investments, than top 10%'s emissions).

64 CHANCEL & PIKETTY, *supra* note 39, at 30; *see also* Tim Gore, *Confronting Carbon Inequality*, OXFAM (Sept. 21, 2020), at 7 [hereinafter OXFAM, *Confronting*]. *See generally* Yannick Oswald, Anne Owen & Julia K. Steinberger, *Large Inequality in International and Intranational Energy Footprints Between Income Groups and Across Consumption Categories*, 5 NATURE ENERGY 231 (2020).

65 *Cf.* CHANCEL & PIKETTY, *supra* note 39, at 20 n.12 (describing challenges of constructing datasets of CO_2e emissions at the household level from household consumption surveys and "national physical energy and CO_2e accounts"); *see* Chancel, *Global Carbon Inequality*, *supra* note 20, at 931 (bemoaning lack of "even basic facts about which groups of the population contribute to emissions growth, or mitigation"); Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 2 ("[A]ll bottom-up studies, to date, rely on Consumer Expenditure Surveys (CEX) that under-sample *top 1%* households and thus have very likely underestimated emissions for the top income groups they report.").

66 OXFAM, *Confronting*, *supra* note 64, at 2, 5 (allocating "national consumption emissions to individuals within each country based on a functional relationship between income and emissions").

67 *Id.* at 7.

68 *See* THE CLOSING WINDOW 2022, *supra* note 12, at 10.

per person in the world.[69] The average American contributes around 16 to 17 tons of CO_2e per year,[70] and that number rises to around 22.5 tons if one includes production-related emissions in other countries attributable to American consumption.[71] Still, the affluent in the United States produce much more carbon with their consumption than the average person. The top 10% of Americans by emissions are each responsible for over seventy tons of emissions each year.[72] Further, the authors observed that there are significant variations *within* the top 10%, and those with more consumption of higher-carbon-intensity goods and services will contribute more emissions.[73] A 2023 study estimated that the top 10% of Americans by income account for 24% of consumption-based emissions.[74] Another recent study finds that in affluent U.S. neighborhoods, housing-related emissions alone may be fifteen times higher than those in nearby less-affluent neighborhoods, with floor area size explaining much of the difference in emissions.[75] Given the racial disparities in income and wealth in the United States, carbon inequality also unsurprisingly tracks across races.[76]

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69 Pierre Friedlingstein et al., *Global Carbon Budget 2022*, 14 EARTH SYS. SCI. DATA 4811 (2022), https://essd.copernicus.org/articles/14/4811/2022/#section4 [https://perma.cc/DB65-UDDZ].

70 Stuart Capstick et al., *Bridging the Gap—The Role of Equitable Low-Carbon Lifestyles*, *in* U.N. ENV'T PROGRAMME, EMISSIONS GAP REPORT 2020, at 62 (2020) (estimating 17.6 tons CO_2e per American on average). That is considerably higher than counterparts in Europe, at 9 tons, or China, at nearly 8 tons. CHANCEL & PIKETTY, *supra* note 39, at 18.

71 *Id.* at 28; CHANCEL, *supra* note 19, at 118 (citing 21 tons on average when including imported goods and services).

72 Chancel, *Global Carbon Inequality*, *supra* note 20 at 936; *see infra* Figure 1.

73 Chancel, *Global Carbon Inequality*, *supra* note 20, at 933 Fig. 2a, 935 Fig. 5b. For example, for the top decile as a whole, transportation constitutes 12% of expenditures and 33% of emissions, but those households who spend a greater portion of their income on transportation, such as those who take more than the estimated 4–5 long haul flights per year, will contribute more than those whose consumption is focused on lower-carbon-intensity items. Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 4, 6.

74 Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 2, 4 (calculating household-level emissions by combining expenditures data by income percentiles with embodied emissions data for 10,211 commodities).

75 Benjamin Goldstein, Dimitrios Gounaridis & Joshua P. Newell, *The Carbon Footprint of Household Energy Use in the United States*, 117 PROC. NAT'L ACAD. SCIS. 19122, 19122–24 (2020) ("The tendency for affluence and FAC [floor-area size] to increase together is a key emissions driver for wealthier households.").

76 *See* Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 5 ("Across all economic groups, we estimate Black households had average footprints of 33.5 t,

The Top 1%. Going beyond the 10% to focus on the very highest emitters stratifies the picture further. The richest 1% of the world by income has contributed 15% of emissions since 1990.[77] That means that the average carbon footprint of someone in the wealthiest 1% of the global population by income is as much as "175 times that of someone in the poorest 10%."[78] Collectively, the top 1% of earners globally has emitted twice the carbon dioxide of the entire bottom 50% of earners since 1990.[79] Measured in terms of emissions (rather than income or wealth), the top 1% of emitters by household now emits around 110 tons each year, which is about 17% of total household emissions.[80] This pattern is more pronounced domestically: the top 1% of American earners in 2019 (those with incomes of over $547,000, whose average income is around $1.5 million) emitted an average of 955 tons.[81] The top 1% of Americans by emissions emits over 250 tons each year.[82] Further, whereas U.S. emissions have decreased by 16% on a per-household basis since the mid-1990s, emissions of the top 1% have *increased* by 23%.[83]

The Top 0.1% and 0.01%. The multibillionaires at the very *top* of the 1% have still more outsized impacts. A 2022 study finds that the top 0.1% of "super-emitters" average 467 tons, and the top 0.01% average 2,531 tons each year.[84] In the

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White Hispanic households averaged 38.6 t, and White non-Hispanic households averaged 43.7 t.").

77 Oxfam, *Confronting*, *supra* note 64, at 2.

78 Gore, *supra* note 13, at 4 fig.2; *see also* Chancel & Piketty, *supra* note 39, at 31 (estimating this same figure at around 210 times). Gössling finds that some affluent individuals emit as much as "several ten thousand times the amount of greenhouse gases attributed to the global poor" as a result of flying. Stefan Gössling, *Celebrities, Air Travel, and Social Norms*, 79 Annals of Tourism Rsch. 102775, at 8 (2019).

79 Oxfam, *Confronting*, *supra* note 64, at 3; *see* Capstick et al., *supra* note 70, at xxv (reporting similar figures in 2015).

80 The Closing Window 2022, *supra* note 12, at 9.

81 Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 2, 4; *see also* Chancel & Piketty, *supra* note 39, at 18, 29 (calculating estimates for 2013 that showed those with incomes over $544,000 contributed sixteen times the American average emissions at that time, and fifty times the world average); Erica York, *Summary of the Latest Federal Income Tax Data, 2023 Update*, Tax Found. (Jan. 26, 2023), https://taxfoundation.org/publications/latest-federal-income-tax-data/ [https://perma.cc/Z6VM-TL2U] (reporting that IRS data showed that top 1% of income earners had an adjusted gross income of $550,000 in 2020).

82 Chancel, *Global Carbon Inequality*, *supra* note 20; *see infra* Figure 1.

83 Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 4.

84 The Closing Window 2022, *supra* note 12, at 9 (citing Chancel, *Global Carbon Inequality*, *supra* note 20 and Chancel, Piketty, Saez & Zucman, *supra* note 19).

U.S., the top 0.1% by income has annual emissions of over 800 tons.[85]

To determine where these super high-end emissions come from, anthropologists Beatriz Barros and Richard Wilk examine the spending patterns of twenty billionaires on dwellings, transportation, and yachts.[86] They find that housing, transportation, and yachting accounted, respectively, for 2.3%, 33.4%, and 64.3% of their sample of billionaires' emissions.[87] Although housing represented a relatively small share of these emitters' carbon, these billionaires average 5.5 houses, at an average size of 13,476 square feet, which together contribute about 190 tons per year.[88] In other words, luxury housing only looks reasonable relative to the carbon extravagance of luxury travel.[89] In total, their results suggest that super-emitters' annual carbon from their homes, travel, and yachts may be as high as 8,194 tons per capita—over *five thousand* times those of the bottom global half of emitters by income and 1668 times the global per-capita average emissions.[90]

Using a different method to estimate more broadly within the top 0.1%, Jared Starr and co-authors estimated that there are about 1900 "super-emitter" households in the U.S.—the top 1.5% of the top 0.1% (i.e., the top 0.0015%).[91] This group is a tiny slice of the 130 million total U.S. households, but each of these super-emitter households account for over 3,000 tons of emissions each year.[92] Their emissions are astounding: approximately 136 tons of greenhouse gas emissions each year just from home energy and utility emissions, 100 tons from first-class long haul flights, over 1,100 tons if they own a private

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85 Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 4.

86 Beatriz Barros & Richard Wilk, *The Outsized Carbon Footprints of the* Super-*Rich*, 17 SUSTAINABILITY: SCI., PRAC. & POL'Y 316, 317 (2021).

87 *Id.* at 319.

88 *Id.*

89 Remarkably, all of these sources of emissions pale in comparison to the emissions associated with one of the latest hobbies of the ultra-wealthy: space tourism. *See, e.g.*, Eloise Marais, *Space Tourism: Rockets Emit 100 Times More CO_2 Per Passenger Than Flights—Imagine a Whole Industry*, THE CONVERSATION (July 19, 2021), https://theconversation.com/space-tourism-rockets-emit-100-times-more-co-per-passenger-than-flights-imagine-a-whole-industry-164601 [https://perma.cc/T9TE-35T9].

90 Barros & Wilk, *supra* note 86, at 318, 319; s*ee also* Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 6 (finding that the top 1.5% of the 0.1% had emissions of 3,000 tons per year).

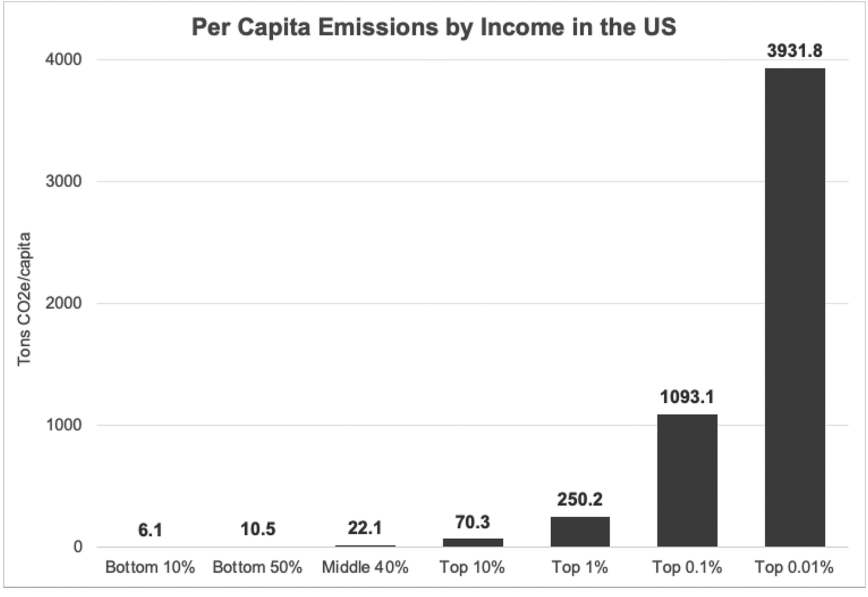
91 Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 6.

92 *Id.*

jet, and over 7,000 tons if they own a yacht.[93] Across the entire 0.1% of the United States (about 124,000 households), Starr and co-authors estimate emissions of about 57 times that of the bottom U.S. decile of households.[94] Further, they estimate that the top 0.1% has increased its per-household emissions by a whopping 50% over the past quarter century, marking a wide divergence from most other households whose emissions have decreased.[95]

When represented graphically (see Figure 1), the disparities in per-capita carbon emissions are so enormous that those of people in the bottom half of income distribution barely register. In Figure 1, we draw from data collated by Chancel to represent disparities in U.S. carbon emissions:[96]

Figure 1. U.S. per capita emissions of selected income segments



In a scathing summation of this data, the Oxfam authors conclude: "Over the past 20–30 years, the climate crisis has been fuel[]ed and our limited global carbon budget squandered in the service of increasing the consumption of the already

93 *Id.*

94 *Id.* at 4, 22.

95 *Id.* at 4.

96 Figure is our own; the data used to construct it comes from Chancel, *Global Carbon Inequality*, *supra* note 20.

affluent, rather than lifting people out of poverty."[97] Projecting ahead, these disparities may grow starker. A 2021 analysis found that despite anticipating small total emissions cuts globally through 2030, "the total emissions associated with the richest 1% are set to continue to increase."[98]

A fair question to ask as we focus on the behavior of the richest and most profligate carbon emitters is how to define "luxury emissions." These emissions are often cast in opposition to "decent-living emissions," which Lukas Tank describes as those "that allow the kind of access to 'food, shelter, safe water and sanitation, health care, education, transportation, clothing, refrigeration, television and mobile phones' that is necessary for a minimally decent life."[99] Along similar lines, Philippe Benoit defines luxury emissions as those arriving from "discretionary extravagant activities," in contrast to emissions arising from "basic needs, . . . basic income generation[,] . . . [and] basic leisure."[100] Oswald and co-authors echo the standard economics definition of luxury consumption, defining luxury emissions as those arising from any household consumption for which, as income increases, demand increases at a faster rate (i.e., goods with an income elasticity greater than one).[101]

We like these definitions as conceptual starting points. However, the category of luxury emissions that can be regulated will necessarily be *politically* determined, which makes outlining its precise boundaries *ex ante* impossible. Will it include, for example, not just yachts and private planes but also second homes and SUVs? All of these fall outside decent living emissions, but the political feasibility of regulating them varies greatly. In Part III, we offer some suggestions of emissions that we think should clearly be in the luxury category, without foreclosing the possibility of a shifting political redefinition of this boundary over time.

But first, in the next Part, we strengthen the case for targeting luxury emissions by considering the moral, social, and political-economic implications of carbon inequality.

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97 Oxfam, *Confronting*, *supra* note 64, at 2.

98 Inst. European Env't Pol'y, Carbon Inequality in 2030, at 4 (Nov. 2021).

99 Lukas Tank, *Against the Budget View in Climate Ethics*, Critical Rev. Int'l Soc. & Pol. Phil. 1, 3 (2022) (internal citations omitted).

100 Benoit, *supra* note 38 (outlining and charting this argument).

101 Yannick Oswald, Joel Millward-Hopkins, Julia K. Steinberger, Anne Owen & Diana Ivanova, *Luxury-Focused Carbon Taxation Improves Fairness of Climate Policy*, 6 One Earth 884, 890, 893 (2023).

II
How Luxury Emissions Are Different

Luxury carbon emissions are not just a large category when broken out in a spreadsheet. They are also morally, socially, and politically different from other carbon emissions for reasons we trace in this Part.

A The Morality of Luxury Carbon

There are strong reasons to condemn luxury carbon emissions as morally different from those presently required to sustain a decent existence. From a utilitarian perspective, if one assumes declining marginal utility associated with consumption (a standard economics assumption),[102] then luxury consumption offers the fewest improvements in an individual's quality of life. Thus, luxury emissions are the least-important emissions for human wellbeing.[103] Taking a broader consequentialist view, gratuitous carbon emissions that impose steep costs on others—humanity writ large, the poor and vulnerable in particular—are morally dubious.

In a non-carbon-constrained world, personal decisions to indulge in high-carbon luxuries might not be condemned, even if these luxuries result in limited utility gains. A traditional liberal attitude might simply view these as idiosyncratic but acceptable modes of living.[104] Indeed, opposition to some redistributive policies in the past has found popular support that is explained at least in part by this kind of live-and-let-live attitude.[105] But under present crisis conditions, gratuitously high-carbon consumption decisions become exceedingly hard to justify.

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102 *See* Jonathan Gruber, Public Finance and Public Policy 29 (4th ed. 2013).

103 *See* Benoit, *supra* note 38 (outlining and charting this argument). At the same time, from a classical economics perspective, high-emissions luxury sectors are inefficient, with huge quantities of resources overallocated because luxury consumers do not pay for their emissions. We further consider this point *infra* note 202 and accompanying text.

104 Although, as we discuss below, luxury consumption is socially corrosive even before one considers its carbon implications. *See infra* note 140 and accompanying text. Moreover, beyond a certain subsistence level, research confirms that it is *relative* income—rather than absolute income—that most matters for happiness. *See* Ed Hopkins & Tatiana Kornienko, *Running to Keep in the Same Place: Consumer Choice as a Game of Status*, 94 Am. Econ. Rev. 1085, 1085 (2004); Richard A. Easterlin, *Will Raising the Incomes of All Increase the Happiness of All?*, 27 J. Econ. Behav. & Org. 35, 36 (1995).

105 *See infra* note 222.

Luxury emissions' immorality is perhaps best illustrated by numerical carbon realities. Global politics and science have converged on the goal of limiting planetary warming to 1.5 or 2 degrees Celsius, based on widespread agreement that warming above these levels is likely to prove catastrophic. To stay within these limits, experts suggest that humanity can emit approximately 380 more gigatons[106] of carbon (for 1.5 degrees) or 1,230 more gigatons of carbon (for 2 degrees).[107] The only way to plausibly stay within these limits is for the world to rapidly decarbonize via achieving *every emissions cut feasible*.[108] There is simply no more space within this budget for avoidable luxury emissions.

Moreover, the marginal gains from reducing high-end emissions are potentially significant. Experts calculate that per-capita emissions need to fall to 2.1 tons per year by 2030 to stay within the 1.5-degree allowance, and the same study estimated that even if *only* the richest 10% of the world reduced their emissions to 2.1 tons by 2030, it would cut total annual carbon emissions by over a third.[109] Because luxury emissions are so unfortunately large, even smaller cuts that fall short of such (perhaps unrealistically large) reductions can significantly improve the prognosis for future climate change. For example, as we elaborate in Part III, private jets are projected to contribute at least 6.7 gigatons of emissions between now and 2050—about 1.7% of the total 380-gigaton carbon budget over that time period. Reducing that source of emissions will, at least, make a dent.

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106 A gigaton is one billion metric tons and a megaton is a million metric tons.

107 Friedlingstein et al., *supra* note 69. Considered in terms of the total population of the world, that means that each of 8 billion people can produce just 47.5 tons of carbon *total* before exceeding the 1.5-degree allowance. At 2022 emissions levels of 58 gigatons per year (7.35 tons of carbon per person in the world), that corresponds to only 9 years (for 1.5 degrees) or 30 years (for 2.0 degrees) of *total* remaining emissions, respectively. Homi Kharas, Wolfgang Fengler, Reshma Sheoraj, Lukas Vashold & Teodor Yankov, *Tracking Emissions by Country and Sector*, BROOKINGS (Nov. 29, 2022), https://www.brookings.edu/articles/tracking-emissions-by-country-and-sector/#:~:text=Global%20greenhouse%20gas%20emissions%20(GHG,reaching%2062%20GT%20by%202030 [https://perma.cc/6JMS-JQFX].

108 *See* ALBERTO CARRILLO PINEDA, ANDRES CHANG & PEDRO FARIA, SCI. BASED TARGETS INITIATIVE, FOUNDATIONS FOR SCIENCE-BASED NET-ZERO TARGET SETTING IN THE CORPORATE SECTOR 24 (Sept. 2020), https://sciencebasedtargets.org/resources/legacy/2020/09/foundations-for-net-zerofull-paper.pdf [https://perma.cc/R9DX-SBDR] (noting importance of "eliminating nearly all sources of anthropogenic GHG emissions and neutralizing hard-to-abate emissions with an appropriate amount of CO_2 removals").

109 OXFAM, *Confronting*, *supra* note 64, at 6.

Recently, however, high-end carbon consumption has been moving in the opposite direction, contributing more and more on a per-capita basis, even as the masses reduce their individual emissions. Starr and co-authors find that in the United States, national average household emissions declined from 1996 to 2019, but the top 0.1% of households increased their emissions by 50%.[110] These figures lend support to arguments for parsing high-end emissions from decent-living ones, as the middle class is already doing far more than the wealthy to address their emissions. And indeed, the bottom 50% of Americans appear to have extremely limited culpability: Chancel and co-authors find that this group not only has falling emissions but is also already below the U.S.'s pledged 2030 per-capita emissions target.[111]

The moral case against luxury emissions is further bolstered by the degree of freedom involved in choosing to consume carbon-heavy luxuries. Critics of a focus on consumption-related emissions often rightfully point out that many everyday choices made by consumers are structurally constrained, pushing the masses to consume "carbon[-]intensive necessities."[112] For example, without access to public transportation, one might have no choice but to drive to work. Without owning a home that can host solar panels, one may have to buy largely fossil-fuel-fired electricity from the local monopoly utility. Even where choices are available, they may be financially out of reach for most people.[113]

However, the standard argument against condemning consumption-related emissions fails to hold in the luxury context. When the choice is to buy a fourth or fifth house, or to size up from 10,000 to 12,000 square feet, or to fly on a private jet, no

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110 Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 4.

111 CHANCEL, PIKETTY, SAEZ & ZUCMAN, *supra* note 19, at 130.

112 Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 4; *see* Shue, *Subsistence Protection*, *supra* note 16, at 253 (quoting Timothy Hayward, *Human Rights Versus Emissions Rights: Climate Justice and the Equitable Distribution of Ecological Space*, 21 ETHICS & INT'L AFFS. 431, 441 (2007)) ("[A]s long as people are locked into a carbon-dependent economic system[,] they have a right not to be deprived of their basic subsistence rights in virtue of that fact.").

