

# In-Country Disparities in Greenhouse Gas Emissions and Their Significance for Politicizing a Future Global Climate Pact

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*Mainstream thought on environmental justice emphasizes disparities between populations in terms of their exposure to environmental risks. Climate change has recently shifted attention from vulnerability to responsibility, with much of the research and dissemination of results accentuating differential contributions on the part of various groups to CO<sub>2</sub> emissions and their accumulation in the atmosphere. But efforts to monitor, mitigate and adapt to climate change are largely premised on sovereign states as the main units of analysis, and on comparisons between them as the primary tool for designing policy. This approach, which reifies climate change as a technical, distant and detached issue, arrests the long overdue politicization of the atmosphere. This Article, which uses data from Israel on differentiated levels of CO<sub>2</sub> emissions by income decile, suggests that hitherto overlooked in-country disparities in CO<sub>2</sub> emissions are an integral part of the problem and of potential ways to tackle it. Offering a critique of attempts to use distributive justice as a basis for a global climate pact, it calls for further in-country analysis of emissions and a better understanding of how the outcomes of those attempts might become relevant to more people globally. Such insights, it argues, are essential for climate policies to become politicized and thus gain prominence and urgency in political debates, campaigns, and eventually on the executive agenda of all levels of government.*

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## INTRODUCTION

Climate change is a realm shaped by and determinant of major social, economic and political inequalities.<sup>1</sup> Environmental justice, a discipline traditionally concerned with uneven *exposure* to environmental harms,<sup>2</sup> is now increasingly preoccupied with uneven *responsibility* for these harms in the first place.<sup>3</sup>

Current efforts on the part of the international community to better understand the root causes of climate change, to mitigate it by reducing greenhouse gas (GHG) emissions, and to devise strategies for adaptation to its dangerous effects are premised on sovereign states as agents. The United Nations Framework Convention on Climate Change (UNFCCC),<sup>4</sup> the Conferences of its Parties (COP), its subsidiary bodies and their various working groups are all governed by representatives of sovereign states. Accordingly, data on GHG emissions is collected, organized, reported and compared by country. Regional and interest-based climate-related coalitions of states define the arenas where potential progress is being negotiated, and so on.

This emphasis on countries as primary climate agents and the relationships between them as the main theater of climate action has consolidated climate as a rather technical realm. Unlike intra-state politics, where differences and inequality are directly attributable to policies and decisions devised by humans, climate is a sphere whose scale, complexity and obvious interface with nature mitigate politicization.<sup>5</sup> The state-by-state prism adopted to analyze emissions

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1 SUSAN A. CRATE & MARK NUTTALL, *ANTHROPOLOGY AND CLIMATE CHANGE: FROM ENCOUNTERS TO ACTIONS* (2008); J. TIMMONS-ROBERTS & BRADLEY C. PARKS, *A CLIMATE OF INJUSTICE* (2006); DARKENING PEAKS: GLACIER RETREAT, SCIENCE AND SOCIETY (Ben Orlove, Ellen Wiegandt & Brian Luckman eds., 2008); Meril Singer, *Beyond Global Warming: Interacting Ecocrises and the Critical Anthropology of Health*, 82 *ANTHROPOLOGICAL Q.* 795 (2009).

2 ROBERT D. BULLARD, *UNEQUAL PROTECTION: ENVIRONMENTAL JUSTICE AND COMMUNITIES OF COLOR* (1994); LUKE COLE & SHEILA R. FOSTER, *FROM THE GROUND UP: ENVIRONMENTAL RACISM AND THE RISE OF THE ENVIRONMENTAL JUSTICE MOVEMENT*; EDUARDO LAO RHODES, *ENVIRONMENTAL JUSTICE IN AMERICA* (2003); DAVID SCHLOSBERG, *DEFINING ENVIRONMENTAL JUSTICE: THEORIES, MOVEMENTS, AND NATURE* (2007).

3 KRISTIN SHRADER-FRECHETTE, *ENVIRONMENTAL JUSTICE: CREATING EQUALITY, RECLAIMING DEMOCRACY* (2005); SCHLOSBERG, *supra* note 2.

4 United Nations Framework Convention on Climate Change, May 9, 1992, S. TREATY DOC. NO. 102-38, 1771 U.N.T.S. 107, available at <http://unfccc.int/resource/docs/convkp/conveng.pdf> [hereinafter UNFCCC].

5 On the politicization of climate see Liisa Antilla, *Climate of Scepticism: Us Newspaper Coverage of The Science of Climate Change*, 15 *GLOBAL ENVTL.*

also sidelined intra-state disparities in GHG emissions, for example between groups of different socioeconomic status, ethnic origins, gender, or location on the urban-rural axis — an important aspect of climate change which deserves more scholarly and public attention than it so far has received.

