The Deeply Flawed Conservative Case for a Carbon Tax

"Conservatives" Endorse the Broken-Windows Fallacy, Reject Evidence and Rigor

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Executive Summary

The Climate Leadership Council (CLC) last month proposed a gradually increasing carbon tax on greenhouse gas emissions, with the revenues to be distributed as "dividends" to all Americans. It proposes also border adjustment rebates and fees for exports and imports to and from foreign markets without equivalent tax policies, and a significant reduction in the existing regulations limiting greenhouse gas emissions, but with an overall reduction in emissions below those incorporated in the current regulatory regime.

Virtually all of the CLC assertions in support of its proposal are incorrect or implausible. The CLC provides no evidence that climate risks are "too big" and assumes that the proposed tax would provide "insurance" without examining the future climate effects of its proposal. The argument that an emissions tax is a more efficient method of reducing emissions relative to regulations is not correct. The dividend proposal is naive in that it ignores the coalition problem in Congress and the relative influence of concentrated and unconcentrated pressure groups. The border tax adjustment would be hugely complex given the international supply-chain system, leading to an increase in the attendant bureaucracy even if the regulatory bureaucracy is reduced in size.

Contrary to its assertions, the CLC proposal would increase the government allocation of resources and thus the size of government. And the premise that the proposal will strengthen the economy by engendering new investment in unconventional energy is a classic manifestation of the broken-windows fallacy: Because the proposal would increase energy costs with no environmental benefits, the economy in the aggregate would be smaller. The CLC misrepresents the findings of a Treasury Department study; after accounting for employment and wage effects, the bottom 70 percent of the income distribution are unlikely to find themselves better off.

The gradually rising tax eventually would yield declining revenue, and there is no easy option for preserving the dividend payments. And the CLC refutes its own claim of policy "predictability" by proposing that after five years a blue-ribbon panel could recommend an increase in the tax rate. The CLC proposal is deeply unserious.

I. Introduction

Poor analysis is pervasive in Beltway policy debates, the latest manifestation of which is yet another "conservative" plea for a tax on "carbon," that is, emissions of greenhouse gases (GHG), among which carbon dioxide is by far the most important component.[1]

Carbon and carbon dioxide are not the same thing, as discussed in the Appendix. For now let us address the arguments in favor of such a tax as promoted in early February by the Climate Leadership Council (CLC), a prominent group of self-described "conservative" academics, former policymakers, and think-tank types.[2] They propose (1) a "carbon" tax starting at $40 per ton and rising in real terms thereafter, combined with (2) a "dividend" policy returning all the revenues quarterly to "the American people" equally in lump-sum fashion, with (3) a border "carbon adjustment" for exports to and imports from nations not imposing a similar policy, and (4) a significant reduction, but not complete elimination, of the GHG policies implemented by the Obama administration, whether by regulation or by executive order.[3]

The justifications and details of the proposal can be summarized as follows:

- The "evidence of climate change is growing too strong to ignore," and "the risks associated with future warming are too big and should be hedged."
- The rising carbon tax would provide "an insurance policy."
- "Economists are nearly unanimous in their belief that a carbon tax is the most efficient . . . way to reduce carbon emissions."
- "All the proceeds from this carbon tax would be returned to the American people on an equal . . . basis" as "dividends."
- The Clean Power Plan would be repealed, and "much" of the other Obama climate regulations would be phased out, with a tax-induced increase in emissions reductions below that attendant upon the Obama regulatory regime, so as to "sustain a bipartisan consensus."
- In addition, a "border carbon adjustment" would engender a level playing field between US exports and imports: rebates to exports and fees imposed on imports respectively to and from countries failing to impose such a tax, with the fees increasing the dividends paid to "the American people."
- The combination of the dividend and regulatory reduction policies would shrink "the overall size of government."
- A carbon tax would encourage technological innovation and a "large-scale substitution of existing energy and transportation infrastructures, thereby stimulating new investment" and providing "predictability" for the private sector.
- "The bottom 70% of Americans would come out ahead under such a program."

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[1] See US Environmental Protection Agency, "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2015," draft, February 15, 2017, ES-3, Table ES-1, https://www.epa.gov/sites/production/files/2017-02/documents/2017_complete_report.pdf. Note that water vapor and clouds are responsible for 65–85 percent of the radiative (warming) properties of the troposphere. See K. P. Shine et al., "Radiative Forcing of Climate," in *Climate Change: The IPCC Scientific Assessment*, ed. J. T. Houghton, G. J. Jenkins, and J. J. Ephraums (Cambridge, UK: Cambridge University Press, 1990), 41–68, https://www.ipcc.ch/ipccreports/far/wg_I/ipcc_far_wg_I_chapter_02.pdf.

[2] See Climate Leadership Council, https://www.clcouncil.org/.

[3] See James A. Baker III et. al., "The Conservative Case for Carbon Dividends," Climate Leadership Council, February 2017, https://www.clcouncil.org/wp-content/uploads/2017/02/TheConservativeCasefor CarbonDividends.pdf. See also David Bailey and David Bookbinder, "A Winning Trade," Climate Leadership Council, February 2017, https://www.clcouncil.org/wp-content/uploads/2017/02/A_Winning_Trade.pdf; and Ted Halstead, "Unlocking the Climate Puzzle," Climate Leadership Council, January 2017, https://www. clcouncil.org/wp-content/uploads/2017/02/Unlocking_The_Climate_Puzzle.pdf.