113 Press Release, *STUDY: One-Third of U.S. Families Who Work Full Time Do Not Earn Enough to Cover Basic Needs Like Housing, Food and Child Care*, DIVERSITYDATAKIDS.ORG (Aug. 31, 2022), https://www.diversitydatakids.org/research-library/journal-article/families-job-characteristics-and-economic-self-sufficiency [https://perma.cc/K8QU-JXQS] ("More than three-quarters of full-time working families with low incomes do not earn enough to afford basic necessities; Black and Hispanic families face even greater odds[.]").

structural constraints are present.[114] These additional emissions cannot be justified on grounds that infrastructural constraints *forced* them to be made. Instead, those who choose to create luxury emissions have been rightfully labeled as "carbon philistines," blissfully indifferent to the climate harms of their pleasure-driven choices.[115]

It is worth closing our section on the immorality of luxury emissions by situating them within global imperatives to reduce poverty. Recall from above that the top 1% of U.S. emitters average 318 tons a year, while the top 0.1% of global emitters average 467 tons.[116] In contrast, the bottom 50% globally average just 1.4 tons of carbon emissions each year—suggesting that they are far from the cause of or the solution to climate change.[117] And this does not even begin to consider historic responsibility for carbon emissions, which lies predominantly with the developed world.[118] Given these dynamics, Shue has suggested that it should be unconscionable to devote the world's remaining carbon budget towards anything other than helping raise the living standards of the 700 million in extreme poverty who cannot yet meet basic economic and physical necessities.[119] With limited headroom remaining before catastrophic warming undoes any progress made in alleviating extreme poverty,[120] it is increasingly the case that some people's luxury "infringes another's subsistence."[121]

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114 *See* Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 10 (noting that "[h]igh-income households have significant agency [and] discretionary spending").

115 Gössling, *supra* note 78, at 2–3.

116 *See supra* notes 81 & 84.

117 *See* Chancel, *Global Carbon Inequality*, *supra* note 20, at 932.

118 *See* CHANCEL, PIKETTY, SAEZ & ZUCMAN, *supra* note 19, at 118 ("Taking historical responsibilities into account implies that high-income nations have no carbon budget left.").

119 Shue, *Subsistence Emissions*, *supra* note 16, at 58; *see also* Breena Holland, *Ecology and the Limits of Justice: Establishing Capability Ceilings in Nussbaum's Capabilities Approach*, 9 J. HUM. DEV. 401, 417 (2008) (building from Nussbaum to propose a "capability ceiling" approach that limits certain capabilities—e.g., driving an SUV—to allow others to achieve a threshold level of capabilities). *See also* Schlosberg, *supra* note 19, at 298 (arguing for more attention to luxury emissions as immoral); Tank, *supra* note 99, at 2 ("[B]y now we have no substantial, net-positive budget of permissible luxury emissions left.").

120 Kemal Dervis, *Devastating for the World's Poor: Climate Change Threatens the Development Gains Already Achieved*, 44 UN CHRONICLE (2007), https://www.un.org/en/chronicle/article/devastating-worlds-poor-climate-change-threatens-development-gains-already-achieved [https://perma.cc/Q7J5-QDZM].

121 Schlosberg, *supra* note 19, at 299; *cf.* Hayward, *supra* note 112, at 445 ("If we assume that there is a determinate limit to the amount of ecological space

B. Social Ramifications of Luxury Emissions

Socially, luxury-carbon emissions have reverberating effects that extend beyond their immediate material contribution to climate change or their direct immorality. Colloquially, we might explain the problem as one of high-end "influencers" whose luxury, carbon-intensive habits "trickle down" to the masses. Research backs up this intuition: scholars link high inequality to an increase in competitive "status-based consumption" in what is often called the "Veblen effect," after the late-nineteenth-century sociologist Thorstein Veblen.[122] Writing in 1899, Thorstein Veblen argued that in stratified societies, people establish their social position via their spending by using conspicuous displays of wealth and leisure to convey their status to others.[123] Recent research has established the persistence of conspicuous consumption trends.[124] Researchers have also confirmed Veblen's instinct that these patterns are socially pernicious, creating what Robert H. Frank has termed a consumption "arms race" in which all classes strive to consume more without actually advancing either their social

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that anyone might justly use, then it is intelligible also to say that anyone who uses more than their just share incurs an 'ecological debt.'"). For this reason, we disagree emphatically with those who argue that luxury emissions can be morally legitimated by purchasing carbon offsets. *See, e.g.*, Stearns Broadhead & Adriana Placani, *The Morality of Carbon Offsets for Luxury Emissions*, 77 WORLD FUTURES 405, 405 (2021) (defending "the view that carbon offsetting makes luxury emissions morally permissible by counteracting potential harm"). There are simply not enough offsets available in the world to allow luxury-related emissions to persist. *See* Shelley Welton, *Neutralizing the Atmosphere*, 132 YALE L.J. 171, 231 (2022).

122 Andrew K. Jorgenson, Juliet B. Schor, Xiaorui Huang & Jared Fitzgerald, *Income Inequality and Residential Carbon Emissions in the United States: A Preliminary Analysis*, 22 HUM. ECOLOGY REV. 93, 96 (2015).

123 VEBLEN, *supra* note 30, at 97–98.

124 *See* Jorgenson, Schor, Huang & Fitzgerald, *supra* note 122, at 97 ("[H]igh-income concentration leads to stronger Veblen effects in which high-income households compete for status via the 'over-consumption' of goods and services which require high energy use."); Andrea Gallice, *Social Status, Preferences for Redistribution and Optimal Taxation: A Survey*, 12 ECON. 1, 2 (Aug. 21, 2018), https://www.degruyter.com/document/doi/10.5018/economics-ejournal.ja.2018-55/html [https://perma.cc/4QGV-JAMS] ("There is ample evidence that positional concerns and status competition influence people's preferences and behavior . . . ."); Robert H. Frank, Adam Seth Levine & Oege Dijk, *Expenditure Cascades*, 1 REV. BEHAV. ECON. 55, 56 (2014) (finding "evidence that rapid income growth concentrated among top earners in recent decades has stimulated a cascade of additional expenditure by those with lower earnings"); JAMES S. DUESENBERRY, INCOME, SAVING AND THE THEORY OF CONSUMER BEHAVIOR (1949) (theorizing the interdependence of consumption preferences among neighbors); JULIET B. SCHOR, THE OVERSPENT AMERICAN: UPSCALING, DOWNSHIFTING, AND THE NEW CONSUMER 9 (1998) (expanding on Duesenberry and identifying specific features of cascading spending effects among neighbors, including mimicking in a rivalrous way).

positioning or ultimate life satisfaction.[125] As we trace below, the Veblen effect creates a particular challenge in the climate-change and social-media eras—and a compelling reason to focus policy attention on luxury emissions.

Economists call the kinds of goods that are most useful in conveying status and wealth "positional goods."[126] In 1899, Veblen identified housing and transportation as core areas of status competition.[127] Little has changed in this regard: today, they remain sectors in which the ultra-wealthy compete for status: car brands, for example, send a highly visible and legible message about the wealth of their driver,[128] as does housing and yacht size.

A 2022 New Yorker article, *The Haves and Have-Yachts*, captures this grotesque competition in the rarified world of yachting. As the article describes, yacht size has become a billionaires' pissing contest: "in the end, nothing says as much about a yacht, or its owner, as the delicate matter of L.O.A.—length over all."[129] The article quotes one Silicon Valley CEO who explains that until recently, "a fifty-met[er] boat was considered a good-sized boat. Now that would be a little bit embarrassing."[130] Consequently, average yacht size has tripled in the last 30 years—even though by law, none of these pleasure boats can hold more than 12 passengers at a time.[131] A recent analysis of carbon emissions by billionaires found that the "typical" billionaire-owned superyacht emits over 7,000 tons of carbon each year.[132]

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125 At levels closer to subsistence, however, more spending really does increase welfare. *See* Robert H. Frank, *Consumption as Pollution: Why Other People's Spending Matters*, *in* THE INTERDISCIPLINARY SCIENCE OF CONSUMPTION 299, 301 (Stephanie D. Preston, Morten L. Kringelbach & Brian Knutson eds., 2014) (arms race terminology); Creutzig et al., *supra* note 23, at 514 ("There is high evidence and high agreement in the literature that vital dimensions of human wellbeing correlate with consumption, but only up to a threshold.") (emphasis omitted).

126 Frank, *supra* note 125, at 300 (defining positional good as "one whose value depends relatively strongly on how it compares with other similar goods in the same category"); FRED HIRSCH, SOCIAL LIMITS TO GROWTH 3–5 (rev. ed. 2005); Fredrik Carlsson, Olof Johansson-Stenman & Peter Martinsson, *Do You Enjoy Having More than Others? Survey Evidence of Positional Goods*, 74 ECONOMICA 586 (2007).

127 VEBLEN, *supra* note 30.

128 Carlsson, Johansson-Stenman & Martinsson, *supra* note 126, at 587.

129 Evan Osnos, *The Haves and the Have-Yachts*, NEW YORKER (July 18, 2022), https://www.newyorker.com/magazine/2022/07/25/the-haves-and-the-have-yachts [https://perma.cc/2A48-6YBE].

130 *Id.*

131 *Id.*

132 Barros & Wilk, *supra* note 86, at 319.

Clearly, those engaging in positional displays of wealth believe themselves to derive some benefit from it. Research confirms, for example, that individuals who wear luxury brands are presumed more competent and are sought out for association and cooperation.[133] And perhaps a yacht with a dedicated ski storage room and a helicopter to take one from the Mediterranean to the Alps has its charms.[134] But at a societal level, conspicuous consumption has corrosive effects. As Robert Frank, Adam Seth Levine, and Oege Dijk have traced, "rapid income growth concentrated among top earners in recent decades has stimulated a cascade of additional expenditure by those with lower earnings" in what they term an "expenditure cascade."[135] As Frank explains, this cascade emerges from the relative nature of affluence:

> [T]he people just below the top are influenced by the new houses that the people at the top build. Maybe they need to have their daughter's wedding reception at home now too. So they build bigger. And then the group that they rub elbows with one level down, they build bigger too. That continues in a cascade all the way down the ladder, and now it is much more expensive than it used to be for middle-income families to meet the standards set by the spending of their peers.[136]

Frank elsewhere describes this type of consumption as "pollution" because no one in the middle or upper classes really benefits much from houses all expanding.[137] Instead, as Andrea Gallice explains, individual investments "cancel out: agents are not able to change their initial position and basically 'run to keep in the same place.'"[138] Moreover, because growing inequality means that middle-class incomes have not grown apace with those of the extremely wealthy, this cascade

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133 *See* Christopher Cannon & Derek D. Rucker, *The Dark Side of Luxury: Social Costs of Luxury Consumption*, 45 PERSONALITY & SOC. PSYCH. BULL. 767, 768 (2019) (reporting these findings but also conducting experiment showing that luxury consumers are perceived to be lacking "warmth").

134 Osnos, *supra* note 129.

135 Frank, Levine & Dijk, *supra* note 124, at 56.

136 Frank, *supra* note 125, at 305; *see also* HIRSCH, *supra* note 126, at 5 (tracing similar logic to conclude that "if everyone stands on tiptoe, no one sees better").

137 Frank, *supra* note 125, at 309 ("If all CEOs had mansions that were 20 percent smaller, they would still be able to entertain in the style expected of them."); *see also* VEBLEN, *supra* note 30, at 32 ("[S]ince the struggle is substantially a race for reputability on the basis of invidious comparisons, no approach to a definitive attainment is possible."); Juliet B. Schor, *Towards a New Politics of Consumption*, *in* THE CONSUMER SOCIETY READER 446, 457 (Juliet B. Schor & Douglas B. Holt eds., 2000).

138 Gallice, *supra* note 124, at 10.

actively harms those outside the elite, making it "more costly for middle-income families to achieve basic goals."[139]

These dynamics render conspicuous consumption socially harmful even *before* climate change impacts are taken into account.[140] But climate change adds an underappreciated layer to this analysis because housing and transportation are not only central positional goods but also key drivers of climate emissions.[141] There is thus a vicious linkage between increasing inequality, conspicuous consumption of positional goods, and runaway carbon emissions. High-income individuals' housing and transportation choices not only emit morally reprehensible quantities of carbon. They also create what we might call an "emissions cascade," driving society's consumption-related emissions higher than they otherwise would have been—and higher than is necessary for wellbeing.

Social media amplifies and morphs these trends in two relevant ways. First, social media amplifies the trend of "upscale emulation," in the lexicon of sociologist Juliet Schor.[142] As Schor explains, whereas people used to take their relative consumption cues from those in their neighborhood, "the lifestyles of the upper middle class and the rich have become a more salient point of reference for people throughout the income distribution. Luxury, rather than mere comfort, is a widespread aspiration."[143]

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139 Frank, *supra* note 125, at 310; Robert H. Frank, *Should Public Policy Respond to Positional Externalities?*, 92 J. PUB. ECON. 1777, 1783 (2008) (tracing how the race for housing in neighborhoods with good schools results in families having to "accept riskier jobs, save less, work longer hours, carry more debt, and commute longer distances").

140 Schor, *supra* note 137, at 457 ("If we accept that what we buy is deeply implicated in the structures of social inequality, then the idea that unregulated consumption promotes the general welfare collapses."); *see also* ROBERT H. FRANK, LUXURY FEVER: WHY MONEY FAILS TO SATISFY IN AN ERA OF EXCESS 178–79 (1999) (tracing the negative welfare and psychological consequences of positional spending and conspicuous consumption). Researchers have similarly documented a positive correlation between economic inequality and increased rates of competitive, status-driven consumption and longer working hours. *See* Lara Cushing, Rachel Morello-Frosch, Madeline Wander & Manuel Pastor, *The Haves, the Have-Nots, and the Health of Everyone: The Relationship Between Social Inequality and Environmental Quality*, 36 ANN. REV. PUB. HEALTH 193, 196 (2015); Jared B. Fitzgerald, Andrew K. Jorgenson & Brett Clark, *Energy Consumption and Working Hours: A Longitudinal Study of Developed and Developing Nations, 1990–2008*, 1 ENV'T SOCIO. 213, 218 (2015).

141 Jorgenson, Schor, Huang & Fitzgerald, *supra* note 122, at 97 (identifying large homes, "powerful motorized vehicles (autos, boats, and airplanes)," and "frequent long-distance travel" as drivers of luxury emissions).

142 Schor, *supra* note 137, at 449.

143 *Id.* at 448–49.

Second, social media may also be shifting the nature of what counts as a positional good. Until recently, "experiential" purchases such as vacations had limited signaling effects—you might show your photos to close friends, but travel's ephemerality precluded it becoming a more widely conveyed status marker.[144] However, social-network users now frequently post images and stories about their traveling experiences, thereby empowering a new era of travel as conspicuous consumption.[145] This development is particularly troubling from a climate-policy angle, as elite travel habits include particularly egregious activities from a climate perspective, such as the use of superyachts and private jets.[146] Further, airline flights remain one of the quickest growing and most difficult to tackle categories of emissions.[147]

The social implications of luxury emissions amplify the case for policy interventions. If such interventions are effective in shifting patterns in ultra-high-end, carbon-intensive consumption, these shifts will have effects that cascade beyond direct emissions reductions.[148] Putting a figure on these

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144 *See* Ruoyun Lin, Niels van de Ven & Sonja Utz, *What Triggers Envy on Social Network Sites? A Comparison Between Shared Experiential and Material Purchases*, 85 COMPUTS. HUM. BEHAV. 271, 272 (2018) (defining experiential purchases as "those made with the primary intention of acquiring a life experience: an event or series of events that one lives through") (citing Leaf Van Boven & Thomas Gilovich, *To Do or to Have? That Is the Question*, 85 J. PERSONALITY & SOC. PSYCH. 1193, 1194 (2003)).

145 *Id.* at 271–72, 278; *see also* Jeongmi (Jamie) Kim & Daniel R. Fesenmaier, *Sharing Tourism Experiences: The Posttrip Experience*, 56 J. TRAVEL RSCH. 28, 28 (2017) (documenting a rise in tourists as "creators, editors, and distributors" of travel content online).

146 *See* KENNER, *supra* note 19, at 18 ("Being hypermobile is a key way to demonstrate membership of the global elite."); *see supra* notes 129–32 (discussing yachts).

147 In the United States, air travel is projected to increase by more than 50% in just over a decade. Between now and 2050, a "high-growth" projection of air travel would create 700 million tons of additional carbon emissions. ENV'T & ENERGY STUDY INST., ISSUE BRIEF: THE GROWTH IN GREENHOUSE GAS EMISSIONS FROM COMMERCIAL AVIATION 6–8 (June 2022) [hereinafter EESI, COMMERCIAL AVIATION GROWTH], https://www.eesi.org/files/IssueBrief_Climate_Impacts_Aviation_2019rev2022.pdf [https://perma.cc/K7UV-2EWV].

148 *See* Kristian S. Nielsen, Kimberly A. Nicholas, Felix Creutzig, Thomas Dietz & Paul C. Stern, *The Role of High-Socioeconomic-Status People in Locking In or Rapidly Reducing Energy-Driven Greenhouse Gas Emissions*, 6 NATURE ENERGY 1011, 1013 (Nov. 2021) (tracing how high-socioeconomic status individuals can "contribute to mitigation via their positions as role models within their social networks and for those who aspire to their levels of status"); Carlsson, Johansson-Stenman & Martinsson, *supra* note 126, at 586 (justifying such regulations on the basis of negative externalities); OXFAM, *Confronting*, *supra* note 64, at 8 (discussing a "'social tipping point' that makes reductions by other relatively high emitters more acceptable, challenges the political influence of high emitters, and sparks wider shifts in social, gendered and racial norms about endless consumption");

cascading reductions is nearly impossible[149]—but if sufficient stigma could be attached to, say, frequent flights, the effect might be substantial.[150] Indeed, one recent survey found that knowledge that a high-profile person had eliminated flying caused between one-half and three-quarters of people to change their attitudes or behaviors towards flying.[151] Substantial improvements might also result from any movement at the top towards preferring cleaner, smaller automobiles.[152] And housing and lifestyle shifts also hold considerable potential, given that household consumption comprises around two-thirds of total global emissions.[153] Fortunately, because consumption of such items is largely positional (beyond a base level), these changes should be possible without negatively affecting wellbeing.[154]

Regardless of whether policies targeting luxury emissions produce dramatic behavioral shifts among luxury consumers,[155] they may still induce broader shifts. There is a "signaling" or "expressive" effect to government regulation that exists beyond its direct effects: as Licari and Meier explain, "governments

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Robert H. Frank, *Behavioral Contagion Could Spread the Benefits of a Carbon Tax*, N.Y. TIMES (Aug. 19, 2020), https://www.nytimes.com/2020/08/19/business/behavioral-contagion-carbon-tax.html [https://perma.cc/VUD5-MD8D].

149 *Cf.* Frank, Levine & Dijk, *supra* note 124, at 56 (lamenting economic models' tendency to "assume that each person's consumption spending is completely independent of the spending of others").

150 *See* Nielsen, Nicholas, Creutzig, Dietz & Stern, *supra* note 148, at 1012 ("Globally, air travel directly emits more CO_2 than Germany does (2.4% of global CO_2 emissions), with high-altitude effects modelled as equivalent to 7.2% of global GHG emissions."); Capstick et al., *supra* note 70, at 65 (finding that limiting aviation "has the potential for substantial emissions reduction, at around 1.9 tCO_2e per avoided long-haul return flight").

151 Steve Westlake, A Counter-Narrative to Carbon Supremacy: Do Leaders Who Give Up Flying Because of Climate Change Influence the Attitudes and Behaviour of Others? (Oct. 2, 2017) (MSc thesis, Birkbeck University), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3283157 [https://perma.cc/4HUH-97L2].

152 Litman finds that positional status consumption is a large driver of car ownership and that a vehicle's size, engine, and interior increase its positionality. T. Litman, Mobility as a Positional Good: Implications for Transport Policy and Planning (Jan. 17, 2007) (unpublished manuscript), https://www.osti.gov/etdeweb/biblio/21039933 [https://perma.cc/M69F-6WC5]. *See also* Nielsen, Nicholas, Creutzig, Dietz & Stern, *supra* note 148, at 1012 ("Motor vehicles are the largest source of per[-]capita GHG emissions in the United States and the second-largest source in Europe, where they are responsible for 21% of personal GHG emissions among the top 1% of emitters.").

153 Capstick et al., *supra* note 70, at 62.

154 Anjali Ramakrishnan & Felix Creutzig, *Status Consciousness in Energy Consumption Decisions: A Systematic Review*, 16 ENV'T RSCH. LETTERS 17 (2021).

155 *See* Nielsen, Nicholas, Creutzig, Dietz & Stern, *supra* note 148, at 1014 (noting research gaps about the "behavio[]ral plasticity" of high-income consumers with respect to air travel, motor vehicles, and housing).

rarely regulate without sending signals about why the regulation is necessary."[156] Their research finds that if government widely publicizes the existence and reasons for an excise tax, it may send signals *beyond* direct monetary effects.[157] In other words, the very act of publicly condemning particular types of emissions may change broader views about the desirability of high-carbon positional goods.[158] Thus, just as government dissemination of information about the health effects of smoking has enhanced the effectiveness of taxes on tobacco, a well-designed regulatory scheme for luxury emissions might help shift broader patterns of consumption.[159]

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156 Michael J. Licari & Kenneth J. Meier, *Regulation and Signaling: When a Tax Is Not Just a Tax*, 62 J. POL. 875, 875 (2000); *see also* RICHARD H. MCADAMS, THE EXPRESSIVE POWERS OF LAW: THEORIES AND LIMITS 13–20 (2015).