Some researchers have been interested in the implications potential climate policies might have for different populations since the early 2000s<sup>6</sup> — a debate which grew significantly with the passing in the U.S. Congress in 2009 of the American Clean Energy and Security Act, and the subsequent attempt to have a similar bill (*The Clean Energy Jobs and American Power Act*) passed by the Senate.<sup>7</sup> The main participants in the debate so far have been lawyers and economists. Emphasis is mainly on the putative effects that projected

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CHANGE 338 (2005); Darren Samuelsohn, *Kerry-Lieberman Climate Bill Would Prompt Decade of Job Growth*, N.Y. TIMES, May 20, 2010, <http://www.nytimes.com/gwire/2010/05/20/20greenwire-study-kerry-lieberman-climate-bill-would-promp-31963.html?pagewanted=all>.

- 6 SERGAY PALTSEV, JOHN M. REILLY, GILBERT E. METCALF & SEBASTIAN RAUSCH, DISTRIBUTIONAL IMPACTS OF A U.S. GREENHOUSE GAS POLICY: A GENERAL EQUILIBRIUM ANALYSIS OF CARBON PRICING (2009); Antonio M. Bento, Lawrence Goulder, Mark Jacobsen & Roger H. Von Haefen, *Distributional and Efficiency Impacts of Increased US Gasoline Taxes*, 99 AM. ECON. REV. 667 (2009); Dallas Butraw, Margaret Walls & Joshua Blonz, *Distributional Impacts of Carbon Pricing Policies in the Electricity Sector*, in U.S ENERGY TAX POLICY 8 (Gilbert E. Metcalf ed., 2009); Terry Dinan & Dian Lim Rogers, *Distributional Effects of Carbon Allowances Trading: How Government Decisions Determine Winners and Losers*, 55 NAT'L TAX J. 199 (2002); Ian W.H. Parry, *Are Emission Permits Regressive?*, 47 J. ENVTL. ECON. & MGMT. 364 (2004); Dallas Butraw, Richard Sweeney & Margaret Walls, *The Incidence of US Climate Policy: Alternative Uses of Revenues from a Cap and Trade Auction* (Resources for the Future, Working Paper No. 09-17-REV, 2009); Corbett A. Grainger & Charles D. Kostland, *Who Pays a Price for Carbon?* (Nat'l Bureau of Econ. Res., Working Paper No. 15239, 2009); Gilbert E. Metcalf, *A Proposal for a US Carbon Tax Swap: An Equitable Tax Reform to Address Global Climate Change* (The Hamilton Project, Brookings Instit., Discussion Paper No. 12-2007, 2007); Sebastian Rausch, Gilbert E. Metcalf, John M. Reilly & Sergey Paltsev, *Distributional Implications of Alternative U.S. Greenhouse Gas Control Measures* (Nat'l Bureau of Econ. Res., Working Paper No. 16053, 2010), available at <http://www.nber.org/papers/w16053>.
- 7 The American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (2009) was approved by the House of Representatives on June 26, 2009 by a vote of 219-212. A complementing legislation known as The Clean Energy Jobs and American Power Act of 2009, S. 1733, 111th Cong. (2009) was introduced to the U.S. Senate on September 30, 2009, but was defeated.

emissions-cutting schemes, complete with cap-and-trade arrangements, allowances, quotas, taxation tools and more, might have for U.S. households across regions and socioeconomic strata. Examining household income structures, sensitivity to tax impositions, relative significance of tax rebates, types of energy supply, proportion of overall expenditure dedicated to energy, dependency on welfare transfers and other factors, researchers try to assess the impacts various schemes might have per dollar earned, per dollar spent on energy, and in relation to the overall financial standing of the household. Some work has been preoccupied with issues of economic efficiency, which are of lesser interest in the present context. The other question raised in this literature, namely the extent to which GHG mitigation schemes could be progressive, is much more relevant for me here.

Answers to the progressiveness riddle are, of course, context-related. They tend to vary across types of GHG emissions mitigation schemes, regions, income levels and household earning structures, to name but a few of the relevant factors. As a general rule, however, focusing solely on amounts of energy consumed and the financial consequences that potential schemes may carry paints a picture which is incomplete. It must be complemented with an account of differences between groups in terms of GHG intensity per energy consumed. We know that households belonging to different income brackets consume differently, and that such differences are often associated with gaps in energy intensity. But are differences in GHG emission levels proportional to gaps in levels of consumption and in energy intensity? Or do consumption gaps involve steeper (or gentler) gaps in GHG intensity?

The first Part of this Article critiques the overreliance within the climate debate on countries as composite entities. It argues that whether the international climate process gravitates towards a “political” agreement (one which relies primarily on the goodwill of countries to adhere to their own pledges and which involves periodic negotiations between countries in an attempt to keep the agreement going), or a “legally binding” one regulated by technical protocols and predetermined sets of sanctions and incentives, in-country inequalities in responsibility for and vulnerability to climate change must not be ignored. To demonstrate this, Part II recaps recent findings from Israel on gaps in GHG emissions between households by income decile.<sup>8</sup> Citing the mainstream view on in-country distributive justice, it predicts that as more evidence accumulates on climate inequalities, climate policies and their potential implications for ordinary people will become more integrated into local politics. This will in turn force national and municipal politicians to

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8 Part II draws on Dan Rabinowitz, *Climate Injustice: CO<sub>2</sub> from Domestic Electricity Consumption and Private Car Use by Income Decile*, 5 ENVTL. JUST. 38 (2012).

forge more coherent climate policies and become more constructive in the global effort for a binding climate pact. Part III is a critique of the attempt to use distributive justice as a design tool for a global climate pact, and a call for further in-country analysis of emissions to be performed elsewhere. Such analyses, it argues, are essential for climate policies to become politicized and thus gain prominence and urgency in debates, campaigns, and eventually at executive levels.

### I. OVERRELIANCE ON COUNTRY BY COUNTRY COMPARISON OF CO<sub>2</sub> EMISSIONS

The view that climate change is essentially a global commons problem, and that any jurisdiction reducing GHG emissions — country, province, city, etc. — incurs the costs of its own actions, while the benefits of averted climate change are distributed globally, has become commonplace. Robert Stavins of the Harvard Project on Climate Agreements has recently drawn a connection between this aspect of the problem and the essential need for *international*, if not global, cooperation. It is the free-rider facet of climate change, he claims, that requires that “the *highest levels* of effective government, i.e. sovereign states and nations, should be involved.”<sup>9</sup>

Positioning sovereign states at the forefront of the struggle to save the atmosphere, and portraying them in the process as analogous to individual actors operating in a commons situation, is a clear reflection of the realist approach to international relations. Assuming that each sovereign state will behave internationally along the same lines as an individual exercising rational choice in his or her social and economic relations with others, this approach will expect individual countries to perceive the international arena as being comprised primarily of other countries, and to pragmatically respond to economic, political and military power as the main drivers of international relations. This perspective to a large degree underwrites the mechanisms developed since World War II for the management of international affairs. The United Nations, very much the driving force behind the current effort to reach global accord on climate, is first and foremost an amalgam of sovereign states. Likewise, the institutions put in place to enhance action on climate, which include, *inter alia*, UNFCCC, the Conference of its Parties (COP), its

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9 Robert N. Stavins, *Beyond Kyoto: An Economic Perspective on Climate Change Policy*, Speech at the Institute of International and European Affairs (Sept. 16, 2011), available at <http://belfercenter.ksg.harvard.edu/files/stavins-presentation-on-beyond-kyoto-for-dublin.pdf>.

scientific, monitoring and compliance subsidiary bodies and their various work groups, are all governed by formal representatives of national administrations. The increasingly detailed, nuanced and sophisticated sets of data on GHG emissions which these institutions demand and use for policy assessments are likewise generated, organized and reported by individual countries. Geared to enabling easy comparison between countries, they further buttress the state as the main unit of analysis.

Treating the state as an inherent, natural unit has been a bastion of modern social sciences since their emergence in the nineteenth century,<sup>10</sup> but one which nevertheless has not been particularly effective for the climate process. Recurrent failures of the Conferences of the Parties of the UNFCCC to prolong — let alone strengthen — the Kyoto Protocol,<sup>11</sup> the most significant achievement of the UNFCCC to date, clearly illustrates the weakness of a global top-down process premised on the compliance of individual states, and the limitations of efforts circumscribed by such contours.

Daniel Bodansky has recently suggested that a shift is imminent, perhaps inevitable, from an attempt to reach agreement on a legally binding climate document such as the Kyoto Protocol to an effort designed to bring about political concurrence, i.e., a much more loosely binding, open-ended agreement.<sup>12</sup> This trend was evident in the outcomes of the fifteenth Conference of the Parties in Copenhagen in 2009.<sup>13</sup> There, faced with an imminent failure, in full view of a global audience, to conclude a binding legal document, the conference, with over fifty national leaders and heads of states (including those of the United States, China, Germany, Brazil, India, United Kingdom, France, Australia and South Africa), made a last-ditch attempt to save face and maintain hope through a text known internationally as the Copenhagen Accord.<sup>14</sup> The result was a procedurally weak, heuristic, circumstance-related

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10 ERIC R. WOLF, *EUROPE AND THE PEOPLES WITHOUT HISTORY* (1st ed. 1982).

11 Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 2303 U.N.T.S. 162, available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf> [hereinafter Kyoto Protocol].

12 Daniel Bodansky, *W[h]ither the Kyoto Protocol? Durban and Beyond* (Harv. Project on Climate Agreements, Belfer Ctr. for Sci. & Int'l Affairs, Harv. Kennedy Sch., Policy Brief, 2011).