157 Licari & Meier, *supra* note 156, at 875–76 ("If citizens understand the justification for a new disincentive, they are apt to act not only upon the disincentive itself, but also on the extra information they receive from government."); *see also* Anne Schneider & Helen Ingram, *Social Construction of Target Populations: Implications for Politics and Policy*, 87 AM. POL. SCI. REV. 334 (1993); Janice Nadler, *Expressive Law, Social Norms, and Social Groups*, 42 L. & SOC. INQUIRY 60, 63 (2017) (arguing that the "law influences attitudes and behavior by what it expresses"); Christopher D. Stone, *The Law as a Force in Shaping Cultural Norms Relating to War and the Environment*, *in* CULTURAL NORMS, WAR AND THE ENVIRONMENT 64, 65 (Arthur H. Westing ed., 1988) ("Laws also contribute to the fashioning of the norms on which their success as mo[]lders of conduct will ultimately depend.").

158 *Cf.* Karine Nyborg et al., *Social Norms as Solutions*, 354 SCI. 42 (2006) (observing how policy can change long-term social norms); Alex Rees-Jones & Kyle Rozema, *Price Isn't Everything: Behavioral Response Around Changes in Sin Taxes*, 76 NAT'L TAX J. 5, 6 (2023) (documenting how taxes also affect "nonprice factors" of goods, such as their amount of media coverage); Bryan Pratt, *A Fine Is More Than a Price: Evidence from Drought Restrictions*, 119 J. ENV'T ECON. & MGMT., Mar. 16, 2023 (finding that the mere announcement of a water conservation policy directly reduced water consumption by signaling the importance of conservation).

159 *See* Karine Nyborg, Richard B. Howarth & Kjell Arne Brekke, *Green Consumers and Public Policy: On Socially Contingent Moral Motivation*, 28 RES. & ENERGY ECON. 351, 363 (2006) (observing that consumers may exhibit "herd behavior if green consumerism is motivated by internalized social norms"); Licari & Meier, *supra* note 156, at 876–77 (discussing the smoking example); *cf.* Reuven S. Avi-Yonah & David M. Uhlmann, *Combating Global Climate Change: Why a Carbon Tax Is a Better Response to Global Warming Than Cap and Trade*, 28 STAN. ENV'T L.J. 3 (2009) (arguing that carbon taxes send an important signal about the negative consequences of pollution); Théo Konc, Ivan Savin & Jeroen C.J.M. van den Bergh, *The Social Multiplier of Environmental Policy: Application to Carbon Taxation*, 105 J. ENV'T ECON. & MGMT., Nov. 15, 2020, at 14 (arguing that carbon taxes have second-order effects resulting from change in the social context in which consumption habits arise); Linus Mattauch, Cameron Hepburn & Nicholas Stern, *Pigou Pushes Preferences: Decarbonisation and Endogenous Values* (Ctr. for Climate Change Econ. & Pol'y, Working Paper No. 346, 2018; Grantham Rsch. Inst. on Climate Change & Env't, Working Paper No. 314, 2018) (explaining that individual preferences and tastes can be endogenous to policy, such that policy changes can drive changes in values and culture).

We are certainly not the first to note the potential power of harnessing social signaling and influencing norms to combat climate change. A recent UN report identified that "lifestyle change . . . by one person, household or community . . . can act as a catalyst to promote wider change, spreading behavio[] rs through peer influence and reconfiguring what is typical or expected."[160] Numerous studies, cited by the UN, have found that social influence has already increased adoption of rooftop solar panels, lower-carbon transportation options, and energy-efficient appliances.[161] Focusing on luxury emissions can combine these kinds of effects on tastes with a focus on trendsetters.

To be sure, there may be latent risks in parsing luxury emissions and targeting them separately. It is possible that those targeted by a luxury-emissions policy might interpret its existence as tacit approval of the behavior. This effect was documented in the oft-discussed Haifa daycare study, in which a fine was imposed on parents who picked up their children late.[162] When the fine was introduced, tardy pickups *increased* substantially, and when the fine was revoked, the late pickups did not return to their prior low levels.[163] Researchers suggested that one reason for this seemingly irrational result is that piling economic incentives onto something that is already seen as a moral obligation might weaken the moral case for the desired behavior.[164] In the daycare-study context, an economic penalty essentially "crowded out" parents' intrinsic motivations to not stick daycare employees with after-hours care of their children.[165] Other studies, however, have found such crowding-out effects lacking (including in another simulated

160 Capstick et al., *supra* note 70, at 72.

161 *Id.*

162 Steven D. Levitt & Stephen J. Dubner, 'Freakonomics' (2005), https://www.nytimes.com/2005/05/15/books/chapters/freakonomics.html [https://perma.cc/97RM-ATUZ]; *see also* Samuel Bowles, *Policies Designed for Self-Interested Citizens May Undermine "The Moral Sentiments": Evidence from Economic Experiments*, 320 Sci., June 20, 2008, at 1605–09 (examining forty-one experiments, many of which refute the standard "separability assumption" in which moral incentives and economic incentives are thought to be additive and not to interact).

163 Levitt & Dubner, *supra* note 162, at 1605–09.

164 *Id.*; *see* Michael J. Sandel, What Money Can't Buy: The Moral Limits of Markets 93–130 (2012) (identifying social signaling as an influence in market transactions and describing how ambiguous messaging can result in altruism yielding to economic interests).

165 Sandel, *supra* note 164, at 111-14; *see also* Uri Gneezy & Aldo Rustichini, *A Fine is a Price*, 29 J. Legal Stud. 1 (2000).

daycare context)[166]—suggesting that the behavioral implications of a luxury-emissions tax are indeterminate. One way to frame the potential risk is to consider whether luxury emitters have significant intrinsic motivation to reduce emissions that a luxury-emissions tax would crowd out.[167] Further empirical work would be necessary to know the answer to this query, but let's just say: we harbor doubts. Indeed, divergent patterns between high-end emissions and other consumer emissions in the U.S. could be evidence that luxury emitters feel less compunction about their carbon emissions than others.

C The Political Economy of Combatting Carbon and Inequality Together

It matters little if luxury-emissions regulation holds special moral and social appeal if it has no political viability. At this point in the climate-change policy trajectory, as one group of climate scholars recently wrote, other considerations in policy design "are subsidiary to the primary challenge of garnering greater political acceptability."[168] But it is our contention that climate policies targeting luxury emissions may be uniquely politically achievable, for reasons underappreciated to date.

Comprehensive climate-change policies suffer from classic collective action and free-rider problems: everyone will benefit from successful policies to combat climate change, but no one wants to unilaterally incur the costs of those policies.[169] A policy strategy targeting a small minority of luxury emitters for the benefit of the broader public (and planet) may be more challenging yet. Political scientists have long sought explanations for why the masses do not rise up and overthrow the tyrannical rich more frequently.[170] One part of the contemporary U.S. answer is that megadonors to both leading political parties have

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166 *See* Cherie Metcalf, Emily A. Satterthwaite, J. Shahar Dillbary & Brock Stoddard, *Is a Fine Still a Price? Replication as Robustness in Empirical Legal Studies*, 63 INT'L REV. L. & ECON. (SPECIAL ISSUE) 1, 1 (2020).

167 Many thanks to Cherie Metcalf for suggesting this framing.

168 David Klenert et al., *Making Carbon Pricing Work for Citizens*, 8 NATURE CLIMATE CHANGE 669, 669 (2018).

169 *See generally* MANCUR OLSON, JR., THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS (1971).

170 For a recent sampling, see generally BENJAMIN I. PAGE & MARTIN GILENS, DEMOCRACY IN AMERICA?: WHAT HAS GONE WRONG AND WHAT WE CAN DO ABOUT IT 14 (2017); JACOB S. HACKER & PAUL PIERSON, WINNER-TAKE-ALL POLITICS: HOW WASHINGTON MADE THE RICH RICHER—AND TURNED ITS BACK ON THE MIDDLE CLASS 145–60 (2011); SETH J. HILL, FRUSTRATED MAJORITIES: HOW ISSUE INTENSITY ENABLES SMALLER GROUPS OF VOTERS TO GET WHAT THEY WANT 7, 12 (2022) (developing "intensity theory" to illustrate why

preferences out of step with most voters[171]—a challenge that is almost certainly activated when it comes to luxury-emissions policies. It will require "entrepreneurial politics"—in the sense of James Q. Wilson's use of the term—to deliver a victory to the masses.[172] Wilson identified "entrepreneurial politics" as existing in those regulatory battles that pit the general public against concentrated interest groups—and suggested that victories are challenging in this space.[173] They occur only when a political entrepreneur is able to successfully utilize a political opening to force politicians to prioritize the will of the majority over the concentrated interests of the few.[174]

We are, quite frankly, uncertain precisely when and where such moments will arise with respect to luxury emissions—but the mounting public outrage and media coverage of class-based emissions disparities suggests that many places may be building towards them.[175] Indeed, although not a luxury-carbon tax per se, Canada recently enacted a luxury tax on certain yachts, private aircraft, and automobiles that the government justified in part by pointing to these vehicles' outsized emissions impacts.[176] Los Angeles, too, recently enacted a "mansion tax" aimed at raising money for affordable housing (again, not explicitly emissions based, but generating climate-related effects).[177]

Extrapolating from these related bellwether policies, we contend that there is stronger majoritarian support for targeting luxury emissions than has been appreciated to date, such that

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minorities sometimes properly triumph over majorities on the strength of their preferences).

171 PAGE & GILENS, *supra* note 170, at 7.

172 See James Q. Wilson, *The Politics of Regulation*, *in* THE POLITICS OF REGULATION 367–70 (James Q. Wilson, ed. 1980).

173 *Id.*

174 *Id.*

175 *See* sources cited *supra* note 4.

176 See Select Luxury Items Tax Act, S.C. 2022, c. 10, s. 135 (Can.), https://laws-lois.justice.gc.ca/eng/acts/S-8.35/FullText.html [https://perma.cc/3MXT-QVV7]; Jacob Zinkula, *Canada is Taxing Luxury Cars, Yachts, and Private Jets as Celebrities Come Under Scrutiny for Their Emissions*, BUS. INSIDER (Aug. 4, 2022), https://www.businessinsider.com/canada-tax-private-jets-cars-boats-wealthy-celebrity-emissions-climate-2022-8 [https://perma.cc/47TA-7H5J].

177 See Real Property Transfer Tax and Measure ULA FAQ, LOS ANGELES OFF. OF FINANCE, https://finance.lacity.gov/faq/real-property-transfer-tax-and-measure-ula-faq [https://perma.cc/X78U-YK65] (last visited March 22, 2024); Debra Kamin, *For Sale: Mansions in Los Angeles at Bargain Prices*, N.Y. TIMES (March 25, 2023), https://www.nytimes.com/2023/03/23/realestate/mansion-tax-los-angeles.html [https://perma.cc/Y7WB-9VN8].

attention should be devoted *now* to designing luxury-emissions policies that are ready to be pushed at the next available openings. It is true that luxury-emissions policies marry two policy issues that have struggled politically: policies targeting carbon consumption and policies targeting wealth redistribution. We believe, however, that narrower focus within each of these policy streams—that is, narrowing carbon consumption policies to focus on the wealthy, and narrowing wealth-redistribution policies to focus on carbon—may focus a moral spotlight within both spheres that achieves political gains in each. Below we explain why.

1 *Focusing on Luxury Narrows Carbon-Consumption Policy to More Palatable Targets*

Consumption-focused solutions might be cast as a third rail of climate policy, which neither the political right nor the left wants to touch in the U.S. On the right, climate policies are often inaccurately portrayed as dictating changes in consumption: "Now, they are coming for your car," reads a recent *Washington Examiner* headline.[178] In fact, the California policy in question merely requires that all cars sold in the state be fully electric by 2035.[179] But even if scaremongering is involved in some instances, it plays because of a liberal strain in the American psyche that resists government intrusion into household-level decisions.[180]

A related concern stems from the left side of the political spectrum. From this perspective, numerous scholars and popular writers have argued that policy efforts aimed at consumption are a dangerous and politically ill-advised distraction from a necessary focus on rooting out carbon emissions at the source of their production.[181] One of the most compelling ver-

178 Stephen Moore, *Now, They Are Coming for Your Car*, WASH. EXAM'R (Aug. 31, 2022), https://www.washingtonexaminer.com/opinion/now-they-are-coming-for-your-car [https://perma.cc/2V6X-BURA].

179 *Id.*

180 *See, e.g.*, Lawrence v. Texas, 539 U.S. 558, 562 (2003) ("In our tradition the State is not omnipresent in the home.").

181 *See* Capstick et al., *supra* note 70, at 75 ("Popular debate has often pitted 'behavio[]r change' and 'system change' against each other, presented as a trade-off between two choices."); *see, e.g.*, Mary Annaise Heglar, *I Work in the Environmental Movement. I Don't Care if You Recycle.*, VOX (June 4, 2019), https://www.vox.com/the-highlight/2019/5/28/18629833/climate-change-2019-green-new-deal [https://perma.cc/T8PY-7TKR] (decrying an "overemphasis on individual action [that] shames people for their everyday activities, things they can barely avoid doing because of the fossil[-]fuel-dependent system they were born into").

sions of this argument comes from geographer Matt Huber's 2021 book, *Climate Change as Class War*.[182] Huber sees the obsession with consumption-related emissions as a manifestation of professional-class guilt that has little resonance with working-class Americans as they struggle to make ends meet under diminished real incomes and stratifying inequality.[183] Moreover, he argues, a consumption focus "doubles down on a privatized political project of individual behavior change"—a project that has a troubling amount in common with Reagan-/Thatcher-era austerity politics.[184]

We believe this critique has much validity, especially as applied to a generalized plea for less consumption. Yet its relationship to luxury emissions remains undertheorized in ways that obscure the power of policies focused on high-end consumption. There are really two critiques embedded within the "don't-focus-on-consumption" line of reasoning: (1) focusing on consumption isn't popular and thus will not advance climate policy; and (2) focusing on consumption distracts from the central causes of the problem, which are fossil-fueled production processes and the financing that empowers them. For our purposes, it is useful to parse these critiques and respond to them separately.

a *Targeting Consumption Is Unpopular, But Targeting Luxury Consumption Less So*

The first objection is grounded in the unpopularity of trying to change consumption patterns. This is a political argument about allies and alienation, centered on the idea that making everyday people feel guilty about their carbon consumption is no way to build a movement, especially when people have limited ability to address these emissions.[185] As a strategic point, we largely agree. But we believe this critique can benefit from nuance about *whose* consumption, of *what goods*. This is where a focus on luxury-carbon consumption becomes useful.

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182 HUBER, *supra* note 35.

183 *Id.* at 158–60.

184 *Id.* at 156; *see also* Leigh Phillips, *The Degrowth Delusion*, OPENDEMOCRACY (Aug. 30, 2019), https://www.opendemocracy.net/en/oureconomy/degrowth-delusion/ [https://perma.cc/9K78-WJLA].

185 *See, e.g.*, Rebecca Solnit, *Big Oil Coined 'Carbon Footprints' to Blame Us for Their Greed. Keep Them on the Hook*, THE GUARDIAN (Aug. 23, 2021), https://www.theguardian.com/commentisfree/2021/aug/23/big-oil-coined-carbon-footprints-to-blame-us-for-their-greed-keep-them-on-the-hook [https://perma.cc/9BWV-DH3H]; HUBER, *supra* note 35, at 145–47, 173–74.

Focusing on luxury emissions has the potential to *activate* class politics, rather than collapsing them—both providing a target to blame for excessive carbon emissions and, by implication, removing individual culpability from everyday Americans with limited structural options for change.[186] In this way, luxury emissions policies might actually help to build the "highly organized social movement with a mass base behind it" that Huber sees as critical to forcing "revolutionary changes" in fossil-fuel production.[187]

We anticipate a separate rejoinder to our proposed focus on *luxury* carbon grounded in the widely accepted economic argument that it is most efficient to put an economy-wide price on carbon and let the market work out which cuts to make.[188] Although we theoretically support non-regressive versions of such taxes, such schemes themselves falter politically. Adequate carbon taxes have been nearly impossible to enact. A few—most notably, the European Union's system—have at times achieved high-enough prices to drive real change.[189] However, most carbon-pricing regimes have not achieved price levels capable

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186 *Cf.* HUBER, *supra* note 35, at 167 (criticizing those whose critiques de-center class).

187 Matt T. Huber, *Ecological Politics for the Working Class*, 3 CATALYST 1 (2019), https://catalyst-journal.com/2019/07/ecological-politics-for-the-working-class [https://perma.cc/3TUR-PWA6].

188 *Cf.* Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 10 ("Economists widely agree that carbon pricing, via either a carbon tax or cap-and-trade system, is essential to decarbonize the U.S. economy in a cost-effective way."); Klenert et al., *supra* note 168, at 669 ("Economic analyses have long recommended carbon pricing as an indispensable strategy for efficiently reducing GHG emissions and tackling climate change. After setbacks over the past two decades, carbon pricing has become popular once again."); Shi-Ling Hsu, *A Complete Analysis of Carbon Taxation: Considering the Revenue Side*, 65 BUFF. L. REV. 857, 861 (2017) (noting "extremely broad consensus" on efficiency, effectiveness, and administrability of a broad-based carbon tax).

189 Although European Union Emissions Trading System prices in June 2024 were back down to around $74/ton, they peaked in early 2023 around a high of $110/ton. *EU Carbon Permits*, TRADING ECON. https://tradingeconomics.com/commodity/carbon [https://perma.cc/9ZM8-8EHF] (last visited June 11, 2024). The World Bank has calculated that carbon prices on the order of $40–80/ton in 2020 and $50–100/ton by 2030 are necessary to meet Paris Agreement carbon-reduction goals. WORLD BANK, REPORT OF THE HIGH-LEVEL COMMISSION ON CARBON PRICES 3 (May 29, 2017). A Reuters poll of climate economists found that most believe that prices already need to be over $100/ton to reach climate-mitigation goals. Prerana Bhat, *Carbon Needs to Cost At Least $100/Tonne Now to Reach Net Zero by 2050: Reuters poll*, REUTERS (Oct. 25, 2021), https://www.reuters.com/business/cop/carbon-needs-cost-least-100tonne-now-reach-net-zero-by-2050-2021-10-25/#:~:text=BENGALURU%2C%20Oct%2025%20(Reuters),Reuters%20poll%20of%20climate%20economists [https://perma.cc/3WE2-GJ4G].

of inducing significant shifts in consumption or production.[190] A November 2022 OECD study found that carbon pricing has remained relatively stagnant over the past several years, with carbon taxes and other policy interventions increasing the price of carbon primarily in a select few jurisdictions that already had relatively robust carbon-pricing schemes already in effect.[191] The most significant new pricing intervention is China's modest emissions-trading system put in place in 2021—but that has sustained prices of only around $8 per metric ton.[192]

Political unpopularity has proven a core limitation on aggressive carbon pricing[193]—often stemming from concerns over how carbon pricing will affect populations struggling under worsening inequality. Indeed, in an analysis of the European Union Emissions Trading Scheme—the one regime arguably pricing at sufficient levels[194]—Diego Känzig finds that low-income house-

190 *See* DANNY CULLENWARD & DAVID G. VICTOR, MAKING CLIMATE POLICY WORK 2 (2020) (asserting that "other policies are doing most of the real work of decarbonization"); Daniel Rosenbloom, Jochen Markard, Frank W. Geels & Lea Fuenfschilling, *Why Carbon Pricing is Not Sufficient to Mitigate Climate Change—and How "Sustainability Transition Policy" Can Help*, 117 PNAS 8664, 8665 (2020), https://www.pnas.org/doi/10.1073/pnas.2004093117 [https://perma.cc/VV7E-LHP5] ("[A]s of 2019, existing carbon pricing schemes only cover about 20% of global emissions and more than two-thirds of these have prices below $20 United States dollars (USD) per ton of CO_2 equivalent.").

191 OECD, PRICING GREENHOUSE GAS EMISSIONS: TURNING CLIMATE TARGETS INTO CLIMATE ACTION (Nov. 2022), https://www.oecd-ilibrary.org/taxation/pricing-greenhouse-gas-emissions_e9778969-en [https://perma.cc/6U8D-YV3B]; *see* Amanda Athanasiou, *Forthcoming OECD Report Reveals Carbon Taxes' Sluggish Growth*, 108 TAX NOTES INT'L 368 (2022); *see also* CULLENWARD & VICTOR, *supra* note 190, at 2–3 (observing that only 1% of global emissions, as of 2020, were covered by a "reasonably ambitious" carbon price).

192 *See* OECD, *supra* note 191, at 36 (explaining that trading in China started around €6 per ton, whereas in Canada and Germany, similar regimes resulted in prices around €25 to €30 in 2021); *China's Carbon Price Hits Record as Polluters Rush for Permits*, BLOOMBERG NEWS (Aug. 11, 2023), https://www.bloomberg.com/news/articles/2023-08-11/china-s-carbon-price-hits-record-as-polluters-rush-for-permits [https://perma.cc/73S6-Z4AC] (noting that China's prices hit a new record high of $9.68 per ton). Another intervention in the works is the European Union's carbon border adjustment mechanism (CBAM), which is being introduced and phased in through 2026. *See* EUROPEAN COMMISSION TAXATION AND CUSTOMS UNION, CARBON BORDER ADJUSTMENT MECHANISM, https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en [https://perma.cc/K6V3-7794] (last visited Mar. 22, 2024). The CBAM is meant to accompany the emissions trading system, seeking to equalize carbon pricing so that imported goods reflect the same carbon prices imposed for domestically produced EU goods so as to prevent "leakage" of producers avoiding EU carbon pricing by moving elsewhere. *See supra* note 189.