13 See Press Release, UNFCCC Publishes Reports Summing Up Results of 2009 UN Climate Change Conference in Copenhagen (Mar. 31, 2010), available at [http://unfccc.int/files/press/news\\_room/press\\_releases\\_and\\_advisories/application/pdf/20100331\\_pr\\_cop\\_report\\_v2.pdf](http://unfccc.int/files/press/news_room/press_releases_and_advisories/application/pdf/20100331_pr_cop_report_v2.pdf).

14 Report of the Conference of the Parties on Its Fifteenth Session, Addendum, Part Two: Action Taken by the Conference of the Parties at Its Fifteenth Session,

formulation with limited consequence in terms of practical commitment of the signatories.

The results of the seventeenth Conference of the Parties to the UNFCCC in Durban in late 2011 were inconclusive. The stated goal of reaching a legally binding agreement by 2015 suggests a will to move away from a “political,” bottom-up arrangement whereby countries set their own emissions reduction commitments, timetables, compliance tests and financial contributions to global adaptation efforts. But the formidable obstacles along the path to 2015 make outcomes uncertain.<sup>15</sup> For the foreseeable future, it looks as though the scene will be defined by oscillation between “political” models and “legally binding” ones, and perhaps by attempts to enhance various combinations of the two.

An important aspect of a “political” trajectory is that if it prevails, commitments made by individual countries will be contingent on permanent commitment and determination on the part of many future governments. Targets and commitments, in other words, will become more sensitive to interests and pressures from actors with influence on local politics. Such actors could come from within a country or from the outside, e.g., multinational corporations with stakes in the local economy, etc.

Legally binding international treaties and agreements, by contrast, have a less strained interface with local politics. Arduous to conclude and difficult to achieve and implement, such technocratic frameworks often remain remote from local audiences, and tend to be perceived as detached from the burning political issues of the day. As a result, they are seldom treated as emotive issues in the local theaters of political action, and very rarely challenged in this context.

This detachment is partly explained by a widespread perception of the state in its capacity as representative of the nation in international fora as an idealized, composite entity, managed homogeneously by a professional bureaucracy. Personifying rationality, even-handedness and loyalty, national delegates are often idealized as disinterested, benevolent brokers, diligently enhancing technical agreements that would best serve current as well as future generations of the people. Their dispositions and their courses of action are thus assumed to exist outside the spheres of action, interest and influence of politicians.

This idealized popular construction of what goes on between bureaucratic delegates in formal international fora, combined with the technical nature of

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*Decision 2/CP.15: Copenhagen Accord*, U.N. Doc. FCCC/CP/2009/11/Add.1 (Mar. 30, 2010).

15 See, e.g., Lavanya Rajamani, *Differentiation in the Emerging Climate Regime*, 14 THEORETICAL INQUIRIES L. 151 (2013).

the issues discussed in climate talks, produces popular disinterest, perhaps indifference. People are not inclined to join mass rallies or picket lines to demonstrate for or against their country's vote in multilateral negotiations on future emission quotas, to push for dates for peak emissions, or to voice their views about their country's contribution to a global adaptation effort. Hoping their assumptions about the benevolence of technocratic delegates are indeed correct, most people seem to give up on the chance to follow closely (and understand) climate negotiations. Even those who make an effort to stay in touch with the debate tend to have difficulties in explaining how the outcomes might be relevant to their lives or to that of their community.<sup>16</sup> This may be paradoxical, given the fact that the process may produce decisions and policies that could influence the chances of billions to maintain their current way of life. But on the whole, the willingness to let negotiators do their thing and represent national interests as best they can tends to remain robust.

Barring the inhabitants of low-lying oceanic islands, who can tangibly imagine their homelands being submerged by rising sea levels, most people thus do not have strong feelings about the effect that climate change might have on their future. They may suspect that the rich and well-connected stand a better chance to survive and perhaps even flourish as food and water become scarcer, as sea levels rise, and as hurricanes and epidemics become more frequent and severe. But the future, particularly when it involves systemic transformations, remains inherently unclear. The disjoint between predictions of what might or might not befall one's unborn grandchildren and the action one chooses to take today in an attempt to influence a political debate that comes across as technical remains unshaken.

There is a difference here between the past, present and future. As often happens in issues that become politicized, assigning blame, responsibility, entitlement and obligation gets crystallized more easily by fresh realizations about history, which can in turn be understood as having consequences for the present and the future. If A is seen as having benefited from a practice B believes has had a negative impact on him, B's perspectives on the present situation and the future are likely to be charged.

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16 An obvious exception here would be communities where climate change is already understood as a key to future survival, such as small island states.