193 CULLENWARD & VICTOR, *supra* note 190, at 7 ("[T]he problem with [carbon] markets is political.").

194 Susanna Twidale, *Analysts Trim EU Carbon Price Forecasts on Weaker Power, Industry Demand*, REUTERS (July 14, 2023), https://www.reuters.com/

holds are doubly affected by increasing carbon prices, first because more of their income is devoted to energy costs, and second because their incomes are often reliant on sectors with high carbon emissions.[195] In contrast, richer households are less affected, both directly and indirectly, by increasing carbon prices.[196] Thus, carbon pricing in the European Union is regressive, and indeed potentially quite a bit more so than previously appreciated.[197] Such regressive policies have predictable social effects: as Chancel and co-authors trace,

> waves of protests against hikes in fuel and transport prices in Ecuador or Chile in 2019, and the Yellow Vest movements in Europe one year earlier . . . showed that policy reforms which do not properly factor in the degree of inequality in a country, and the winners and losers of these reforms, are unlikely to be publicly supported and are likely to fail.[198]

To be sure, broad-based carbon pricing policies can be designed to be non-regressive.[199] Even so, they often remain politically unpopular as compared to other methods of mitigating climate change.[200] Ultimately, we neither champion nor

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sustainability/climate-energy/analysts-trim-eu-carbon-price-forecasts-weaker-power-industry-demand-2023-07-14/ [https://perma.cc/24HB-WGRN] (reporting trading prices around 87EUR per ton in 2023, and forecasting carbon pricing rising from 85EUR to just over 100EUR per ton over the next three years).

195 Diego R. Känzig, *The Unequal Economic Consequences of Carbon Pricing* 3 (London Bus. Sch., Working Paper No. 31221, 2022).

196 *Id.*

197 *See id.* at 2–3.

198 CHANCEL, PIKETTY, SAEZ & ZUCMAN, *supra* note 19, at 126.

199 *See infra* Part III.C.

200 An extensive body of research documents the public's preference for subsidies and direct regulations over carbon taxation—even when such taxes are progressive in nature. *See, e.g.*, Stefano Carattini, Maria Carvalho, & Sam Fankhauser, *Overcoming Public Resistance to Carbon Taxes*, 9 WIREs CLIMATE CHANGE e531, 3 (arguing that the perceived distributional impacts of carbon taxation partially account for the public's opposition); Goran Dominioni & Dirk Heine, *Behavioural Economics and Public Support for Carbon Pricing: A Revenue Recycling Scheme to Address the Political Economy of Carbon Taxation*, 10 EUR. J. RISK REGUL. 554, 558–59 (2019) (explaining that people "may not understand, be aware of, or not believe that well-designed environmental taxes can generate climate and welfare benefits"); Marisa Beck, Nicholas Rivers, & Hidemichi Yonezawa, *A Rural Myth? Sources and Implications of the Perceived Unfairness of Carbon Taxes in Rural Communities*, 133 ECOLOGICAL ECON. 124, 133 (2016) (finding that people perceive carbon taxes as regressive even when the policies are progressive); Linda Steg & Charles Vlek, *Encouraging Pro-Environmental Behaviour: An Integrative Review and Research Agenda*, 29 J. ENV'T PSYCH. 309, 314 (2009) (noting people generally prefer policies that promote environmentally friendly behavior and technologies rather than discouraging existing practices); Simon Dresner, Louise Dunne, Peter Clinch, & Christiane Beuermann, *Social and Political Responses to*

dismiss generalized carbon pricing—our focus, instead, is on what a focus on luxury emissions can add to these debates. Such a luxury-emissions-focused policy could stand on its own, be additive to a general carbon pricing scheme, or serve as a first step in some jurisdictions towards a broader-based carbon price.

Some focus on luxury is particularly important because even as generalized carbon pricing may disproportionately impact the poor, it does little to target the rich. Rich people are simply less price-sensitive: it takes a larger increase in prices to change the behavior of households with more disposable income.[201] This means that a broad-based carbon pricing scheme that internalizes a high price for carbon will likely still be ineffective to deter the carbon consumption of the ultra-wealthy.[202] If one thinks—as we do—that luxury emissions deserve special condemnation and regulation, broad-based carbon pricing is an inapt tool.

b *Production- and Consumption-Oriented Policies Are Useful Complements*

The second challenge to consumption-based climate policies mounted by progressive critics is that greater substantive climate gains can be made by focusing on production. As Huber observes, the super-affluent most deeply influence

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Ecological Tax Reform in Europe: An Introduction to the Special Issue, 34 ENERGY POL'Y 895, 901 (concluding that many doubt the effectiveness of carbon taxation policies); Ernesto Dal Bó, Pedro Dal Bó & Erik Eyster, *The Demand for Bad Policy when Voters Underappreciate Equilibrium Effects*, 85 REV. ECON. STUD. 964, 6 (2018); Stefano Carattini, Andrea Baranzini, Philippe Thalmann, Frédéric Varone & Frank Vöhringer, *Green Taxes in a Post-Paris World: Are Millions of Nays Inevitable?*, 68 ENV'T & RES. ECON. 97, 100 (2017) (finding that tax shifting policies in which carbon tax revenue offsets other forms of taxation are one of the public's least preferred means of environmental regulation); Gary M. Lucas, Jr., *Voter Psychology and the Carbon Tax*, 90 TEMPLE L. REV. 1, 26 (2017) ("Unlike the carbon tax, regulations and subsidies mandate or reward particular, easily identifiable actions intended to help the environment in ways that are obvious to the casual observer.").

201 *See generally* GRUBER, *supra* note 102, at 31–40. *See also* Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 11 (noting the equity concern of a high carbon tax, as "wealthy families would be free to make no meaningful lifestyle changes, while low-emitting poor families could face a crushing burden").

202 *See* Dario Kenner, *Inequality of Overconsumption: The Ecological Footprint of the Richest* 8 (Anglia Ruskin Univ., Working Paper No. 2015, 2015); Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 10 ("For a top 1% household, a carbon tax of $200 [per ton] amounts to 3% of pre-tax income (11% of expenditures). For deciles 1–3, it equates to 52%, 24%, and 18% of their respective incomes (14–15% of expenditures).").

emissions trajectories in their roles as investors and corporate managers.[203] Bolstering this point, a 2022 Oxfam report finds that the investments of 125 billionaires emit 393 million metric tons of carbon emissions each year—the equivalent of France's annual emissions.[204] Thus, policy targeting affluent emitters might most effectively focus not on consumption-based emissions, but on investment and job-related ones. And indeed, the "polluter elite," identified by Dario Kenner—a group whose extreme wealth is attributable to investments in fossil fuels and other direct contributors to climate change—are a particularly culpable and unsympathetic cohort.[205]

On this point, we simply reject an either/or framing. Clearly, decisionmakers whose power affords them the ability to make vast allocational decisions should be a central focus of climate policy. And crucially, investment-related emissions *are* receiving attention. Activists and shareholders alike are now mobilizing to control these emissions, with divestment movements encouraging investors to choose asset managers based on climate-related criteria,[206] ESG movements targeting asset managers themselves, and shareholder resolutions attempting to influence corporate climate strategies from the inside.[207] Similarly, a recent proposal by Jose Pedros Bastos Neves and

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203 *See* HUBER, *supra* note 35, at 144 (observing this dynamic at work for Delta Airlines).

204 OXFAM, CARBON BILLIONAIRES: THE INVESTMENT EMISSIONS OF THE WORLD'S RICHEST PEOPLE 10–11 (Nov. 2022), https://policy-practice.oxfam.org/resources/carbon-billionaires-the-investment-emissions-of-the-worlds-richest-people-621446/ [https://perma.cc/Q9QU-3A97].

205 KENNER, *supra* note 19, at 27–28; *see also* Dario Kenner, *The Polluter Elite Database*, WHYGREENECONOMY? (June 2019), https://whygreeneconomy.org/the-polluter-elite-database/ [https://perma.cc/6LMD-XDGF].

206 *See* Hari M. Osofsky, Jacqueline Peel, Brett McDonnell & Anita Foerster, *Energy Re-Investment*, 94 IND. L.J. 595, 610–14 (2019) (discussing the fossil fuel divestment movement and arguing that it is part of an array of actions that will prompt and accelerate shifts away from carbon-based sources of energy); Neil Gunningham, *Review Essay: Divestment, Nonstate Governance, and Climate Change*, 39 LAW & POL'Y 309, 310 (2017).

207 *See* Stavros Gadinis & Amelia Miazad, *Corporate Law and Social Risk*, 73 VAND. L. REV. 1401, 1474 (2020) (explaining corporations' growing adoption of ESG performance metrics as an element of corporate risk management); Susan N. Gary, *Best Interests in the Long Term: Fiduciary Duties and ESG Integration*, 90 U. COLO. L. REV. 731, 801 (2019) (arguing that corporate sustainability goals, related to climate change arising in connection with the ESG movement, are consistent with fiduciary duties of asset managers); *see also* Chancel, *Global Carbon Inequality*, *supra* note 20, at 936 (recommending that states "impose taxes or regulations on the basis of the pollution content of asset portfolios or of investments."); CHANCEL, PIKETTY, SAEZ & ZUCMAN, *supra* note 19, at 132 (proposing "steeply progressive tax rates on polluting stock ownership").

Willi Semmler works to address some of these concerns by introducing a "carbon wealth tax" that would impose an additional tax on returns from investments in "brown" capital.[208] We find all of these efforts commendable.

Yet recent research has made clear that a focus on major producers alone is unlikely to avert catastrophic warming—and that adding a focus on consumption may both speed and ease climate mitigation. Indeed, to focus on the hyper-affluent only in their roles controlling capital leaves aside a huge amount of emissions of affluence. Investment-based emissions have accounted for only 50–70% of the top-one percent's emissions dating back to 1990, and a smaller percentage yet of the top-ten percent's emissions.[209] That means that over 30–50% of high-end emissions result from consumption. We believe these emissions should not be ignored in climate policy, particularly given the tie between luxury consumption and production. Drawing from Marxist reasoning, Natalie Suzelis articulates this relationship well: "the capitalist mode of production necessitates continuous accumulation on an ever-expanding scale, which includes continued investment and reinvestment in productive expansion and *consumption*."[210] In other words, consumption cannot be so neatly cordoned off from production—especially the kinds of consumption, like luxury consumption, that drive and shape broader social patterns of want.[211]

Numerous models suggest that household consumption—which can be calculated to account for somewhere between 66% and 72% of greenhouse gas emissions[212]—will have to shift in order to meet global goals for limiting warming.[213] For

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208 José Pedro Bastos Neves & Willi Semmler, A Proposal for a Carbon Wealth Tax: Modelling, Empirics, and Policy 8 (June 2022 draft) (unpublished manuscript), https://ssrn.com/abstract=4114243.

209 *See* Chancel, *Global Carbon Inequality*, *supra* note 20, at 7, 23.

210 Natalie Suzelis, *Class Struggle Against Growth*, SPECTRE J. (Aug. 25, 2022), https://spectrejournal.com/class-struggle-against-growth/ [https://perma.cc/EE28-BQZM] (emphasis added).

211 *See supra* Section II.C.

212 *See* CAMBRIDGE SUSTAINABILITY COMM'N, CHANGING OUR WAYS? BEHAVIOUR CHANGE AND THE CLIMATE CRISIS 8 (2021), https://www.rapidtransition.org/resources/cambridge-sustainability-commission/ [https://perma.cc/8FLR-JWD5] (citing studies from 2009 and 2020 evaluating the extent to which direct and indirect household consumption contributes to carbon emissions).

213 Capstick et al., *supra* note 70, at 70 ("Major reductions in emissions require substantial changes to . . . patterns of consumption and behavio[]rs—especially among the global rich."); *see* JÖRGEN LARSSON ET AL., CONSUMPTION-BASED SCENARIOS FOR SWEDEN—A BASIS FOR DISCUSSING NEW CLIMATE TARGETS 6 (2022), https://www.sustainableconsumption.se/wp-content/uploads/sites/34/2022/03/

this reason, the Intergovernmental Panel on Climate Change for the first time ever included in its 2022 assessment report a chapter on demand, finding that demand-side changes might lower global total energy consumption by as much as 40%.[214] Such a transformation would make it significantly easier to transform the production processes and infrastructure needed to make additional reductions necessary to stay within 1.5 to 2 degrees of global warming.[215]

The findings of a 2020 article, *Scientists' Warning on Affluence*, reinforce the importance of consumption-oriented climate policy.[216] Increases in consumption, the authors observe, have "outrun any beneficial effects of changes in technology over the past few decades."[217] If such patterns hold, even partially, there is no way to entirely "green" our way out of ecological and climate collapse—to some degree, affluence as expressed through consumption must be curbed.[218]

However, these authors go on to observe that under our current system "a persistent, deep and widespread reduction of consumption and production would . . . imply widespread economic recession with a cascade of currently socially detrimental effects."[219] This observation harkens back to Huber's objections: at least in the short term, these researchers all agree that consumption-oriented policy would seem not just politically ill-advised but also economically and socially cruel. Here again, *luxury* consumption proves a useful parsing mechanism. A focus on superfluous consumption practices does not present the same risk of dramatic economic collapse, given the small number of people engaging in such practices.[220] And although

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Consumption-based-scenarios-.pdf [https://perma.cc/EHE6-KVQP] ("[T]he aggregate consumption-based emissions that can be achieved by focusing on advanced technology development do not suffice to be in line with the Paris Agreement."). *But see* Phillips, *supra* note 184 (arguing that just as there was an "absolute decoupling" of chlorofluorocarbon emissions and growth under the Montreal Protocol, so could there be for greenhouse gas emissions).

214 Creutzig et al., *supra* note 23, at 535.

215 *See id.* at 535 ("[S]ocio-cultural changes within transition pathways can offer gigaton[]-scale CO_2 savings potential at the global level, and therefore represent a substantial overlooked strategy in traditional mitigation scenarios.").

216 Thomas Wiedmann, Manfred Lenzen, Lorenz T. Keyßer & Julia K. Steinberger, *Scientists' Warning on Affluence*, NATURE COMMC'NS 1 (2020), https://doi.org/10.1038/s41467-020-16941-y [https://perma.cc/PRF7-X6W9].

217 *Id.* at 2.

218 *Id.* at 3.

219 *Id.* at 4.

220 *See infra* notes 344–46 and accompanying text (discussing lessons from the early 1990s federal luxury tax on yachts).

much of our argument in Part II builds from the premise that a focus on luxury emissions may have important cascading societal effects, these effects would unroll more slowly—giving time for larger attendant systems transformation to take shape.

The critical reception we anticipate on this point—assuming a climate policy focused on consumption to be in tension with one focused on production—illuminates an important animating aspect of this project. We see a focus on luxury emissions as *complementary* to other ongoing efforts to stem climate change. Given humanity's current position vis-a-vis carbon emissions, policy makers should pursue every avenue to mitigate future emissions. Thus, attention to high-end carbon-producing consumption contemplated here should not come at the expense of, or in exchange for, inaction in other avenues.[221]

2 *A Focus on Carbon Inequality Adds a Moral Dimension to Wealth Redistribution*

Just as injecting a focus on *luxury* consumption might advance the politics of regulating consumption-based emissions, so too might a focus on *emissions* enhance the politics of redistribution—in particular, the challenge of rising high-end inequality.

There has been an enormous outcropping of scholarly and popular literature on contemporary inequality and its ill effects. Yet, as others have observed, little of this has translated into effective redistributive policies. Although proponents of redistributing wealth and income make the case that inequality undermines democracy and weakens the social fabric, policy proposals have been met with a popularly compelling rejoinder grounded in individual liberty: a *"to the victor goes the spoils"* opposition to taxation. This perspective has been successfully

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221 In this regard, we note Huber's critical insistence on treating carbon emissions policy as a sort of zero-sum game: he writes, for example, that "it is seductive to think that the only solution for climate change is getting the rich" to reduce their individual carbon footprints through lifestyle changes, and that "[p]lacing 100 percent of the responsibility for emissions on consumers is an ideological trick of market exchange under capitalism." Matt Huber, *Rich People Are Fueling Climate Catastrophe—But Not Mostly Because of Their Consumption*, JACOBIN (May 2, 2021), https://jacobin.com/2021/05/rich-people-climate-change-consumption [https://perma.cc/4WYV-QYN3]. One way to read this argument is that he agrees with us that a multi-pronged policy addressing consumption and production is necessary. Another way, that we disagree with, is that one might focus entirely on production and not at all on consumption.

propagated far beyond the actual victors in the economic spoils system as it exists today.[222]

The moral urgency of climate change and the moral purchase of distinguishing luxury emissions have the potential to add a new element to debates about redistribution. Mitigating climate change requires absolute carbon emissions reductions. These reductions are a zero-sum debate: more emissions by the ultra-wealthy permit fewer emissions by everyone else, if emissions targets are to be met.[223] Carbon emissions are also more measurable and perhaps easier to convey than threats to democratic governance and the generalized ills of stratified wealth. Because luxury emissions are morally condemnable in ways beyond mere wealth and consumption,[224] targeting luxury emissions is potentially more politically appealing than achieving a similar distributional result using a standard tax or other policy tool that cannot claim the same moral urgency. The recent public outrage directed at outlandish luxury emissions reinforces this point.[225]

Class-oriented climate policies also respond to the interrelationship between extreme inequality and climate change. Not only do the wealthy emit more, they also play an outsized political role in stymieing efforts to limit emissions. In a study focusing on wealth inequality, Kyle Knight and co-authors find that in high-income countries, wealth inequality correlated with higher emissions over the period from 2000 to 2010.[226] The authors observe that "[t]his finding is consistent with political economy theories arguing that the concentration of political and economic power that accompanies the concentration of wealth plays an important role in increasing environmental degradation."[227] Multiple studies now confirm that a more

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222 *See* Gallice, *supra* note 124, at 3, 5 (observing that "[m]any members of the working class appear to be against redistribution" and suggesting that "high inequality in the distribution of gross incomes may lead some individuals who are below the mean to oppose redistribution, because sorting gives them the option of not getting stuck in 'poor' clubs"); PAGE & GILENS, *supra* note 170, at 14 ("U.S. history and, in recent years, survey data have demonstrated that most Americans have no desire to confiscate the property of the wealthy. They have never come close to doing so. In fact, wealthy Americans have been highly successful at resisting or rolling back even mildly redistributive threats to their property, such as the progressive income tax.").

223 *See supra* notes 106–08 and accompanying text.

224 *See supra* Section II.A.

225 *See* sources cited *supra* notes 1, 2, 4, and 21.

226 Kyle W. Knight, Juliet B. Schor, & Andrew K. Jorgenson, *Wealth Inequality and Carbon Emissions in High-income Countries*, 4 SOC. CURRENTS 403, 409 (2017).

227 *Id.*

equal society is a less carbon intensive one.[228] These findings may be best viewed as a second-order effect to extreme inequality undermining democracy and social mobility, but they nonetheless add importance to a focus on luxury consumption.[229]

In sum, policies that seek to limit inequality are themselves good climate policy, and redistribution that has been politically intractable might be more possible if explicitly connected to carbon inequality.

III
Targeting Luxury Emissions

So far, we have built the case that luxury emissions merit a targeted policy response. We view development of a workable policy design as a critical next step in advancing this argument. Focusing our attention on U.S. policy options at either the state or federal level, we propose in this Part a luxury carbon emissions tax as the most politically feasible and administrable option—with an eye toward promoting the sort of social contagion that could result from shifting high-end consumption preferences. After laying out our case for a luxury emissions tax, we work through some of the design details and challenges.

A Instrument Choice in Regulating Luxury Emissions

There is no shortage of policy instruments theoretically available to target luxury emissions: a jurisdiction might employ direct regulations or bans, subsidies, cap-and-trade schemes, or taxation.[230] For example, direct regulations might prohibit or limit emissions from certain sources of luxury emissions, such as private jets or private yachts. Or a cap-and-trade regime could limit the overall number of private jets or impose allowances on greenhouse gas emissions from private jet use,

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228 *See* Jorgenson, Schor, Huang & Fitzgerald, *supra* note 122.

229 *See* Knight, Schor & Jorgenson, *supra* note 226, at 405 (citing James Boyce, *Inequality as a Cause of Environmental Degradation*, 11 Ecological Econ. 168 (1994) and Liam Downey, Inequality, Democracy, and the Environment (2015) whose research shows that inequality of political power fuels environmental degradation); Daniel Shaviro, *Tax Law, Inequality, and Redistribution: Recent and Possible Future Developments* 2 (NYU School of Law, Law and Economics Research Paper Series, Working Paper No. 22-06, 2021) (summarizing social harms linked to extreme high-end inequality).

230 *See* A. Lans Bovenberg & Lawrence H. Goulder, *Environmental Taxation and Regulation*, *in* 3 Handbook of Public Economics 1474, 1513–24 (describing pricing mechanisms and their alternatives, including quotas, tradeable permits, subsidies and performance standards).

so that only those most willing to pay would continue to fly on private jets. Which of these instruments should policymakers pursue?[231]

The question of instrument choice has long occupied environmental and climate law scholars as well as scholars of law and economics.[232] The conventional wisdom in the law and economics field is that tax laws should be dedicated to redistribution, while regulations should be shaped to maximize efficiency—minimizing deadweight loss and transactions costs, and achieving efficient allocation of resources—without regard to distributive outcomes.[233] However, that approach has met resistance from non-economists,[234] and, more recently, from within, as scholars point out the real-world impracticability of severing policy considerations in this manner.[235] In similar fashion, William Boyd compellingly argues that abstract debate about instrument choice in environmental regulation is of limited utility.[236] It is not as if we are picking which kind of fruit looks best to pluck off the shelf and put in our shopping cart. Instead, choosing policy instruments is a *contested*, *political* matter—such that attention to the political economy of various instruments is crucial.[237]

For our purposes, we would be happy to see any of the potential instruments mentioned above shaped into laws to regulate luxury emissions. But we are cognizant of political

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231 In this discussion, we have set aside the broader alternatives of carbon pricing regimes that target *all* carbon consumption, as explained in the prior Part. *See supra* notes 193–202 and accompanying text.

232 *See* William Boyd, *The Poverty of Theory: Public Problems, Instrument Choice, and the Climate Emergency*, 46 COLUM. J. ENV'T L. 399, 400–01 n.1 (2021).

233 Louis Kaplow & Steven Shavell, FAIRNESS VERSUS WELFARE (2002); *see also* Kyle Logue & Ronen Avraham, *Redistribution Optimally: Of Tax Rules, Legal Rules, and Insurance*, 56 TAX L. REV. 157, 157–58 (2003) (describing the positions and discussion among law and economics scholars).

234 *E.g.*, Michael B. Dorff, *Why Welfare Depends on Fairness: A Reply to Kaplow and Shavell*, 75 S. CAL. L. REV. 847 (2002).

235 *E.g.*, Zachary Liscow, *Redistribution for Realists*, 107 IOWA L. REV. 495, 499 (2022) ("[W]hile the reigning orthodoxy [of Kaplow and Shavell] makes sense in theory, it fails in practice. It ignores how ordinary Americans think about the law and thus ends up exacerbating inequality rather than mitigating it."); Daniel A. Farber, *Climate Justice*, 110 MICH. L. REV. 985, 989 (2012) (reviewing Eric A. Posner & David Weisbach, CLIMATE CHANGE JUSTICE (2011)) ("To say that we should not engage in redistribution unless we can implement the ideal form of redistribution is really to say that we should not engage in redistribution at all.").

236 *See* Boyd, *supra* note 232, at 401.

237 *Id.* at 408; *see also* LEE ANNE FENNELL & RICHARD H. MCADAMS, FAIRNESS IN LAW AND ECONOMICS, xiii–xxiv (Lee Anne Fennell & Richard H. McAdams eds., 2014) (underscoring attentiveness to political economy in designing redistributive policies).

dynamics. In some places, the political climate appears conducive to direct regulation of luxury emissions: France, for example, began banning private short-haul flights in 2022.[238] However, within the United States, we see a luxury-emissions-focused tax as the most realistic and politically promising policy option. Taxes allow the government to influence allocation decisions (how money is spent) without necessarily directing alternatives—thus, policymakers often favor a tax-based approach for its ability to simplify policy design details.[239] For example, if the goal is to reduce private jet flights, a tax instrument does not require policymakers to determine set a number of flights that is permissible and then prescribe who should get to take those flights. A tax strategy thus may jibe better with the United States' liberal aversion to intruding into consumptive behaviors and household decision-making.[240]

There are also administrability reasons to embrace a luxury emissions tax approach. Of course, the amount of the tax and how it is imposed and enforced are important considerations, and an array of options (which we discuss below) are readily available and familiar from existing national, state, and local tax regimes.[241] Price increases imposed via tax can be

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238 Jennifer Mossalgue, *France Starts Banning Short-Haul Flights, Cracks Down on Private Jets*, ELECTREK (Dec. 5, 2022), https://electrek.co/2022/12/05/france-to-ban-short-haul-flights/ [http://perma.cc/Z6U2-NZCA] (describing a ban that applies to any route that can be traveled "by rail in less than 2.5. hours, with many options for direct train travel throughout the day"). However, there appears to have been some slippage in implementation: a decree formalizing the ban, released in May 2023, narrows the ban's application to only three routes in the country and exempts all flights originating from Paris Charles de Gaulle, the country's largest airport. *See* Aurelien Breeden, *Vaunted French Ban on Short Domestic Flights Is a Pale Shade of Green*, N.Y. TIMES (May 24, 2023), https://www.nytimes.com/2023/05/24/world/europe/france-short-haul-flights-emissions.html [https://perma.cc/RD6R-6B49] . This dilution in implementation of a ban perhaps adds force to the arguments we make below in favor of a tax. *See infra* Part III.

239 *See* Reuven S. Avi-Yonah, *Taxation as Regulation: Carbon Tax, Health Care Tax, Bank Tax and Other Regulatory Taxes*, 1 ACCT., ECON., & L. 1, 4–5 (2011), https://repository.law.umich.edu/cgi/viewcontent.cgi?article=2643&context=articles [https://perma.cc/92XL-2XFY] (defending the use of the tax system for regulatory purposes by reference to debates over carbon regulation and the fact that "the government does not have necessary information" to target emissions limits, and describing how a tax regime is less complex than a cap-and-trade regime).

240 *See supra* note 29; *see also* Hsu, *supra* note 188, at 860 ("Certainly, a carbon tax is the climate option most consistent with libertarian values, emphasizing as it does minimization of government intervention.").

241 In particular, import duties vary by product and by origin, creating an extremely detailed and complex set of rate schedules. *See generally Determining Duty Rates*, U.S. CUSTOMS & BORDER PROT., https://www.cbp.gov/trade/programs-administration/determining-duty-rates [https://perma.cc/39Z8-7RXS] (discussing the "Harmonized Tariff System," which is a "reference manual that is the size of

calibrated to achieve specific degrees of deterrence or to raise a specific amount of revenue. Taxes also allow for precise targeting of particular categories of luxury emissions.[242] And taxation offers flexibility as to who remits the tax and how the policy might be communicated to maximize positive behavior change among luxury emitters and beyond.[243]

These considerations have combined to make carbon taxes the preferred policy of many U.S. policymakers and scholars—even as politics have prevented a sufficiently stringent or broad carbon tax from being enacted in any U.S. jurisdiction.[244] Accordingly, if we are right that a policy focus on *luxury* emissions will activate class politics in ways that draw in working-class Americans and progressives,[245] then opting for taxation as the instrument of choice might help also draw centrists on board.[246] For these reasons, we focus the remainder of our analysis on the design considerations and challenges of implementing a luxury emissions tax.

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an unabridged dictionary," and explaining how the appropriate duty rate is determined by "classification specialist[s]"). Similarly, at the state and local level, taxes are widely imposed on the value real estate and some personal property, and sales tax regimes can involve variable tax rates and complex exemptions. *See* KATHERINE LOUGHEAD, JARED WALCZAK, & EDDIE KORANYI, TAX FOUNDATION, FISCAL FACT NO. 797, UNPACKING THE STATE AND LOCAL TAX TOOLKIT: SOURCES OF STATE AND LOCAL TAX COLLECTIONS (FY 2020) (Aug. 2022), https://taxfoundation.org/data/all/state/state-local-tax-collections/#property [https://perma.cc/76RP-XUDY] (summarizing state and local property and sales tax regimes, among other sources of revenue).

242 *See, e.g.*, INT'L MONETARY FUND, POLICY PAPER NO. 2019/010, FISCAL POLICIES FOR PARIS CLIMATE STRATEGIES—FROM PRINCIPLE TO PRACTICE (May 2019), https://www.imf.org/en/Publications/Policy-Papers/Issues/2019/05/01/Fiscal-Policies-for-Paris-Climate-Strategies-from-Principle-to-Practice-46826 (evaluating carbon mitigation mechanisms with a focus on carbon pricing options as centrally important policy instruments); *see supra* note 241.

243 *See, e.g.*, ORG. FOR ECON. COOP. & DEV., FORUM ON TAX ADMINISTRATION, BEHAVIOURAL INSIGHTS FOR BETTER TAX ADMINISTRATION: A BRIEF GUIDE 13–14 (Aug. 13, 2021), https://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/behavioural-insights-for-better-tax-administration-a-brief-guide.pdf [https://perma.cc/MU2X-KTGL] (summarizing various strategies for promoting tax compliance through taxpayer communications); *cf.* Joel Slemrod & Shlomo Yitzhaki, *Tax Avoidance, Evasion, and Administration*, *in* 3 HANDBOOK OF PUBLIC Economics 1427–29 (Alan J. Auerbach & Martin Feldstein eds., 2002) (emphasizing the importance of the "interaction of tax policy and tax administration" and that administrative details are "critical determinants of tax policy").

244 *See* sources cited *supra* note 188.

245 *See* argument *supra* Section II.C.1.a.

246 Following the same reasoning, we commend recent work on a carbon wealth tax that would target carbon-intensive investments. *See* Neves & Semmler, *supra* note 208. However, we are concerned that this plan as proposed would suffer the deficiencies of broader carbon consumption taxes because it does not distinguish between highly resourced investors versus small investors—thus making it an easy target for political rhetoric about taxing regular people's retirement savings.

The design options for a luxury emissions tax explored below could function either at the state or federal level. For purposes of reducing total emissions, it would obviously be advantageous to apply the tax federally—or, better yet, to harmonize with other jurisdictions around the world interested in similar taxes. A broader regime would help to avoid persistent challenges of tax avoidance and emissions "leakage" that plague any efforts to tax carbon,[247] and which may be particularly acute when it comes to hyper-mobile affluent consumers.[248] That said, as with most climate policy in the United States, it may first require a bold state—and one with a greater appetite for redistribution and climate action than the national polity—to experiment with a luxury emissions tax.[249]

B Designing a Luxury Emissions Tax

In this section, we sketch some thoughts about how to make a luxury emissions tax effective and administrable, focusing on how to define the tax base, how to administer and enforce the tax, and how to use revenue generated.

1 *Excise Tax Models*

Although one could imagine alternative ways to design a luxury emissions tax, we view a tax focused on particular luxury consumption activities as the most feasible option.[250]

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247 *See* David Weisbach & Samuel Kortum, *Climate Change Policy in the International Context: Solving the Carbon Leakage Problem*, 31 N.Y.U. ENV'T L.J. 1 (2023) (describing "leakage" challenges, where regulation in one jurisdiction results in production activity moving elsewhere, and recommending multiple carbon tax instruments as a way to internalize the social cost of carbon via both producers *and* consumers).

248 *See supra* note 146 on hypermobility. *See infra* notes 352–63 and accompanying text on avoidance.

249 *See, e.g.*, David E. Adelman & Kirsten H. Engel, *Reorienting State Climate Change Policies to Induce Technological Change*, 50 ARIZ. L. REV. 835 (2008) (arguing that state actions can meaningfully contribute to climate change solutions by providing innovation); Andrew Jordan, Dave Huitema, Jonas Schoenefeld, Harro Van Asselt & Johanna Forster, *Governing Climate Change Polycentrically: Setting the Scene*, *in* GOVERNING CLIMATE CHANGE: POLYCENTRICITY IN ACTION? (Jordan, A., Huitema, D., Van Asselt, H., & Foster, J., eds., 2018) (celebrating the potential for polycentric climate governance—occurring across scales and actors—to induce useful experimentation).

250 A more sweeping alternative might be to model a tax on luxury emissions on a broad-based consumption tax. Under this approach, a luxury emissions tax could be imposed by tracking individual or household consumption—either in terms of emissions (by introducing some form of carbon accounting) or dollars (as a cashflow consumption tax)—with a tax imposed above a level deemed to be excessive, and perhaps with deductions for taxpayers with low carbon consumption.

The basic tax mechanism for introducing a price adjustment to specific activities or goods is called an excise tax. Generally, excise taxes are calculated as a portion of the cost of an item or service, or as a fixed sum per unit.[251] Because excise taxes increase the costs of delivering any good or service targeted by the tax, basic economic analysis anticipates that the market price as well as overall supply and demand will adjust accordingly.[252]

Excise taxes have various flavors. Perhaps most familiar in environmental policy, a Pigouvian excise tax is designed to internalize the social costs of a product or service into the market price.[253] For example, federal law currently includes Pigouvian taxes on certain oil and petroleum products and other chemicals, with revenues directed to the Superfund to cover hazardous waste cleanup costs.[254] Another variation of excise tax is the "sin tax." Rather than necessarily being calibrated to social costs, sin taxes are designed to discourage the use of a disfavored product.[255] Classic sin tax targets include cigarettes

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Cf. Manoj Viswanathan, *Implementing a (Modern) Progressive Consumption Tax*, 41 VA. TAX REV. 241, 243, 249 (2022) (describing an "individual accounting progressive consumption tax" whereby rates increase as consumption increases for each individual); Robert H. Frank, *The Frame of Reference as a Public Good*, 107 ECON. J. 1832, 1841–42 (1997) (proposing a progressive consumption tax for the purpose of discoursing high-end consumption). We welcome the creation of more far-reaching proposals along these lines, although we see their political feasibility as limited in the current moment.

251 ANTHONY A. CILLUFFO, CONG. RSCH. SERV., R46938, FEDERAL EXCISE TAXES: BACKGROUND AND GENERAL ANALYSIS 5 (2021). When measured as a portion of costs, an excise tax may be referred to as an *ad valorem* tax.

252 *Id.* at 15–16; *see Excise Tax*, IRS.GOV, https://www.irs.gov/businesses/small-businesses-self-employed/excise-tax [https://perma.cc/J5YM-8HUY].

253 *See* Bovenberg & Goulder, *supra* note 230, at 1475, 1478–80; Richard A. Musgrave, *A Brief History of Fiscal Doctrine* at 11–12, *in* 1 HANDBOOK OF PUB. ECON. (Martin Feldstein & A.J. Auerbach eds., 1st ed. 1985) (explaining economist Arthur Pigou's distinction between social net product and private net product, internal costs and benefits, and third-party costs and benefits).

254 I.R.C. §§ 4611, 4661; *see Petroleum Tax—Hazardous Substance Superfund Financing Rate Reinstated*, IRS.GOV, https://www.irs.gov/businesses/small-businesses-self-employed/petroleum-tax-hazardous-substance-superfund-financing-rate-reinstated [https://perma.cc/6AN8-ACCY]; *Superfund Chemical Excise Taxes*, IRS.GOV, https://www.irs.gov/businesses/small-businesses-self-employed/superfund-chemical-excise-taxes [https://perma.cc/N8YD-KU7T]. Of course, the United States also subsidizes oil in many problematic ways from a Pigouvian perspective. *See, e.g.*, Peter Erickson, Adrian Down, Michael Lazarus & Doug Koplow, *Effect of Subsidies to Fossil Fuel Companies on United States Crude Oil Production*, 2 NATURE ENERGY 891 (Nov. 2017).

255 *See* Richard E. Wagner, *The Taxation of Alcohol and the Control of Social Costs*, *in* TAXING CHOICE: THE PREDATORY POLITICS OF FISCAL DISCRIMINATION 227, 232

and alcohol, each of which is currently taxed on a per unit basis under federal law.[256]

Luxury taxes, in contrast, are excise taxes that are motivated by revenue and distributional concerns: even if a market transaction for the subject item does not produce externalities or is not otherwise deemed undesirable, a luxury tax might be imposed where policymakers recognize an opportunity to raise revenue from taxpayers who have the ability to pay a premium for a good or service.[257] Historically, the federal government has imposed luxury taxes on telephone calls, furs, and toiletries, and into the 1990s there were federal luxury taxes in place on boats, planes and jewelry.[258] The last federal luxury tax on the books was imposed on cars with a purchase price of over $40,000, though Congress eliminated this provision after 2002.[259]

Some excise taxes combine multiple justifications, incorporating flavors of Pigouvian tax, sin tax, and luxury tax. For example, the current 10% federal excise tax on indoor tanning services, enacted as part of the Affordable Care Act, combines a sin tax element (tanning is bad!) with a Pigouvian element (the cost of tanning does not fully reflect the social cost of skin cancer treatments imposed on health care providers and insurers) as well as a luxury tax element (tanning is gratuitous and if people really want to do it they can afford to pay more).[260] But the tanning tax also highlights the fraught line-drawing and value judgments that excise taxes can give rise to: tanning may well be the kind of "luxury" for which demand *decreases* as wealth or income *increases*, and there was little if any attempt in the political negotiations leading to the tanning tax's enactment to calculate the actual external costs of tanning services.

(William F. Shughart & Paul W. McCracken eds., 1st ed. 1997); CILLUFFO, *supra* note 251, at 1, 16–17.

256 *See* CILLUFFO, *supra* note 251, at 1 & n.2. Subtitle E of the Internal Revenue Code, I.R.C. §§ 5001–5872, covers a variety of excise taxes on spirits, wine, beer, and tobacco: among other products, taxing cigarettes on a per cigarette basis with different rates for different sizes and types, and (generally) taxing alcohol on a per volume basis (e.g., $13.50 per "proof gallon" for rum). *See id.*; STEVEN MAGUIRE & JENNIFER TEEFY, CONG. RSCH. SERV., R41028, THE RUM EXCISE TAX COVER-OVER: LEGISLATIVE HISTORY AND CURRENT ISSUES (Jan. 20, 2010).

257 CILLUFFO, *supra* note 251, at 1.

258 *Id.*, at 3; LOUIS ALAN TALLEY, CONG. RSCH. SERV., RS20314, LUXURY TAX ON PASSENGER VEHICLES 2–3 (Mar. 7, 2002); LEONARD E. BURMAN & JOEL SLEMROD, TAXES IN AMERICA: WHAT EVERYONE NEEDS TO KNOW 105 (2d ed. 2020).

259 TALLEY, *supra* note 258, at 3.

260 I.R.C. § 5000B.

Similarly, the federal gasoline tax is an excise tax that is vaguely Pigouvian in that driving a gas-fired car imposes social costs, but the gasoline tax rate is not calibrated to internalize those costs.[261]

A tax on luxury emissions could combine positive aspects of each type of excise tax discussed above. A luxury emissions tax would internalize at least some costs of carbon emissions in Pigouvian fashion. It would also make a moral and political statement in the vein of a sin tax. And finally, it would target wealthy taxpayers in particular, raising much needed revenue for potential investment in carbon mitigation efforts with redistributive benefits.[262]

2 *How to Target "Luxury"?*

A threshold consideration in designing a luxury emissions tax is how to define the tax "base," *i.e.*, what precisely constitutes the kind of superfluous luxury emissions that should be subject to tax? In economics, a luxury good is defined as "a good for which demand increases more than proportionally as income rises."[263] But the economics definition of luxury goods is likely to be overinclusive for our purposes, applying to decidedly middle-class goods like full size pickup trucks and leaf blowers. We mean something different by the term, intending to return to the idea introduced above that what matters is emissions-heavy consumption far beyond what is necessary for a decent life.[264] Although some of the indulgences of the American middle class are heavy emitters, they do not give rise to the sort of truly gratuitous high-end carbon emissions that make a luxury emissions tax politically appealing. Thus, once

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261 *See* Jonathan S. Masur & Eric A. Posner, *Toward a Pigouvian State*, 164 PENN. L. REV. 93, 117 (2015) (contemplating a "semi-Pigouvian" tax that does not fully incorporate social costs). Gasoline excise tax revenues are earmarked for the federal Highway Trust Fund. For another example of a Pigouvian tax, see CILLUFFO, *supra* note 251, at 8–9 (explaining Highway Trust Fund and Airport and Airway Trust Fund as the largest and second largest trust funded by U.S. Excise Tax).

262 *See infra* Section III.C.

263 CILLUFFO, *supra* note 251, at 6. Along similar lines, Veblen described a category of goods for which demand increases as price goes up, which he associated with status signaling. *See supra* notes 126–27. *But see* Robert H. Frank, *Conspicuous Consumption? Yes, but It's Not Crazy*, N.Y. TIMES (Nov. 22, 2014), https://www.nytimes.com/2014/11/23/upshot/conspicuous-consumption-yes-but-its-not-crazy.html [http://perma.cc/RE5G-QRDV] (questioning the prevalence of Veblen goods on grounds that even ultra-rich people are not inclined to waste money).

264 *See supra* notes 99–100 and accompanying text.

political economy is introduced as a core consideration, the term "luxury" becomes subjective and contextual.

Not all luxury items are equally morally condemnable from an emissions perspective—mansions might seem to be an easy target, but apartments in Manhattan, which may be equal in price to detached luxury homes elsewhere, are comparatively carbon efficient. Similarly, pricey caviar is an extreme luxury, but it is also low carbon and highly sustainable.[265] These sorts of considerations complicate luxury emissions tax targeting.

With these challenges in mind, we explore how a luxury emissions tax regime might define certain consumption as "luxury" and add a surtax to the purchase price or use of those goods and services, with a rate schedule that could vary across items.[266] A primary challenge with imposing a luxury emissions tax on an item-by-item and activity-by-activity basis is prescribing in detail the categories of goods and services that should be subject to the luxury emissions tax. The parameters for the goods and services to be included in the tax base should be informed by economists' research on positional goods, climate scientists' research on carbon emissions, and considerations of political feasibility. The best targets would be carbon-producing positional goods that seem likely to influence broader societal preferences and provoke widespread public ire and moral condemnation.[267]

Some suggestions follow, with commentary and approximate estimates of the potential direct emissions that could be targeted by introducing a tax in each of these categories of luxury consumption.[268] These calculations both understate the potential effects, because a luxury emissions tax can shift broader consumption behavior, and overstate the direct effects, because we do not contemplate that all targeted behavior will be mitigated—rather, it will either be deterred *or* raise revenue

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265 Julie Zawadzki, *Most Expensive Caviar (from $1,000 to $113,630)*, CHEF'SPENCIL (May 6, 2022), https://www.chefspencil.com/most-expensive-caviar/ [http://perma.cc/VX9Q-W8SC].