## II. IN-COUNTRY CLIMATE INEQUALITY: EMPIRICAL EVIDENCE FROM ISRAEL

Let me now turn to an angle of the climate crisis that hitherto has received less than its share of scholarly attention: inequality between populations *within countries* in terms of GHG emissions. A recent study of CO<sub>2</sub> emissions in Israel looked at domestic electricity consumption (DEC) and private vehicle use (PVU) by income decile.<sup>17</sup> Electricity generation is responsible for 54.3% of the country's total GHG emissions, while vehicle combustion engines add another 20.4%.<sup>18</sup> The two sectors together thus account for a considerable proportion of GHG emissions in the country as a whole, so analyzing them becomes intriguing.

Combining figures published by Israel's Electricity Company's (IEC) for average annual electricity consumption per household by income decile<sup>19</sup> with data on the average numbers of persons per household in each decile, annual per capita emissions incurred by domestic electricity consumption were calculated for each income decile. Comparison between the deciles was expressed in terms of a *Carbon Inequality Index (CaII: emissions from DEC)*.<sup>20</sup>

Significantly, as shown in Table 1, values calculated for the top decile indicate that an individual living in a household belonging to that decile is responsible for CO<sub>2</sub> emissions (from DEC) approximately 24.2 times higher than emissions attributable to individuals residing in a household belonging to the bottom income decile. Figures for the eight deciles in between the top and bottom deciles predictably display a similar tendency. Individuals in households belonging to the ninth decile are responsible for the emission of 2.3 times more CO<sub>2</sub> than individuals belonging to households in the bottom income decile. This ratio then gradually grows as we climb the decile ladder, with individuals in households belonging to the second decile being responsible for 12.85 times more emissions than those attributable to individuals belonging to households in the bottom income decile.

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17 Rabinowitz, *supra* note 8.

18 The figure is the sum of the emissions accounted for in ISR. CENT. BUREAU OF STATISTICS, STATISTICAL ABSTRACT OF ISRAEL 2009, at 935 tbl. 27.6 (2010) (Isr.).

19 ISR. ELEC. CO. (IEC), STATISTICAL REPORT FOR THE YEAR 2009, at 30 (2010) (Isr.).

20 The *CaII: emissions from DEC* takes the average CO<sub>2</sub> annual emissions of individuals in the bottom income decile as standard (value = 1), and calculates the ratios between this figure and the average annual per capita emissions typical of every other income decile.

**Table 1: Carbon Inequality Index — Per Capita Emissions of CO<sub>2</sub> from Domestic Electricity Consumption by Income Decile, Israel 2009**

Decile	Annual Kw/h consumed per household <sup>21</sup>	Number of persons per household <sup>22</sup>	Kw/h per capita	CO <sub>2</sub> emissions from DEC (Kg, CO <sub>2</sub> per Kw/h) <sup>23</sup>	Annual per capita CO <sub>2</sub> emissions (Kg)	Carbon Inequality Index (DEC) <sup>24</sup>
Top (1)	19,687	2.7	7,291	0.707	5,154	24.20
Bottom (10)	1,564	5.2	301	0.707	213	1.00

Next, the *CAII: emissions from DEC* index was used to calculate the degree to which carbon inequality works as a multiplier of consumer inequality. To achieve this, the *CAII: emissions from DEC* was divided by the *Inequality Index in Consumer Spending* — the per capita spending (in NIS) in each income decile divided by per capita spending in the bottom income decile. The ratio between the indices expresses the extent to which *CAII: emissions from DEC* serves as multiplier of consumer inequality. The figure calculated suggests that while individuals living in households belonging to the upper decile spend 6.2 times more than individuals in households belonging to the lowest income decile, their twenty-fourfold CO<sub>2</sub> emissions (from DEC) serves as a multiplier of consumer inequality by a factor of almost four, as shown in Table 2.<sup>25</sup>

**Table 2: Carbon Inequality (Per Capita Emissions from DEC) as a Multiplier of Consumption Inequality by Income Decile, Israel 2009**

Decile	Carbon Inequality Index (DEC) <sup>26</sup>	Total spending per household (NIS) <sup>27</sup>	Persons per household <sup>28</sup>	Spending per capita (NIS)	Consumer Inequality Index <sup>29</sup>	Carbon Inequality (DEC) as a multiplier of consumer inequality
Top (1)	24.20	21,130	2.7	7,825	6.20	3.90
Bottom (10)	1	6,560	5.2	1,262	1	1

21 IEC, *supra* note 19, at 30 tbl. 44.

22 ISR. CENT. BUREAU OF STATISTICS, *supra* note 18, at 297 tbl. 5.32.

23 ISR. ELEC. CO., 2009 ENVIRONMENTAL REPORT 7 (2010).

24 The ratio of CO<sub>2</sub> emissions per capita (DEC) in the top decile to CO<sub>2</sub> emissions per capita in the bottom decile.

25 For figures for all deciles, see Rabinowitz, *supra* note 8, at 41.

A similar, though somewhat more complicated calculation was then performed for CO<sub>2</sub> emissions from use of private vehicles (PVU). Having established, for each decile, variables including vehicles per household, people per household, average engine size of vehicle, average age of vehicle and average mileage travelled per annum, the figures were combined to yield a *Carbon Inequality Index (CaII: emissions from PVU)*. As with emissions from domestic electricity consumption, the annual per capita emission of individuals in households of the bottom income decile was taken as the standard (value = 1), to be compared with average annual per capita emissions of individuals in every other income decile. A similar picture emerged as in the case of domestic electricity consumption: the *CaII: emissions from PVU* figure calculated for the top income decile suggests, as shown in Table 3, that an individual living in a household belonging to that decile is responsible for CO<sub>2</sub> emissions (from PVU) approximately twenty-seven times higher than emissions attributable to individuals residing in a household belonging to the bottom income decile.<sup>30</sup>

**Table 3: Carbon Inequality Index — Per Capita Emissions of CO<sub>2</sub> from Private Vehicle Use (CAII: Emissions from PVU) by Income Decile, Israel 2008.**

Decile	Cars per household <sup>31</sup>	Persons per household	Cars per capita	Km. traveled per year <sup>32</sup>	Emission (Kg CO <sub>2</sub> per Km) <sup>33</sup>	Kg. CO <sub>2</sub> per car p.a.	Kg. CO <sub>2</sub> per capita p.a.	Carbon Inequality Index <sup>34</sup>
Top (1)	1.84	2.7	0.68	20,875	0.192	3,989	2,718	27.2
Bottom (10)	0.22	5.2	0.04	12,525	0.200	2,505	100	1

As with emissions stemming from domestic electricity consumption, the *CaII: emissions from PVU* was then divided by the same *Inequality Index in Consumer Spending*. As shown in Table 4, the outcome suggests that when it

26 See *supra* Table 1.

27 ISR. CENT. BUREAU OF STATISTICS, *supra* note 18, at 288 tbl. 5.27.

28 *Id.* at 297 tbl. 5.32

29 Ratio between per capita spend (NIS) in the top decile and per capita spend in the bottom deciles.

30 For figures for all deciles, see Rabinowitz, *supra* note 8, at 42.

31 Adapted from ISR. CENT. BUREAU OF STATISTICS, *supra* note 18, at 297 tbl. 5.32.

32 *Id.*

33 For details on methodology for calculation see Rabinowitz, *supra* note 8.

34 Ratio of CO<sub>2</sub> emissions (PVU) per capita in top income decile to the CO<sub>2</sub> emissions (PVU) per capita in the bottom income decile.

comes to PVU, CO<sub>2</sub> emissions serve as a multiplier of consumer inequality by a factor of 4.39.<sup>35</sup>

**Table 4: Carbon Inequality (Per Capita Emissions from PVU) as a Multiplier of Consumption Inequality by Income Decile, Israel 2009**

Decile	Carbon Inequality Index (PCU) <sup>36</sup>	Total household Spending (NIS) <sup>37</sup>	Persons per household <sup>38</sup>	Spending per capita (NIS)	Spending inequality index	Carbon inequality (PVU) as a multiplier of Spending inequality
Top (1)	27.2	21,130	2.7	7,825	6.20	4.39
Bottom (10)	1	6,560	5.2	1,262	1	1

Economic disparities in Israel have grown considerably in recent years, placing the country unflatteringly near the top of OECD countries in terms of standard measures of inequality. This is abundantly clear in the inequality index of consumer spending mentioned above, and undoubtedly influences my *Carbon Inequality Indexes* (both *DEC* and *PVU*). But even if Israel presents an extreme case, there is no reason to assume that the principle established by this study, namely that CO<sub>2</sub> emissions serve as a multiplier of already existing unrelated inequalities, is unique to Israel. The same differential, with its far reaching moral, political and practical implications for assigning responsibility and administering change, can plausibly be assumed to apply in most other countries.

Additional analyses are, of course, required that would cover more nuanced types of lifestyles and consumption patterns, and diverse populations. I am currently looking at lifecycle analysis of CO<sub>2</sub> emissions stemming from food consumed and solid waste produced by income decile, and have plans to look more closely at disparities within deciles. The top and bottom deciles, for example, are internally uneven, with gaps between percentiles often being significantly more dramatic than aggregate disparities between adjacent deciles. Subsequent research will hopefully cover more population cleavages, including ethnic origin, periphery vs. metropolis, various settlement types, gender, and more.

35 For figures for all deciles, see Rabinowitz, *supra* note 8, at 44.

36 See *supra* Table 3.

37 ISR. CENT. BUREAU OF STATISTICS, *supra* note 18, at 288 tbl. 5.27.

38 *Id.* at 297 tbl. 5.32.

This data from Israel is brought here as an illustration of the extraordinary heterogeneity of in-country emission levels. This variation is important for (a) understanding the distortions inherent in mainstream analyses that look exclusively at between-country variations; and (b) as foreground for my following argument on the potential of such figures to galvanize climate change — assumption of responsibility for it and mitigation efforts — into a full-fledged political issue.