266 In a recent econometric study of the carbon reduction and redistributive potential of a "luxury" carbon tax, Oswald et al. model a similarly variable luxury carbon tax, though more broadly applicable: a carbon tax on luxury consumption pegged to income elasticities of each of 14 categories of consumption expenditures, calibrated on a country-by-country basis. Oswald, Millward-Hopkins, Steinberger, Owen & Ivanova, *supra* note 101, at 888–89. As such, the authors distinguish between luxury goods in South Africa and the U.S. (to use two examples they point to as exemplary of the 88 countries they consider).

267 *See supra* Section II.B.

268 *See infra* Figure 2.

that can be used to otherwise confront climate change, as discussed in Section III.C.

Fossil fuel-burning private jets. Emissions from air travel are growing rapidly,[269] and private jets are the worst offender in this category, releasing up to two tons of carbon emissions for each hour of flight time.[270] At present there are around 13,500 private jets in North America, with ownership overwhelmingly concentrated in the top 0.1% of earners.[271] Researchers estimate that private jets in the U.S. alone will contribute between 770 and 940 megatons CO_2e from 2022 through 2024.[272] The lower end of that estimate assumes that private jet flight will return to its pre-COVID levels, whereas the higher end assumes that the COVID private jet travel boom continues on the trajectory set through 2021.[273] Unfortunately, there is little reason to think that private jet use will recede without intervention.[274] The higher end figure approaches the equivalent emissions of 20% of all cars in the United States (nearly 65 million cars total) over that same time period.[275] Even the lower estimate is equal to the greenhouse gas emissions of over 53 million cars in the

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269 Worldwide aviation currently constitutes around 2.4% of emissions and is projected to increase significantly. EESI, COMMERCIAL AVIATION GROWTH, *supra* note 147.

270 Emissions from private jets increased by 23% in the past few years as COVID-19 resulted in a "pandemic induced private aviation boom." Joseph B. Sobieralski & Stacey Mumbower, *Jet-Setting During COVID-19: Environmental Implications of the Pandemic Induced Private Aviation Boom*, 13 TRANSP. RSCH. INTERDISCIPLINARY PERSP. 100575, at 5 (Mar. 2022); *see also* ANDREW MURPHY & VALENTIN SIMON, TRANSPORT & ENVIRONMENT, PRIVATE JETS: CAN THE SUPER RICH SUPERCHARGE ZERO-EMISSION AVIATION? (April 2021).

271 Starr, Nicolson, Ash, Markowitz & Moran, *supra* note 27, at 22.

272 Sobieralski & Mumbower, *supra* note 270. An industry report claims that carbon dioxide (note: not all greenhouse gases) from private jet flights constitute as little as two percent of aviation emissions, and that private jet greenhouse gas emissions amount to 256 megatons per year, which would be just under 770 megatons over three years, approximately the same as the lower bound of the Sobieralski-Mumbower estimate. GENERAL AVIATION MANUFACTURERS ASSOCIATION & INTERNATIONAL BUSINESS AVIATION COUNCIL, BUSINESS AVIATION COMMITMENT ON CLIMATE CHANGE at 3, https://gama.aero/wp-content/uploads/GAMA-IBAC-Joint-Position-on-Business-Aviation-Tackling-Climate-Change-1.pdf/ [https://perma.cc/8VJ4-YUVK]. The industry group has branded private jet flights as "business aviation." *Id.*

273 Sobieralski & Mumbower, *supra* note 270.

274 *See* Maria Shollenbarger, *The Trouble with Private Jets . . .*, FIN. TIMES (June 12, 2022), https://www.ft.com/content/0ef421b1-5d3a-475b-b1ca-ca47bbbdc992/ [https://perma.cc/HU9B-X9LA] (describing increased private jet and helicopter flights to the Hamptons, and a court battle over attempts by homeowners to reduce those flights).

275 Sobieralski & Mumbower helpfully convert greenhouse gas emissions into equivalent passenger car emissions on the road each year, assuming each car drives 11,500 miles and has an average fuel economy of 22 miles per gallon. Sobieralski & Mumbower, *supra* note 270. We adopt this same convention along with

U.S.,[276] or approximately the same as the CO2 produced each year by the 300 million inhabitants of sub-Saharan Africa.[277]

Extrapolating from that lower estimate and adopting the unlikely assumption U.S. private jet emissions stay at that lower range (rather than increasing) between now and 2050, private jets will contribute around 6.7 gigatons, or 1.7%, of the total 380 gigaton carbon budget. Using the higher end estimate of 940 megatons over three years,[278] private jets might contribute 24.4 gigatons over that time period, or 6.4% of the remaining allowance. A targeted tax that can change the behavior of a few tens of thousands of private jet owners could thus mark significant progress toward meeting a limited carbon budget.

The positional aspect of private jets is important in considering jets as a source of future emissions. More and more people are aspiring to private jet use, and various business schemes over the last several years have sought to introduce private jet travel to the masses.[279] Targeting private jet travel could also dampen the (currently positive) social status implications of private business travel, which is generally reserved for the most highly compensated executives.[280] Increasing the cost of private jet use might tamp down expansion of private jets, and further might prompt private investment in technology for electric or other carbon-efficient alternatives to private jets—ultimately with potentially broader application in commercial air travel.[281]

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their assumptions to provide passenger car equivalents as a point of reference throughout this section.

276 *Id.*

277 The 300 million figure is extrapolated from emissions and population statistics for the region. *See* SUB-SAHARAN AFRICA CARBON (CO2) EMISSIONS 1990–2023, https://www.macrotrends.net/countries/SSF/sub-saharan-africa-/carbon-co2-emissions/ [https://perma.cc/ZHY7-S4MF]; SUB-SAHARAN AFRICA: TOTAL POPULATION FROM 2011 TO 2021, https://www.statista.com/statistics/805605/total-population-sub-saharan-africa/ [https://perma.cc/W9ZM-5B83].

278 *See supra* note 272 and accompanying text.

279 Sobieralski & Mumbower, *supra* note 270 (describing a "pandemic-induced boom" in private jet use and resulting CO2e emissions); *see* Maria Shollenbarger, *supra* note 274.

280 *See* David Crow, Robin Kwong, Caroline Nevitt & Jennifer Bissell, *Executive Perks: The Corporate Jet Files*, FIN. TIMES (Mar. 7, 2016), https://ig.ft.com/sites/business-jets/ [https://perma.cc/4HZD-EJKG].

281 *E.g.*, Jeremy Bogaisky, *Meet the Billionaire Who Wants to Build the Tesla of Airplanes*, FORBES (Dec. 15, 2022) https://www.forbes.com/sites/jeremybogaisky/2022/12/15/eviation-alice-magnix-richard-chandler/?sh=322067bd602c [https://perma.cc/DPM7-GLM3] (investment in electric plane technology may have future application for shipping companies including DHL); Benoit, *supra* note

A private jet tax should be imposed on all use, including both personal and business trips, so as to eliminate distinctions that might encourage tax avoidance by way of simply recategorizing use. A private jet tax could be levied on the initial purchase or lease of each aircraft, or on operating costs. We recommend both. A luxury excise tax should be applied to the purchase of any jet for non-commercial-flight purposes, including both new aircraft and used aircraft. Private jets could be distinguished in two ways: first, any purchaser who does not make flights available to the general public—including individuals and also businesses or entities that are holding companies for private jets—should be subject to the tax for any jet purchase. This would include archetypal small private jets like Kim Kardashian's Gulfstream, as well as larger airline jets like the Boeing 737. Second, any purchase of a small jet engine aircraft (i.e., the category of plane below commercial airliner size), should be subject to the tax regardless of whether the purchaser is selling tickets to the general public. These rules should be extended as well to cover any long-term lease arrangements, as many aircraft are not owned by the regular operator.

Additionally, the luxury emissions tax should target operative costs. One model is the current jet fuel excise tax—that tax applies to fuel used for commercial flights and for private jet flights for business purposes, but it does *not* apply to fuel for private jets used for personal purposes.[282] Expanding and increasing the existing jet fuel excise tax regime to impose a substantially higher tax on any fuel used on flights not made available to the general public (or, perhaps, for flights for which the per passenger fuel consumption will exceed a certain threshold) will increase operating costs even for current owners of private jets.

Other air travel. Because air transportation is such a significant producer of carbon emissions,[283] it may make sense to target commercial air travelers as well.[284] Admittedly, commer-

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38 (noting that a high tax rate on luxury emissions can prompt research and investments in low-carbon alternatives).

282 I.R.C. § 4041(c) (imposing a tax of 4.3 cents per gallon for commercial-use jet fuel, and 21.8 cents per gallon for other use). There is also a "ticket" excise tax, discussed in further detail below, that generally applies if costs for personal private jet use are paid by passengers.

283 *See supra* note 148.

284 *Cf.* XINYI SOLA ZHENG & DAN RUTHERFORD PH.D., INT'L COUNCIL ON CLEAN TRANSP., AVIATION CLIMATE FINANCE USING A GLOBAL FREQUENT FLYING LEVY (Sept. 22, 2022), https://theicct.org/publication/global-aviation-frequent-flying-levy-sep22/.

cial flights are significantly more carbon efficient than private jet flights. But, nonetheless, reducing commercial air travel in and from the U.S. could have a substantial impact on overall carbon emissions, and there are significant reductions to be made by focusing only on high-volume first-class and business-class frequent flyers. In the United States, 12% of the population takes 66% of flights, while more than half the population does not fly at all.[285] A very small 7.2% of the population (15% of the flying population) took nine or more flights in the year 2017.[286]

There is significant progress to be made in this segment in terms of reducing greenhouse gas emissions: passenger air travel excluding private jets produces around 80% of aviation emissions, and the United Nations anticipates that without intervention those emissions will triple by 2050.[287] A conservative estimate is that passenger air travel globally contributes around 750 megatons of CO2 each year, which amounts to 19.4 gigatons through 2050. This is 5.1% of the total carbon budget, even without taking into account the projected increase. Just under a quarter—24%—of passenger air travel emissions come from flights originating in the U.S., and two-thirds of those (16% total) are domestic flights.[288]

A luxury frequent flyer tax could be imposed in conjunction with the existing "ticket" excise tax that funds federal aviation administration.[289] Such a tax could target flights originating in the U.S., and could apply only to people taking, say, ten or more flights per year, limiting it to the very highest volume travelers. Still, this would have the potential to reach something like half of the tickets purchased. Crunching those rough numbers, a high-volume commercial airline ticket tax in the U.S. could reach approximately 89 megatons of emissions each year,[290]

[https://perma.cc/ZU4D-P6DM] (proposing a "frequent flying levy" as a form of progressive taxation that fund decarbonization efforts).

285 POSSIBLE., ELITE STATUS: GLOBAL INEQUALITIES IN FLYING (Mar. 30, 2021), https://www.wearepossible.org/latest-news/elite-status-how-a-small-minority-around-the-world-take-an-unfair-share-of-flights/ [https://perma.cc/22YQ-DVXT].

286 *Id.*

287 Brandon Graver, Ph.D., Kevin Zhang & Dan Rutherford Ph.D., *CO2 Emissions from Commercial Aviation, 2018* 2 (Int'l Council on Clean Transp., Working Paper No. 2019–16, 2019), https://theicct.org/sites/default/files/publications/ICCT_CO2-commercl-aviation-2018_20190918.pdf/ [https://perma.cc/6X2M-S2GP].

288 *Id.*

289 *See* I.R.C. § 4261.

290 Calculated as: 750 megatons CO_2 produced annually by passenger air travel, of which just under one quarter originate in the U.S., which amounts to

which amounts to 2.3 gigatons of carbon emissions through 2050. That is 0.6% of the 380 gigaton carbon budget, or the equivalent of 6.2 million passenger cars.[291]

A luxury air travel tax could also be directed towards first-class or business-class flyers. First-class and business-class travelers have the most damaging carbon impact, with estimates that each first-class ticket contributing nearly nine times as much carbon as the same trip via economy class, and each business-class ticket contributing three times as much.[292] On the passenger level, a tax could be imposed on frequent flyers using business- and first-class travelers who might be dissuaded from marginal trips. Alternatively, a luxury tax could be imposed on all premium seats, regardless of frequency of traveling. Targeting these travelers in particular could help spark social reverberations that help to tamp down air travel more broadly, and also push airlines to reconfigure their layouts to reduce premium sections and thus increase passenger volume and efficiency on each flight.

Superyachts. The carbon emissions produced by superyachts strike us as the most gratuitous emissions, and the amounts of emissions produced by each superyacht are truly shocking.[293] Wilk and Barros estimated that among billionaires, yachting accounted for 64.3% of emissions.[294] In their close examination of a small sample drawn from the 2,095 member Forbes billionaires list, they found three-quarters of billionaires owned a yacht.[295] With an average estimated emissions of 7,018 tons per year, each superyacht produces the annual carbon emissions of thousands of people in the bottom half of the income spectrum.[296]

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180 megatons. Of those, just under half of tickets are purchased by the highest volume travelers, which means a tax on just those travelers would target approximately 89 megatons of emissions each year.

291 *See supra* note 279.

292 Heinrich Bofinger & Jon Strand, *Calculating the Carbon Footprint from Different Classes of Air Travel* 15–16 (World Bank Grp. Pol'y Rsch., Working Paper No. 6417, 2013). The calculation takes into account floor space taken up by premium classes, share of passengers traveling in premium sections, seat weight and other weight factors—because first-class and business-class are heavier, take up more space, and are less full, the per passenger carbon footprint of these sections is much higher than for economy seats. *Id.*

293 *See supra* notes 129–32 and accompanying text.

294 Barros & Wilk, *supra* note 86, at 319.

295 *Id.* Their sample was only twenty billionaires total; our estimates proceed by extrapolating based on that number, but it is admittedly rough and warrants further consideration.

296 *Id.*

A recent industry publication indicated that there were 5,555 superyachts operating around the world as of 2022, and another 668 superyachts in production.[297] Around a quarter of those superyachts are owned by Americans—in 2021, the highest superyacht sales year of all time, Americans bought 23% of the 887 superyachts purchased;[298] an earlier estimate pegged U.S. superyacht ownership at about one-third of all yachts in the world.[299] If U.S. taxpayers own approximately 2,074 superyachts, those craft may account for 14.5 megatons of greenhouse gas emissions each year.[300] Even if those numbers stay flat between now and 2050, that amounts to 393 megatons, which is a modest 0.1% of the greenhouse gas emissions budget, but that is still the equivalent of around 1 million passenger cars on the road in the U.S. each year.

As with private jets, a superyacht tax might be levied on the purchase of the boat, or on fuel or other usage or operating costs. Again, we recommend both. First, a tax on yacht purchase or lease could be imposed in the year of purchase and without regard to where the boat is docked. Because of the international nature of superyacht travel, an enforcement regime might be particularly challenging as to fuel and port fees. For practicability, an excise tax on the purchase, lease, or rental of luxury yachts could be imposed on any U.S. citizen or resident individual or related business. Structuring this fee by boat length might also help cut down on the positional arms race for ever-larger yachts.[301] To prevent evasion, as discussed in the next section, the onus for disclosure of ownership or use would be placed on the U.S. individual taxpayer (perhaps in connection with regular income tax filings required of every U.S. taxpayer, as discussed below), with stiff penalties for

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297 SUPERYACHT TIMES, *The State of Yachting* 2023 at 10.

298 Devon Pendleton, *World's Super Rich Drive 77% Surge in Superyacht Sales*, BLOOMBERG (Feb. 1, 2022), https://www.bloomberg.com/news/articles/2022-02-01/superyacht-sales-jumped-77-last-year-as-inventories-shrank.

299 Simon Goodley, *Almost Half of World's Superyachts Have UK or US Owners, Survey Finds*, THE GUARDIAN (Apr. 18, 2016), https://www.theguardian.com/business/2016/apr/18/superyachts-almost-half-worlds-uk-us-owners/ [https://perma.cc/HX5F-DNP3]. Americans make up about 27% of the most recent Forbes billionaires list—735 out of 2,640 individuals. Chase Peterson-Withorn, *Forbes' 37th Annual World's Billionaires List: Facts and Figures 2023*, FORBES (Apr. 4, 2023), https://www.forbes.com/sites/chasewithorn/2023/04/04/forbes-37th-annual-worlds-billionaires-list-facts-and-figures-2023 [https://perma.cc/39FD-2PA6].

300 Based on the Barros & Wilk sample, we extrapolate to the entire list of 2,095 billionaires. *See* Barros & Wilk, *supra* note 86, at 319.

301 *See supra* notes 130–32.

failure to disclose.[302] Second, an additional tax could be based on a calculation approximating the carbon emissions produced by the yacht for the year, for example based on the size and distance traveled, or the total fuel used. Yacht users could be required to report their annual fuel consumption and pay an excise tax on usage over a threshold volume. This tax could apply both to owners and to renters, and, again, could be imposed by way of requiring disclosure with regular tax filings.[303]

To be sure, such a tax might discourage few billionaires from their playthings, and it is impossibly hard to estimate how many individuals subject to tax in the U.S. are among those who own superyachts. But nonetheless, a tax would at least enhance social scrutiny of this oft-idealized but hidden corner of luxury consumption.[304] Further, boat technology seems particularly ripe to transition to low-carbon alternatives, with the availability of sun and wind at sea.[305] As with air travel, technological developments at the high end of the market can accrue to more commonplace boat propulsion, thus multiplying the carbon mitigation impacts of a yacht tax.[306]

Extra residences. Are vacation homes a justifiable use of our limited carbon budget? Jeff Bezos recently purchased a $5 million mansion in Washington, DC, which sits across the street from his $23 million mansion.[307] The smaller mansion is now his seventh home. While homes are a relatively small portion of the carbon emissions of the ultrawealthy,[308] they are a large and growing contributor to carbon emissions overall,

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302 *See infra* notes 355–63 and accompanying text.

303 *Id.*

304 *See* Osnos, *supra* note 129.

305 *See, e.g.*, Jake Richardson, *Voltari Electric Performance Boat Travels 91 Miles On A Single Charge*, CLEANTECHNICA (Feb. 13, 2023), https://cleantechnica.com/2023/02/13/voltari-electric-performance-boat-travels-91-miles-on-a-single-charge/ [https://perma.cc/243G-JKNT]. However, boats (and planes) generally rely on liquid fuel because it is so light compared to other fuel sources (including battery power). *See* Mitch Jacoby, *The Shipping Industry Looks for Green Fuels*, CHEM. & ENG'G NEWS (Feb. 27, 2022), https://cen.acs.org/environment/greenhouse-gases/shipping-industry-looks-green-fuels/100/i8 [https://perma.cc/Q88K-AW9C].

306 *See, e.g.*, *Yacht Industry Leaders Announce Electric Yacht Partnership*, DRIFT TRAVEL, https://drifttravel.com/yacht-industry-leaders-announce-electric-yacht-partnership/ [https://perma.cc/HYX2-64WW].

307 *Jeff Bezos to Buy Another DC Home . . . The One Across the Street*, URB. TURF (Jan. 8, 2020), https://dc.urbanturf.com/articles/blog/jeff-bezos-buys-another-dc-homethe-one-across-the-street/16299 [https://perma.cc/DV5E-ME7X].

308 In Wilk's and Barros' analysis, accommodations made up just 2.3% of billionaires' carbon emissions. Barros & Wilk, *supra* note 86, at 319.

accounting for 20% of carbon emissions in the United States.[309] Larger and more expensive homes have substantially outsized carbon contributions.[310] While data on extra residences is sparse, it appears that perhaps five percent of all houses constitute second homes, so third homes are even less common.[311]

While these residential emissions can be reduced partially through decarbonizing the electrical grid, some have made the case that, in light of an increasing number of houses and continued reliance on fossil fuels for stoves and other appliances, truly reducing emissions in housing will require higher density and reducing or stemming the growth of house sizes. Taxing extra vacation homes is one way to start to reshape housing preferences at the top end, where emissions are most significant, without directly impinging on existing consumption habits of the non-wealthy.

There is significant precedent for a tax on extra homes: many states already have a version of a surtax on extra residences in the form of a "homestead exemption," which reduces property taxes on primary residences but not vacation homes or commercial properties.[312] The homestead exemption tax benefit can take the form of reduced rates or assessment ratios,[313] reduced assessment values,[314] or directly reduced tax bills.[315] Recently some localities, most notably Los Angeles,

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309 Goldstein, Gournardis & Newell, *supra* note 75, at 19122.

310 *Id.*

311 *See* Andrew T. Hayashi & Richard M. Hynes, *Protectionist Property Taxes*, 106 Iowa L. Rev. 1091, 1099 (2021) (citing statistics on second homes from the Federal Reserve from 2005); *see also* Na Zhao, *The Nation's Stock of Second Homes*, Nat'l Ass'n of Home Builders (May 13, 2022), https://eyeonhousing.org/2022/05/the-nations-stock-of-second-homes/ [https://perma.cc/6GW6-TZLD].