### III. THE LIMITATIONS OF DISTRIBUTIVE JUSTICE AS A BASIS FOR A GLOBAL MORAL CLIMATE COMMUNITY

Yoram Margalioth and Yinon Rudich, working from the premise that maximum atmospheric CO<sub>2</sub> concentration of 500 ppm is both desirable and achievable, argue that the global quota of permissible emissions that would ensure that concentrations do not exceed that level should not be allocated on a global per capita basis.<sup>39</sup> They argue that distributive justice models, including Rawls's, explicitly negate the notion of a moral community across international borders.

Margalioth and Rudich acknowledge the right of citizens of richer countries, where inventions and investments that enable and ensure lifestyles and assets associated with high emissions were made in the first place, to retain their current standard of living. To support this line of argument, they indicate that developing and least developed countries that happen to have terrestrial carbon sinks (e.g., primordial tropical forests that absorb CO<sub>2</sub>), and who now look to carbon trading benefits as a result, are not inclined to see these sinks as universally belonging to mankind as a whole. Their willingness to accept payment for protecting the primordial forests betrays a subscription to the principle that such sinks are the property of those who control them territorially. This leads Margalioth and Rudich to conclude that industrial countries who have taken *de facto* control of the atmosphere by historically pumping vast quantities of CO<sub>2</sub> into it have put into effect an identical principle, and are therefore not morally obliged to pay for their proportion of the atmospheric sink capacity. If they now decide to make a contribution to a global adaptation fund, Margalioth and Rudich conclude, they do so as a moral act of solidarity, not in exchange for other countries' rights in global sinks.

My analysis of inequalities within countries in terms of CO<sub>2</sub> emissions is to a large extent emancipated from such constraints on principles of distributive

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39 Yoram Margalioth & Yinon Rudich, *Close Examination of the Principle of Global Per Capita Allocation of the Ability of Earth to Absorb Greenhouse Gas*, 14 THEORETICAL INQUIRIES L. 191 (2013).

justice. Within a given country, once a CO<sub>2</sub> emissions regime is installed (either voluntarily or as part of a global pact), people will rightfully assume, like Rawls, that past, present and future quotas should be allocated on a per capita basis. Consequently, if an individual or a group is known to have emitted disproportionately, demands are likely to be made that this unjust imbalance be rectified. Significantly, and contrary to the per capita emissions allocation logic that remains ideal and theoretical, my push for a calculated linkage between the levels of emissions a subnational population is responsible for and the extent it is requested to mitigate it is not arbitrary, but rather based on actual data.

The dramatic gaps in CO<sub>2</sub> emissions between more affluent and poorer households exposed by my research<sup>40</sup> are, of course, very relevant to the debate on the extent to which GHG emission-cuts regimes are progressive or regressive. Since CO<sub>2</sub> emissions inequality is dramatically steeper than existing income and consumption disparities, almost any carbon emission-cuts regime imaginable can easily be designed progressively. The rich and the poor pay the same dollar amount for energy. But the respective compositions of their CO<sub>2</sub> emission “portfolios” are vastly different. The poor, whose energy consumption is skewed towards essentials (travelling to work, heating modest domiciles, etc.) and away from luxury and leisure, have little flexibility. The rich, on the other hand, consume a lot of luxury and leisure, and have technological and behavioral alternatives galore.

A wealthy suburban household in a well-to-do community in North America or Western Europe, if faced with sanctions and incentives linked to GHG emission quotas, has a variety of flexible means with which to manage its new obligations. For example, it could curb nonessential elements like overheated and over-chilled domestic spaces, imported food, excessive use of motorcars and aviation, leisure activity, holiday travel, and so on. It is also likely to use access to and familiarity with the regulatory system to take advantage of tax incentives, improve on health as a result of more physical exercise, and even feel good about its contribution to saving the atmosphere. Not least, modifications it will need to make will probably not require core changes in its lifestyle, and will represent financial costs that, given a relatively high level of overall income and expenditure, will not make a significant dent in its economic stability.

A household in a mobile home park in North America, on the other hand, or one in a Brazilian favela, an Asian urban slum, an African shantytown or a Palestinian refugee camp, once compelled to (or incentivized) to reduce GHG emissions, will probably suffer considerable economic inconvenience.

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40 Rabinowitz, *supra* note 8.

Deprived of nonessential uses of energy it can reduce, it will be forced to curb activities that are essential to survival and hygiene such as cooking, basic heating or washing.

These differences between the rich and poor, periphery and center, ethnic groups and other segments in society will obviously gain significance, and become politically charged, as mitigation efforts gravitate from distant, technocratic-legalistic international fora to more familiar institutions nearer home.