312 Of note, this means that renters in these places bear the burden of rents reflecting higher tax rates than their non-renting peers, which is particularly troubling from a climate perspective where rental residences are more commonly energy efficient apartments. In essence, the failure of the homestead exemption to apply to rental apartments is a government subsidy to less-energy-efficient homes.

313 *E.g.*, S.C. Dep't of Revenue, S. C. Tax Incentives for Econ. Dev. ch. 5, at 2 (Jan. 2022), https://dor.sc.gov/resources-site/lawandpolicy/Documents/SCTIED-2022-Complete%20Manual.pdf [https://perma.cc/Z3UM-RHR3](explaining that primary residences are taxed at a 4% rate, while second homes are taxed at a 6% rate); *Principal Residence Exemption*, Mich. Dep't of Treasury, https://www.michigan.gov/taxes/property/principal [https://perma.cc/E7EW-KKSR] (explaining that principal residences are exempt from part of the millage rate).

314 *E.g.*, *Property Tax Exemptions and Additional Benefits*, Fla. Dep't of Revenue, https://floridarevenue.com/property/pages/taxpayers_exemptions.aspx [https://perma.cc/UE7B-WGUV] (providing that the value of a primary residence can be reduced by up to $50,000 of taxable value).

315 *E.g.*, *Property Tax Relief: Homestead Tax Credit*, Ark. Assessment Coordination Div., https://www.arkansasassessment.com/real-property/property-tax-

have imposed "mansion" taxes on the transfer of particularly expensive homes.[316]

A luxury emissions tax on extra homes would do better to target size or energy consumption, which are directly correlated with emissions, rather than price—and with this targeting could potentially help tamp down escalating home sizes.[317] For administrability, an extra homes tax could apply based on a formula that approximates excess energy use arising from additional residences. Alternatively, to enhance precision, a homes' tax might require that owners of more than one home report the energy usage for all homes (perhaps net of proven clean energy) and pay a surtax based on energy consumption. To affect the housing stock more generally, the tax might include credits for the adoption of energy efficient features (in the case of new builds) or additions (in the case of existing homes).

Because data on vacation homes is lacking, it is difficult to estimate the potential direct impact of a tax that targets a subset of those homes. The lack of direct impact further highlights an important aspect of taxing luxury emissions: reshaping social norms and tastes. A tax on extra homes should be shaped to shift consumption tastes of the masses—toward fewer, smaller houses—as well as consumption infrastructure—toward energy efficient housing stock and carbon-free sources of energy. A luxury emissions tax on extra residences could be designed to make the annual carrying costs of those residences higher, signaling social disapprobation and also encouraging aspirations to more carbon-friendly building and energy consumption postures—with the hope of making the purchase of excess homes, particularly extra-large ones, déclassé.

Other luxury items. Beyond the items discussed above, one could imagine numerous additional targets for a luxury emissions tax on select goods, including supercars and mega-SUVs (like the Mercedes G-Wagon), or high-end, emissions-intensive

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relief/ [https://perma.cc/G7V3-NZ32] (providing a homestead property tax credit of up to $375 per year).

316 *See* Jack Fleming, *L.A.'s Rich Are Already Scheming Ways to Avoid New 'Mansion Tax'*, L.A. TIMES (Dec. 15, 2022), https://www.latimes.com/california/story/2022-12-15/l-a-s-new-mansion-tax-scheme [https://perma.cc/3HVB-DMRF].

317 *New Single-Family Home Size Continues to Grow*, NAT'L ASS'N OF HOME BUILDERS BLOG (Mar. 3, 2022), https://www.nahb.org/blog/2022/03/new-single-family-home-size-continues-to-grow [https://perma.cc/6AJM-24WM]. Square-footage-based rates would not precisely track energy usage—but one could imagine granting reduced tax rates to large homes that could prove clean energy supply or enhanced energy efficiency measures.

animal products. These kinds of products are not themselves a significant source of carbon emissions. For example, one recent estimate pegged the number of supercars sold each year worldwide around 36,000, a tiny portion of the 74 million total cars sold annually.[318] And while supercar emissions are several times the emissions of standard gasoline powered cars, even if supercars were entirely curbed immediately, it would make essentially no dent in the 2050 carbon budget. However, shifting consumer preferences in passenger cars in the United States, where transportation emissions are expected to soar absent significant policy changes, is critical to carbon mitigation strategies over the next few decades.[319] Consequently, even if limited in total emissions' impacts, taxing mega-SUVs might play a role in stemming the tide of U.S. preference-shifting toward ever larger vehicles.[320]

To that end, we would encourage that a luxury emissions tax regime should be designed and branded with flexibility to add additional items that might influence non-luxury consumption habits more broadly. Building on the foundation of luxury emissions taxes on high-end air travel and yacht use, additional luxury emissions taxes might be introduced in other sectors in similar fashion.

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To reiterate, the carbon budget necessary to prevent climate change from accelerating beyond human control is just 380 to 1230 gigatons of greenhouse gas emissions.[321] Skeptics ask whether the targets contemplated here are of a scale that matters in light of the enormity of the challenge. While direct emissions reductions are not the singular goal of taxing luxury emissions, our rough calculations show that there is significant direct progress to be made from mitigation focused on luxury consumption, as summarized in Figure 2. These back-of-the-envelope calculations indicate that by targeting *only* certain consumption habits that predominantly affect *less* than 1% of

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318 Mark Vaughn, *Which Country has the Most Supercars?*, AUTOWEEK (May 31, 2021), https://www.autoweek.com/news/sports-cars/a36574028/country-with-most-supercars/# [perma.cc/A5LT-QJ3A].

319 *See* INT'L ENERGY AGENCY, WORLD ENERGY OUTLOOK 2022, at 146–47 (Oct. 2022), https://www.iea.org/reports/world-energy-outlook-2022 [perma.cc/26UL-NWR7]; *see also GHG Emissions*, INT'L COUNCIL ON CLEAN TRANSP., https://theicct.org/policies/ghg-emissions/[perma.cc/4HSZ-AGUV].

320 *E.g.*, Will Chase, Jared Whalen & Joann Muller, *Pickup Trucks: From Workhorse to Joyride*, AXIOS (Jan. 23, 2023), https://www.axios.com/ford-pickup-trucks-history [https://perma.cc/WPL2-KTUD].

321 *See supra* notes 106–11 and accompanying text.

the U.S. population, approximately 7.1% of the remaining carbon gap between current emissions and 1.5-degree compatible scenarios could be achieved. That is a substantial return on regulatory investment—even before one even considers potential global spread, social reverberations, and innovations that might result from such a regime and eventually induce more widespread reductions.

Figure 2: Emissions Reduction Potential of United States' Luxury Emissions Targets[322]

Category	Annual Emissions (megatons)	Passenger Car Equivalents (each year, in millions)	Emissions Through 2050 (gigatons)	% of 1.5 Degree GHG Budget (380 gigatons)
Private Jets	313.3	64.7	24.4	6.4%
Other Air Travel	89	6.2	2.3	0.6%
Super Yachts	10.7	2.0	0.9	0.1%
Extra Residences	*	*	*	*
Other	*	*	*	*
***Totals*:**	***413* megatons annually**	***72.9 million* passenger cars**	***27.6 gigatons* through 2050**	***7.1%* of carbon budget**

3. *Other Design Considerations*

Once we establish that a particular good or service should be subject to a luxury emissions tax, a host of familiar tax design and administration challenges arise regarding rates, incidence, compliance obligations, and enforcement strategies. In this section we propose an excise tax reporting regime modeled off of existing rules that combat tax evasion, to be attached to annual income tax filings for taxpayers engaging in luxury emissions activities.

One preliminary point: certainly, marketing and framing should be carefully considered and packaged with the introduction of any luxury emissions tax, so as to maximize its social impact. Ultimately the taxes targeting the luxury items

322 (*) indicates amounts we could not calculate. *See* accompanying notes 277–80 (private jets); 292 (air travel); 302 (super yachts).

discussed above or other luxury emissions consumption should be framed and promoted with an eye toward "evoking, cultivating, and empowering public-spirited motives" that transcend the luxury-non-luxury distinction in those sectors where such broader signaling is important.[323] We leave those elements of luxury emissions policy in more capable hands than those of law professors, but can imagine promoting something like posters at all airports that say, "Flying Fries the Planet. That's why all private flights from this airport are subject to a luxury emissions tax."

Turning to design fundamentals, on the question of rates, economists typically recommend lower tax rates so as to minimize behavioral distortions.[324] In the climate context, several scholars have thus suggested a focus on broad-based carbon taxes where all carbon emissions would be taxed at a consistent rate.[325] A widely discussed starting point for setting carbon tax rates is to base the tax on the "social cost of carbon" (SCC), which attempts to measure the total social costs—i.e., damages, associated with each additional ton of carbon emissions.[326] To be sure, the social cost of carbon is a highly subjective and values-based figure, dependent upon the discount rate one applies to future climate damages, the scope of damages that "count," and a host of other assumptions.[327] Nevertheless, many experts have called for greater use of the SCC across legal tools as a means of rationalizing climate policy and better incorporating climate considerations across government decision

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323 Bowles, *supra* note 162, at 1609.

324 *See generally,* Alan J. Auerbach & James R. Hines Jr., *Taxation and Economic Efficiency, in* 3 HANDBOOK OF PUBLIC ECONOMICS 1347–1421 (Alan J. Auerbach & Martin Feldstein eds., 2002), *supra* note 242.

325 *E.g.*, Gilbert E. Metcalf & David Weisbach, *The Design of a Carbon Tax*, 33 HARV. ENV'T L. REV. 499, 513–14 (proposing a broad carbon tax with no exemptions to minimize the rate necessary to internalize the social costs of carbon).

326 *See, e.g.*, *Carbon Pricing*, MIT CLIMATE PORTAL https://climate.mit.edu/explainers/carbon-pricing [https://perma.cc/8UJ5-W7W2] ("In theory, a carbon price should be equal to the 'social cost of carbon.'"). In practice, the SCC is presented as a range and it can be difficult to directly translate this into an appropriate taxation rate. *See* Noah Kaufman, Alexander R. Barron, Wojciech Krawczyk, Peter Marsters & Haewon McJeon, *A Near-Term to Net Zero Alternative to the Social Cost of Carbon for Setting Carbon Prices*, 10 NATURE CLIMATE CHANGE 1010, 1010 (2020). The SCC is also tied *not* to legal commitments but to damage functions—making it for some a questionable basis for setting tax levels as a means of achieving legal pledges. *See id.*

327 *See* Richard L. Revesz & Max Sarinsky, *The Social Cost of Greenhouse Gases: Legal, Economic, and Institutional Perspective*, 39 YALE J. REG. 856, 861–72 (2021) (detailing SCC methodologies and their changes across US Presidential administrations).

making.[328] Currently, the official Biden Administration figure for SCC stands around $51/ton. But the Administration is in the middle of a significant effort to revamp these estimations, with early proposals coming out of the Environmental Protection Agency suggesting that a revised figure may be as high as $190/ton.[329]

In the luxury emissions context, we believe there are good reasons to set tax rates significantly higher than the general SCC. As we have discussed, the justifications for a luxury emissions tax are not grounded in Pigouvian theory alone (which would counsel for matching the tax rate to the external costs the activity imposes).[330] Instead, this tax would also reflect elements of a sin tax and luxury tax. Because of the moral culpability of luxury emissions, taxes well above the externality costs of a ton of carbon emissions are justified as a matter of condemnation of particularly wasteful and harmful social practices.

Moreover, because of the affluence of these emitters, *only* very high tax rates will potentially have the desired deterrence effect. A marginal excise on fuel consumption—of the sort that might be imposed under a broad, SCC-based carbon pricing framework—might substantially deter, say, a middle-income American family from running the heat or air conditioning in their home for an extra few hours a day. But the same tax would barely register as a blip in the consumption expenditures of a Koch brother refueling his yacht—even at the higher $190 per ton SCC discussed above, an average superyacht emitting around 7,000 tons each year would produce just over $1.3 million of emissions-based tax revenue.[331]

Uneven impacts of policies across classes are a well-recognized problem in economic analysis, but the solutions are not obvious. Economists and environmental law scholars have considered the possibility of introducing equity weights to the SCC, which might help to confront this sort of issue by recognizing that harm imposed on poorer communities needs to receive policy emphasis (translated in the SCC into increased

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328 *See id.*

329 *See* U.S. E.P.A., EPA External Review Draft of Rep. on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances 3 (2022).

330 *See supra* notes 252–54 and accompanying text.

331 *See supra* notes 296, 329. While $1.3 million may sound like a lot, itis a small portion of the operating costs of a superyacht, estimated to be around 10% of the purchase cost annually, and a tiny fraction of the purchase cost—which can be in the many hundreds of millions of dollars. *See* Osnos, *supra* note 129.

monetized value) beyond the nominal amount of harm measured by willingness to pay and other metrics grounded in available resources.[332] In similar fashion to equity weights, deterring activities undertaken by people with extremely high willingness to pay, may *require* exceeding the actual SCC. From this perspective, there is distributional logic in applying that higher-than-average cost to a set of taxpayers who are particularly well-resourced and able to pay.

Exactly how luxury consumers will respond to very high tax rates remains an open empirical question. The unique nature of Veblen goods—for which demand increases as price increases, at least to a point—raises the possibility of counterintuitive reactions to policy interventions that affect prices. One possibility is that yachts and private jets and other positional goods are already at their maximally profitable prices. An efficient market framework suggests they should be, because sellers should drive the price ever higher as demand continues to increase. If prices are at the maximum demand level prior to the introduction of a luxury emissions tax, then any tax-induced price increase should be expected to decrease demand.

However, it is also possible that because prices for Veblen goods inflate without relation to their cost (i.e., prices are a result of the weird demand that results with Veblen goods, not really reflecting the costs of inputs), producers and sellers might simply absorb the tax cost and keep prices steady in order to continue to maximize profits.[333] That result assumes that sellers can adjust prices to accurately reflect additional tax costs, which would be challenging in any event and even moreso if the excise taxes are administered in connection with income tax filings (as explored below) rather than at the time of the transaction. If, however, the luxury tax does not reduce demand through the pricing mechanism, any reduction in demand would have to be based on the communicative moral element of the policy. Experience with the federal luxury tax in place in the 1990s and prior suggested some of this effect—with producers leaving prices flat with regard to

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332 *See* Zachary Liscow, *Is Efficiency Biased?*, 85 U. CHI. L. REV. 1649, 1652, 1656 (2018); *see also* Richard L. Revesz, *Regulation and Distribution*, 93 N.Y.U. L. REV. 1489, 1489 (2018).

333 *See* Laurie Simon Bagwell & B. Douglas Bernheim, *Veblen Effects in a Theory of Conspicuous Consumption*, 86 AM. ECON. REV. 350, 351 (1995) (explaining that because prices of Veblen goods are demand driven, very often "an excise tax on luxury brands amounts to a nondistortionary tax on pure profits").

high-end cars.[334] A third possibility is that some of these items are Veblen goods that are still on the upward slope of the demand curve, in which case price increases due to introduction of a tax will actually *increase* demand.[335] While we doubt this final scenario is widely the case, the very possibility underscores, again, the importance of communicating the moral justification for the tax.

Despite these uncertainties, our sense is that luxury emissions tax rates should be quite high to maximize social signaling, potential revenue generation, and actual behavior change. This approach finds support in the significant body of literature recommending very high tax rates on high-end consumption, grounded in the basic utilitarian insight that consumption has declining marginal utility.[336] Thus, given the profligate nature of luxury emissions, if the rich move away from taxed products and activities to lower-carbon alternatives, this is an efficient change in behavior from the perspective of parsimonious and welfare-enhancing use of the world's limited carbon budget—even as it induces limited changes in billionaires' welfare.[337] If, however, the ultra-wealthy do not change their behavior and instead pay the tax (or retailers pay it for them), revenue is maximized—and social media might judge them harshly for violating legally codified social mores.

Further, in the context of addressing climate change, there is an efficiency case to be made for altering the consumption habits of a relatively small group rather than a larger group. Top 1% households in the U.S.—from which most luxury emissions taxes would be gathered—make a much more administrable group of tax targets than the entire U.S. population, even as they capture a large percentage of the desired tax base. For example, the 13,500 private jets used in North America are on pace to emit the same amount of greenhouse gases each year as more than 64.7 million passenger cars.[338] From an efficiency perspective, it seems less disruptive to change the

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334 *See, e.g.*, *id.* at 352 (describing Rolls Royce offering to pay the substantial luxury tax in place at the time on behalf of its customers).

335 *See supra* notes 122–28 and accompanying text.

336 Joseph Bankman & Thomas Griffith, *Social Welfare and the Rate Structure: A New Look at Progressive Taxation*, 75 CALIF. L. REV. 1905, 1947 (1987).

337 *See* Frank, *supra* note 139, at 1785 (arguing that a high marginal tax rate on the wealthy is "justified not only on grounds of equity, but also on grounds of narrow economic efficiency"); *see also* Hsu, *supra* note 188, at 864 ("[C]arbon taxes are likely less distortionary than many other taxes, so that a carbon tax 'swap' could be economically efficient, *even without counting the climate benefits*.").

338 *See supra* notes 270–78 and accompanying text.

travel habits of a few tens of thousands rather than several tens of millions.

What exactly do we mean by high tax rates? Specific rates should be driven by empirical analysis beyond the scope of this Article, and we do not think it is particularly fruitful to suggest specific rates at the outset. Whatever rate is decided upon will be the product of political negotiations that reflect a jurisdiction's social context and goals with respect to emissions deterrence and revenue generation. But for the sake of providing some theoretical bounding, our discussion above suggests that the SCC might serve as a *lower* bound of a reasonable building block for luxury emissions tax rates, given the myriad justifications for focusing carbon taxation on this category of emitters.[339] We also want to emphasize that many of the goods and services that might be targeted by a luxury emissions tax are already subject to product-specific, administrable tax regimes that a luxury emissions tax could build upon.[340] For points of comparison, there is currently a broadly imposed 21.8 cent per gallon excise tax on jet fuel and an 18.3 cent per gallon tax on gasoline for cars, amounting to a tax rate of 2–8% for jet fuel and 5–15% for car fuel, depending on gas prices.[341] Property taxes on residences range from around 1% of market value to around 4%.[342] Any determination of the amount at which to tax luxury emissions might take these sector-specific baselines into account, along with considerations of price elasticity, anticipated substitution effects and avoidance techniques, and above all, political feasibility.[343]

Incidence—that is, understanding who bears the burden of the tax—is another important consideration in designing the

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339 *See supra* note 331 and accompanying text.

340 For example, import duties require precise parameters for how to categorize and measure different types of goods, resulting in thousands of pages of written guidance that prescribes how duties are to be imposed and on precisely what goods. *See* discussion *supra* note 241.

341 JOINT COMM. ON TAX'N, JCX-99-15, PRESENT LAW AND BACKGROUND INFORMATION ON FEDERAL EXCISE TAXES, at 12, 62 (July 13, 2015), https://www.jct.gov/publications/2015/jcx-99-15/.

342 However, note that property tax rates are particularly difficult to state clearly and consistently because rates are based on a market value, an assessed value, an assessment ratio, and, finally, a "millage" that is a portion of the product of the assessed value and assessment ratio. A 2% tax rate would amount to $11,000 in taxes on a $550,000 house, which is just above the median in the notoriously high-tax New York City suburb of Westchester. *Westchester County Property Tax Rate 2023*, TAX-RATES.ORG, http://www.tax-rates.org/new_york/westchester_county_property_tax [https://perma.cc/6JXH-ZXPQ].

343 *See* Slemrod & Yitzhaki, *supra* note 243, at 1428–29.

luxury emission tax regime. We briefly consider two aspects of incidence here: perceived incidence and real incidence. Perceived incidence—including messaging around potential effects of a tax—should be a political concern. The history of the federal luxury tax on yachts is instructive in this regard. In 1990, Congress enacted a 10% tax on the purchase of yachts.[344] It was met with stiff resistance from the yacht manufacturing and sales industry, which blamed the government for declining yacht purchases and accompanying job losses in the yacht building industry in the succeeding years.[345] In 1993, a generally progressive tax bill enacted largely by Democrats included a repeal of the yacht excise tax.[346] Subsequent analysis, however, showed that the luxury tax had little to do with decreasing yacht sales.[347] Still, the narrative of the luxury tax on yachts causing job losses had the desired effect in 1993. Aviation unions in Canada have raised similar objections with respect to that country's new luxury tax—though these concerns were not enough to stymie its adoption.[348]

Real incidence is a separate and complex consideration. The effect that a luxury emissions tax would have on employment in targeted sectors is far from certain. For example, to the extent that a luxury tax on private jets does, in fact, reduce the production and use of private jets, it will likely reduce jobs and incomes for people who build, service, and operate those jets. But that spending is likely to be channeled to other goods and services, thus opening up new low-carbon employment and creating a puzzle of worker transition.[349] To the extent that

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344 CILLUFFO, *supra* note 251, at 16.

345 *Id.*

346 The yacht tax was replaced in part by a 24.4 cent per gallon excise tax on diesel fuel used for recreational boating, but that provision was subsequently repealed out of administrability concerns as it required aquatic gas stations to distinguish between recreational and non-recreational customers. *See* JOINT COMM. ON TAX'N, JCS-23-97, GENERAL EXPLANATIONS OF TAX LEGIS. ENACTED IN 1997, at 110–11 (Dec. 17, 1997).

347 CILLUFFO, *supra* note 251, at 16.

348 *See* Steven Sitcoff, *Canada's Luxury Tax: Practical Challenges for the Aviation Industry*, MCMILLAN (Nov. 28, 2022), https://mcmillan.ca/insights/publications/canadas-luxury-tax-practical-challenges-for-the-aviation-industry/#:~:text=This%20law%20generally%20applies%20a,exemption%20applies%20under%20the%20law [https://perma.cc/3BSG-2NDH].

349 *See, e.g.*, INT'L ENERGY AGENCY, SKILLS DEVELOPMENT AND INCLUSIVITY FOR CLEAN ENERGY TRANSITIONS (Sept. 2022), https://www.iea.org/reports/skills-development-and-inclusivity-for-clean-energy-transitions [perma.cc/7XFV-6RJK] (surveying data and providing case studies on job declines in high carbon industries and transition opportunities to high-growth, low-carbon jobs). This is a familiar problem across climate change policies more broadly, and also in international trade.

the tax does *not* change behavior and, rather, raises revenue, that revenue could be used to facilitate climate-friendly transitions in targeted industries such as air travel—thus potentially *saving* jobs in the sector. Either way, there are policy tools available to help mitigate cross-class impacts of luxury taxes—and these tools should be deployed as appropriate, in response to actual observed impacts of relevant taxes.

A high rate for a luxury emissions tax provokes a concern that it will lead to avoidance activities that do not achieve that desired cost-internalization.[350] For example, if the United States imposed a high excise tax on fuel for superyachts, owners of superyachts might make a habit of refueling in Bermuda or a Caribbean Island rather than the mainland United States. In that case, the tax does not actually deter the targeted behavior—luxury yacht emissions might remain at approximately the same level—and the government does not raise any revenue. However, there is also the possibility of *good* avoidance behaviors: if an excise tax on yacht fuel prompts some would-be gas-yachters to redirect their boat consumption to carbon-free sailing, that would be a luxury emissions tax success. Avoidance considerations counsel for thoughtful up-front design based on the most difficult structural points of taxation to avoid (which, in the yacht context, might be a tax on any U.S. owners regardless of flag jurisdiction, as we suggested above).

Existing tax policy can guide the design of a luxury emissions tax, particularly in considering reporting and enforcement. The U.S. federal income tax is notoriously complex and incorporates many different enforcement strategies, and, for better or worse, tax avoidance by the well-resourced is a familiar problem in tax administration and enforcement.[351] There are some useful guideposts in existing tax law for how to construct an administrable and effective luxury emissions tax regime. One of the most successful strategies is third-party information reporting whereby some parties have compliance responsibilities that are distinct from remitting tax payments.[352] Existing

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See, e.g., Timothy Meyer, *Misaligned Lawmaking*, 73 VAND. L. REV. 151, 151 (2020) (describing political process challenges in pairing free trade agreements with effective trade adjustment assistance).

350 *Cf.* Weisbach & Kortum, *supra* note 247 (describing carbon taxes in one jurisdiction leading production activities to move somewhere else). *See generally*, Slemrod & Yitzhaki, *supra* note 243.

351 *See, e.g.*, Joshua D. Blank & Ari Glogower, *The Tax Information Gap at the Top*, 108 IOWA L. REV. 1597 (2023).

352 *See id.*; Joshua D. Blank & Ari Glogower, *Progressive Tax Procedure*, 96 N.Y.U. L. REV. 668, 680–83 (2021).

federal excise taxes that already impose reporting obligations for precisely defined behaviors and actions, often in connection with filing income tax returns, provide a good starting point.[353]

Along third party reporting generally, we find two particular enforcement regimes in the U.S. tax code to be of particular interest: the Foreign Bank Account Reporting (FBAR) regime,[354] and the Foreign Account Tax Compliance Act (FATCA).[355] Congress enacted the FBAR rules and FATCA in response to U.S. taxpayers' rampant use of foreign financial institutions to hide income from the IRS.[356] Each has aspects that could be very useful in administering and preventing leakage from a national or state level luxury emissions tax.

The FBAR regime requires each U.S. citizen or resident taxpayer to disclose any foreign bank accounts to the U.S. government.[357] The FBAR requirements are a simple addition to income tax reporting: each taxpayer is required to check a box on their annual Federal income tax return if they own any foreign bank accounts worth more than $10,000 each.[358] Any taxpayer who checks the box must follow up with a disclosure form that provides information about where the account is located and the value of the account.[359] Failure to report foreign assets in this manner results in significant penalties for each infraction.[360] The FATCA rules work in conjunction with the FBAR regime, but are focused on foreign banks that accept deposits from U.S. taxpayers, requiring that they collect and disclose back to the Treasury Department basic information about the account holders.[361]

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353 *See supra* note 252; *see, e.g.*, *supra* notes 254, 256.

354 31 U.S.C. §§ 5311–5335.

355 26 U.S.C. §§ 1471–1474.

356 *Cf.* Robert W. Wood, *FATCA's Perfect Storm for Offshore Accounts*, 87 N.Y. ST. B.J. 44, 44 (Mar./Apr. 2015) (describing the combined effects of the FATCA and FBAR regimes).

357 *Report of Foreign Bank and Financial Accounts (FBAR)*, INTERNAL REVENUE SERV. (July 5, 2023), https://www.irs.gov/businesses/small-businesses-self-employed/report-of-foreign-bank-and-financial-accounts-fbar [https://perma.cc/4UHF-Z3QM].

358 *Id.*

359 *Id.*

360 26 U.S.C. § 6038D(d); 31 U.S.C. § 5321(a) (imposing a penalty of at most $10,000 for failure to report an account). The Supreme Court recently interpreted the penalty provision to be capped at $10,000 per report for nonwillful failures to disclose, whereas willful failures to disclose can accrue penalties on a per account (rather than per report) basis, which has resulted in penalties in the millions of dollars for some taxpayers. Bittner v. United States, No. 21-1195 598 U.S. __ (2023).

361 Blank & Glogower, *supra* note 351, at 1619–22. U.S. citizens and residents owe U.S. income tax on their worldwide income, regardless of where it is earned.

In similar fashion, we can imagine a Luxury Emissions Activity Report (LEAR) could work like the FBAR, requiring each taxpayer to disclose on their annual income tax return if they have an interest in or made use of a yacht, private jet or extra residence, or tallying their commercial air travel. Failure to check the box despite falling into one of the required disclosure categories would give rise to steep penalties. A checked box would prompt further required disclosures that would allow the government to determine whether the taxpayer was paying appropriate luxury emissions taxes, based on metrics used to measure each different category of luxury emissions—yachts and private jets purchased and used, as measured by transactions and fuel consumption, for example. The LEAR system might be bolstered by a Foreign Luxury Emissions Compliance (FLEC) disclosure requirement for foreign seaports and airports to provide information about U.S.-owned craft.[362] While the U.S. does not have any direct jurisdiction over the foreign financial institutions subject to FATCA, it has been able to enforce the disclosures through a combination of tactics involving the threat of financial harm and treaty-like agreements entered into with foreign governments.[363] This approach further suggests the possibility of enacting a FLEC regime in conjunction with other countries enacting similar rules, and then jointly agreeing to impose necessary disclosures reciprocally.

Together, a LEAR and a FLEC regime could act as a backstop to taxpayers who might try to hide their luxury emissions activities in other jurisdictions. Getting this aspect of the scheme right will be important for expanding the political possibilities unlocked by luxury emissions tax revenues—a topic we take up in the next subsection.

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362 *Cf. id.* (emphasizing import of third-party reporting and describing administrative challenges with the information received by Treasury in connection with FATCA requirements).

363 The FATCA statute imposes on other financial institutions a requirement to remit to the U.S. government a withholding tax on any payments made to noncompliant financial institutions. *Id.* at 1620. So, for example, if a Swiss bank refused to comply with FATCA disclosures, the U.S. would require any U.S. bank that transferred money to that Swiss bank for any reason to withhold as a tax a certain percentage of the payment. *See* Itai Grinberg, *The Battle Over Taxing Offshore Accounts*, 60 UCLA L. REV. 304, 336–38 (2012). This was seen as a stick to induce countries to agree to multilateral treaties to waive the withholding tax and require financial institutions to provide the required information under domestic law. *Id.*

One final note. One aspect of instrument choice to be wary of is the potential for challenges under the U.S. Constitution.[364] Excise taxes have a lineage dating back to the founding era and are specifically authorized in Article I.[365] This authority allows the Federal government to impose a tax on activities or transactions.[366] However, taxes based on property values or assets held might run afoul of the "direct tax" clause, which requires apportionment of any direct taxes based on each state's population.[367] The contours of this apportionment limitation have been unclear and subject to divergent Supreme Court interpretations dating back to the late eighteenth century.[368] Recently, skeptics of various wealth tax proposals have made the case that a federal wealth tax could not pass muster without a constitutional amendment (similar to the Sixteenth Amendment that made clear the income tax does not require apportionment).[369] As long as the exact contours of Congress' taxing power remain undetermined, the outer bounds are vulnerable to Constitutional challenge.[370] Few such limitations apply at the state and local levels—taxation based on property

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364 We do not delve into potential state level constitutional limitations; in general, states are empowered to tax in whatever manner they see fit, with the exception of taxes that tax interstate commerce more heavily than intrastate commerce (e.g., preventing states from imposing import duties on goods from other states), and as long as the states do not impinge on the federal governments sole authority to impose import duties at the national border. *See* U.S. CONST. art. I, §. 8, cl. 3 (giving Congress the power to regulate commerce "among the several States"); *id.* § 9, cl. 5 (prohibiting state level export duties).

365 *Id.* § 8, cl. 1 ("The Congress shall have Power To lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States; but all Duties, Imposts and Excises shall be uniform throughout the United States; . . .")

366 Pollock v. Farmers' Loan & Trust Co., 157 U.S. 429, 687 (1895) (describing various taxes as excises if the tax constitutes "a charge for a privilege, or on the transaction of business, without any necessary reference to the amount of property belonging to those on whom the charge might fall").

367 U.S. CONST. art. I, § 9, cl. 4 ("No Capitation, or other direct, Tax shall be laid, unless in Proportion to the Census or Enumeration herein before directed to be taken."); *see* National Fed. Indep. Bus. v. Sebelius, 567 U.S. 519, 571–72 (2012) (explaining that a tax on inactivity—failing to procure health insurance—is not a "direct" tax under the Constitution and therefore can be imposed without apportionment but indicating that a tax on personal property is a direct tax).

368 *Compare* Hylton v. United States, 3 U.S. 171, 180 (1796) (holding that a tax on the value of carriages was not a direct tax) *with Pollock*, 157 U.S. at 685 (reinterpreting the Hylton court as determining that the carriage tax was allowable without apportionment because it was an excise on the "use" of carriages).

369 *See generally*, John R. Brooks & David Gamage, *Taxation and the Constitution, Reconsidered*, 76 TAX L. REV. 75 (describing, critically, these arguments).

370 *Id.* at 77 (describing the precarity of precedents that suggest a wealth tax need not be apportioned as a direct tax in light of the ideological profile of the

values (without any transaction) is a standard form of public finance sub-federally. So, while we have focused on an excise tax model that could work at the federal level, state and local policymakers have more flexibility to tax luxury emissions by way of property values or other proxies that might exist without a transaction occurring.

C. Promoting and Funding Low-Carbon Public Investments

A well-designed luxury emissions tax with appropriately high rates could bring in a sizeable amount of government revenue. These funds could be sent to the general treasury, be returned to individuals (either pro rata or redistributionally), be used to reduce or offset other tax burdens, or be spent for a dedicated set of purposes.[371] This final part lays out our vision for the best uses of this revenue, again with an eye toward political economy, moral, and social implications. We advocate for directing luxury emissions tax revenue towards investments that make a high-quality, low-carbon lifestyle accessible for all.

This position puts us at odds with the many economists who favor rendering carbon taxation progressive (or non-regressive) via other tax offsets or a "dividend" approach, which would return revenue to lower-income households in the form of a rebate check.[372] In part, our disagreement is political. Although numerous "cap-and-dividend" schemes have been proposed at the federal and state levels, none has gotten over the political finish line. As Gary Lucas has found, the "pain of paying" immediately biases people against carbon taxation,[373] and dividends do not appear to lower this pain as much as targeted investments do.[374] Further, people actually like environmen-

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current Supreme Court); *e.g.*, Moore v. U.S., 144 S. Ct. 1680 (2024) (challenging certain income tax rules that allow for taxation without a realization event).

371 *See* Hsu, *supra* note 188, at 870–71. Others have noted that climate change necessitates additional government revenue merely to maintain the status quo: "additional government spending accompanies both the bad impacts of climate change, such as from larger hurricanes, and the costs of adapting, trying to limit . . . the vulnerability to [climate change]." Peter Diamond, *Discussion of the Landscape*, *in* COMBATING INEQUALITY, *supra* note 5, at 35–36.

372 *See generally* DONALD B. MARRON & ADELE C. MORRIS, TAX POL'Y CTR., HOW SHOULD GOVERNMENTS USE REVENUE FROM CORRECTIVE TAXES? 10 (Jan. 2016), https://www.brookings.edu/wp-content/uploads/2016/07/How-Should-Governments-Use-Revenue-from-Corrective-Taxes-Marron-Morris-1.pdf [https://perma.cc/7QYC-HWFT].

373 Lucas, Jr., *supra* note 200, at 27–28.

374 European research suggests that earmarking carbon tax revenue for environmental purposes increases the public's support for the tax. *See, e.g.* Steffen Kallbekken & Håkon Sælen, *Public Acceptance for Environmental Taxes:*

tal taxes when they are used for environmental purposes—and the more clear and consistent the government is about those plans, the better.[375] Shi-Ling Hsu makes a similar observation, noting that opponents to carbon taxes have often successfully oriented their messages around the idea that carbon tax revenue would essentially "be gathered together as a pile of cash and burned."[376]

But our disagreement goes beyond the political, to touch on the more fundamental issue of what government is *for* when it comes to a collective problem as grave as climate change.[377] We have built our case for a luxury carbon tax on the premise that luxury carbon emissions are morally and politically distinguishable from other carbon emissions largely because of differing structural constraints: whereas luxury carbon can be cut back without major quality-of-life impacts,[378] most people cannot easily transition away from carbon today and meet their basic mobility, shelter, nutrition, or clothing needs.[379] Indeed, if what is holding people back from low-carbon lifestyles is a fossil-fuel-fired electricity grid, underinvestment in public transportation infrastructure, and as-of-yet unaffordable electric vehicles, then the necessary response involves structural changes, not everyday consumption choices.

Revenue recycling and carbon dividends are incapable of overcoming these structural barriers. Instead, what is needed is intelligent, targeted government spending on broad-based low-carbon, opportunity-equalizing infrastructure: large-scale

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Self-Interest, Environmental and Distributional Concerns, 39 ENERGY POL'Y 2966, 2972 (2011); Dresner, Dunne, Clinch & Beuermann, *supra* note 200, at 901 (finding that study participants were more concerned about how the government will use carbon tax revenue than about how effective the tax is at disincentivizing carbon use).

375 *See* Dresner, Dunne, Clinch & Beuermann, *supra* note 200, at 902; Andrea Baranzini & Stefano Carattini, *Effectiveness, Earmarking and Labeling: Testing the Acceptability of Carbon Taxes with Survey Data*, 19 ENV'T ECON. POL'Y STUD. 197, 214 (2017).

376 Hsu, *supra* note 188, at 862; *id.* at 871 ("[P]airing a carbon tax with 'green' spending has political attractions[.]").

377 Although economists are often skeptical of earmarking generally, there is some evidence that the practice may assist with sustaining tax regimes that impose concentrated costs, making them more politically appealing to widely dispersed beneficiaries. *See* Susan Camic Tahk, *Public Choice Theory and Earmarked Taxes*, 68 TAX L. REV. 755, 778–81 (2015) (assessing the staying power of earmarked taxes in states and arguing that earmarking can bolster taxes in the "entrepreneurial politics" quadrant of Wilson's public choice taxonomy).

378 Again, assuming diminishing marginal utility of consumption. *See supra* note 102 and accompanying text.

379 *See supra* notes 99–100, 112–13 and accompanying text.

and low-cost renewable energy; a transportation transformation in the U.S., including bullet trains, public transit, and bike lanes; the unsprawling of American communities; and a delicious and affordable low-carbon food supply.[380] These kinds of public investments not only reduce emissions while improving quality of life, but help to build stronger communities, governance, and democracies.[381]

Our inclination regarding the best use of luxury carbon tax revenue is starting to be tested in action at the state and federal levels. Several recently adopted aggressive climate action plans have included robust redistributive government climate spending.[382] For example, New York recently announced a strengthened and accelerated cap-and-trade program explicitly premised on the model of "cap-and-invest," in which the estimated $1 billion in annual revenue will be devoted in large part to helping disadvantaged communities invest in decarbonization and energy efficiency initiatives.[383] Funding will also be used "to launch new investment in industries intended to create tens of thousands of good paying, family-sustaining jobs of the future that can lift entire communities."[384] California's cap-and-trade program also devotes a dedicated portion of its funding to low-income communities as a means of garnering more support from environmental justice proponents.[385] Similarly, the Biden Administration has combined its unprecedented levels of public climate and infrastructure spending with what it calls the "Justice40" initiative, which pledges to direct 40% of

380 *See* Creutzig et al., *supra* note 23, at 534–37 (showing options for reducing consumption across these categories).

381 *Id.* at 524 ("Less waste, better emissions control and more effective carbon policies lead to better governance and stronger democracies.").

382 *See* CHANCEL, PIKETTY, SAEZ & ZUCMAN, *supra* note 19, at 131 (tracing examples of successful policies marrying climate and inequality objectives around the world).

383 Stephen Singer, *New York Gov. Hochul Outlines Climate, Energy Priorities with Cap-and-Invest Program*, UTILITYDIVE (Jan. 12, 2023), https://www.utilitydive.com/news/new-york-gov-hochul-outlines-climate-energy-priorities-with-cap-and-inves/640197/ [https://perma.cc/HU7F-2DBP].

384 Press Release, N.Y. State Energy Rsch. & Dev. Auth., Governor Hochul Unveils Cap-and-Invest Program to Reduce Greenhouse Gas Emissions and Combat Climate Change (Jan. 10, 2023), https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-1-10-Governor-Hochul-Unveils-Cap-and-Invest-Program [https://perma.cc/9F6P-YB67].

385 *See Cap-and-Trade Dollars at Work*, CAL. CLIMATE INVS. https://www.caclimateinvestments.ca.gov/ [https://perma.cc/AUZ4-K9QV].

the benefits of all public spending to historically disadvantaged communities.[386]

In all of these examples, strong government spending commitments towards remediating inequality, environmental injustices, and structural barriers helped mobilize political coalitions in favor of aggressive climate programs. A similar redistributive, community-building commitment could make luxury emissions taxes both a politically feasible and materially transformative policy option. One final observation: if luxury emissions taxes are to achieve widespread support and buy-in via broad-based social spending, then it is not enough just to *use* tax revenue for these purposes. It must also be communicated that *these* taxes funded *this* infrastructure. As a model, implementers might look to Vienna, Austria's path-breaking public funding of middle-income housing complexes, which bear plaques on their facades announcing "Built by the municipality of Vienna in the years 1925–1926 from funds from the housing tax."[387] Imagine it, in a decade: an interwoven network of high-speed bullet trains connecting much of the country, each of which proclaims on its carriage sides, "Built by the United States Government from funds derived from a tax on luxury private jet usage."

CONCLUSION

It is time to stop approaching the urgent challenge of reducing carbon emissions as though any carbon pricing regime must apply equally to everyone and everything. As we have argued, there are strong reasons for differentially applying a carbon tax to luxury carbon emissions. Moral considerations, social dynamics, and political economy all counsel for a carbon tax focused on the outsized consumption of the rich. This tax alone will not solve climate change or inequality, but it would nevertheless represent an important advance in theories, discussions, and policy approaches to the challenges.

To be sure, this type of tax is unprecedented—in large part because the interrelationship between climate change and high-end inequality is just starting to gain scholarly and popular attention. Nevertheless, we believe such a policy might

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386 *Justice40: A Whole-of-Government Initiative*, WHITE HOUSE, https://www.whitehouse.gov/environmentaljustice/justice40/ [https://perma.cc/Y56W-3G9Q].

387 *See* Francesca Mari, *Imagine a Renters' Utopia*, N.Y. TIMES (May 23, 2023) https://www.nytimes.com/2023/05/23/magazine/vienna-social-housing.html [https://perma.cc/TLH4-LKX4].

have traction in the current political climate, as it would fuse coalitions concerned about inequality with those focused on climate change and would activate a class politics in climate change policy that has too long been dormant.[388] Now all that is needed is a bold jurisdiction to test these hypotheses and begin a potential cascade of shifting norms and behaviors.

Andrew Carnegie once stated, "Capitalism is about turning luxuries into necessities."[389] Although this theory has been a potent source of profits, its application has also done much to drive the planet to the brink of catastrophe. Climate change now provides a compelling and urgent reason to regulate such superfluity by turning high-emitting luxuries into objects of contempt, while using resulting revenues to help chart a broader course out of the climate emergency.

388 *Cf.* HUBER, *supra* note 35, at 194–208 (on class politics). To be clear, though, we doubt Huber would condone our consumption-based proposal. *See supra* Section III.C.

389 MARK SKOUSEN, THE MAKING OF MODERN ECONOMICS: THE LIVES AND IDEAS OF GREAT THINKERS 58 (2d ed. 2015).