As national and local governments design new legal, administrative and fiscal tools to enhance emissions cuts, disparities between the magnitudes, compositions and elasticity of different populations' carbon footprints will be thrown into relief. The economic, social, cultural and political consequences of reducing carbon footprints<sup>41</sup> will need to be calculated separately for respective groups. Whether allowances and quotas are administered as carbon tax, incentives for efficiency (e.g., reduced consumption), or as per capita, per industry or per production unit quotas, and whether or not such quotas and allowances become tradable in more or less efficient markets, sticks as well as carrots cannot apply equally to all population groups. The fact that rising energy costs, calculated as a proportion of household income or financial strength, make a bigger dent in poorer households' budgets, also lends support to this progressive logic.

## CONCLUSION

This Article began with a critical review of the nature and dynamics of negotiations over climate in the international arena — predominantly the UNFCCC and its subsidiary bodies. The argument put forward in Parts II and III, however, suggests that an awareness of the internal variance between subnational populations' respective levels of responsibility for the creation of climate change in the first place could have more immediate, in-country political and policy implications. It also implies that the arena in which climate issues play out could be expanded from the current international fora to include a number of local-level political theaters of operation.

As the debate on efforts to curb GHG emissions becomes embedded in local political contexts, it will become more nuanced and accessible to growing publics. Assuming that such an effort will involve demands to curb

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41 See TIMMONS-ROBERTS & PARKS, *supra* note 1; DAN RABINOWITZ, HENE ZE BA: KAIZAD NISROD ET SHINUI HA'AKLIM? [HERE IT COMES: HOW DO WE SURVIVE CLIMATE CHANGE?] (2009) (Isr.).

consumption, the question regarding who (i.e., what segments of the population) gets to preserve their erstwhile living standards will gain prominence. If, as I predict, evidence will continue to emerge supporting the claim that certain groups within a given political community emit more GHG than others, and are therefore more accountable for the emergence of the climate crisis and its perils, calls to treat populations differentially when it comes to climate action will become much more emotive and vociferous.

Whether emissions are reduced top-down through coercive command and control regimes or through schemes more amenable to market behavior like in-country micro emission trading mechanisms, big emitters are likely to resist. Likewise, in-country political contentions over emission targets, quotas, sanctions and incentives could easily become a struggle on the part of those accustomed to a lavish lifestyle to maintain it.

These segments of society have considerable economic and political clout, and their self-preservation efforts will surely impact the ability of governments to forge effective climate policies. It is difficult to predict how matters will pan out, as there are variations between countries in size, economic structures, the purchasing power of the more affluent segments, and the relative power of corporations embedded in the carbon economy.

Tools for international cooperation on mitigation and adaptation to the climate crisis remain fundamentally important, with coalitions and cooperation between countries continuing to play an essential role in the global attempt to readjust the composition of the atmosphere. Notwithstanding, local politics may well emerge in years to come as equally important for the battle against climate change. Disparities in GHG emissions and differentiated vulnerability to climate change could soon become a major stage for the drama of the future of the atmosphere. This is why attention on the part of researchers, policymakers and the media to internal climate inequalities is so important.

Social scientists have yet to live up to the full potential of their various disciplines to help shape the academic and political debate on climate change.<sup>42</sup> While less equipped to shed light on the concrete climatic, geographic and ecological features of what I call the Post-Normal Climate Condition (PNCC),<sup>43</sup> they can contribute more than they have done to a better grasp of PNCC's

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42 For an early attempt, see William I. Torry, *Anthropological Perspectives on Climate Change*, in *SOCIAL SCIENCE RESEARCH AND CLIMATE CHANGE* 208 (Robert Chen ed., 1983).

43 I take my cue here from Funtowicz's idiom "Post Normal Science," SILVIO O. FUNTOWICZ & JEROME R. RAVETZ, *SCIENCE FOR THE POST-NORMAL AGE* 739-55 (1993).



social and political implications, and to the quest for means to mitigate it and adapt to its projected perils.<sup>44</sup>

Finally, a tentative note on the putative relationship between the in-country level of analysis — and political debate — on CO<sub>2</sub> emissions, and the international effort to mitigate climate change: I think the two could have a positive effect on one another. Negotiators on behalf of rich industrial countries, who attend international climate negotiations following a political process at home that had taken on board internal variations between populations in terms of past contribution and future mitigation of CO<sub>2</sub> emissions, might become more sensitive towards the argument habitually made by Third World countries on their minimal historic contribution to the crisis. This may prod negotiators on behalf of richer nations to adopt a more nuanced and constructive approach toward notions such as the “common but differentiated responsibilities” of countries and their “specific national and regional development priorities, objectives and circumstances,” which have been a declarative component of the UNFCCC since at least the Kyoto protocol.<sup>45</sup>

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44 See Mike Davis, *Who Will Build the Ark?*, 61 NEW LEFT REV. 29 (2010).

45 See Kyoto Protocol, *supra* note 11, preamble to art. 10.