Let us now address each of these arguments in turn, except that the evidence and risks of climate change are examined in the Appendix.

II. A Rising Carbon Tax as an Insurance Policy

The CLC asserts that their carbon tax would provide "an insurance policy," but never quite tells us how much insurance the tax would provide, presumably in terms of reduced future temperatures and attendant climate effects. Interestingly, they argue that "a sensible carbon tax might begin at $40 a ton and increase steadily over time." Since the Obama administration estimate of the "social cost of carbon" was $36 per ton for 2015 in year 2007 dollars, it is obvious that the CLC $40 figure is that $36 plus a rough adjustment for inflation.[4] That the Obama estimate is deeply dishonest[5] seems not to concern the CLC "conservatives," but they argue explicitly that "the initial carbon tax rate should be set to exceed the emissions reductions of current regulations."

So let us do what the CLC failed to do: apply the EPA climate model[6] to estimate the temperature effect in the year 2100 of the entire Obama climate action plan, the goal of which was a 17 percent reduction in US GHG emissions below 2005 levels by 2020.[7] The averted warming is about 0.015 of a degree Celcius. (The standard deviation of the surface temperature record is about 0.1 of a degree.) Since the CLC proposes a tax rate yielding emissions cuts greater than those envisioned in the Obama climate action plan, let us assume for discussion purposes a temperature effect double that of the Obama policies: 0.03 of a degree. That remains a figure that could not be distinguished from statistical noise.

Let us include the effects of the additional US emissions cuts promised in the pseudo-agreement with China: an additional 10 percent below 2005 levels by 2025.[8] That yields another 0.01 of a degree. Note that the Chinese "commitment" was for a "peak" in their GHG emissions by 2030, without any specification of the level of that peak or emissions levels over the ensuing years.

We can use our imaginations and examine the effects of global reductions in GHG emissions vastly larger than those promised[9] in the Paris 21st Conference of the Parties (COP-21) agreement.[10] For the most part, those promised

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[4] See US Interagency Working Group on Social Cost of Greenhouse Gases, "Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis," August 2016, https://www.epa.gov/sites/production/files/2016-12/documents/sc_co2_tsd_august_2016.pdf.

[5] See Benjamin Zycher, "The Achilles' Heel of the Obama Climate Regulations," American Enterprise Institute, February 9, 2017, https://www.aei.org/publication/the-achilles-heel-of-the-obama-climate-regulations/; and Benjamin Zycher, "Four Decades of Subsidy Rationales for Uncompetitive Energy," statement before the Committee on Finance, US Senate, June 14, 2016, https://www.aei.org/publication/four-decades-of-subsidy-rationales-for-uncompetitive-energy/.

[6] See University Corporation for Atmospheric Research, MAGICC/SCENGEN, http://www.cgd.ucar.edu/cas/wigley/magicc/. For a general description of climate models, see Judith Curry, "Climate Models for the Layman," Global Warming Policy Foundation, 2017, http://www.thegwpf.org/content/uploads/2017/02/Curry-2017.pdf.

[7] For the Obama climate action plan, see Executive Office of the President, "The President's Climate Action Plan," June 2013, https://obamawhitehouse.archives.gov/sites/default/files/image/president27sclimate actionplan.pdf.

[8] See Benjamin Zycher, "Observations on the US-China Climate Announcement," *Hill*, November 14, 2014, http://thehill.com/blogs/pundits-blog/energy-environment/224076-observations-on-the-us-china-climate-announcement; Benjamin Zycher, "The US-China Climate Agreement Hangover," *Hill*, December 8, 2014, http://thehill.com/blogs/pundits-blog/energy-environment/226272-the-us-china-climate-agreement-hangover; and White House, "U.S.-China Joint Announcement on Climate Change," November 11, 2014, https://obamawhitehouse.archives.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change.

[9] See UN Framework Convention on Climate Change, "INDCs as Communicated by Parties," http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx.

[10] See UN Framework Convention on Climate Change, "The Paris Agreement," http://unfccc.int/paris_agreement/items/9485.php.

emissions cuts—the "Nationally Determined Contributions" (NDCs)—are relative to a business as usual (BAU) baseline. If the BAU baseline for a given nation simply assumes future economic growth only a bit greater than that actually observed over time—by some such small amount as, say, 0.3 percent per year—then that nation would meet its NDC for future cuts in GHG emissions without any change in its underlying emissions behavior at all!

So let us assume the 27 percent emissions cut by the US by 2020/2025 as already discussed, and by 2030 a Chinese cut of 20 percent, a 30 percent cut by the rest of the industrialized world, and a 20 percent cut by the rest of the developing world. The total temperature effect by 2100: about 0.5 of a degree. Would the CLC conservatives please justify the implicit assertion that that is worth at least 1 percent of global gross domestic product (GDP) annually, or about $600 to $750 billion per year?[11]

Even those calculations assume a climate "sensitivity"—the amount of warming in 2100 caused by a doubling of GHG concentrations—of 4.5 degrees, the maximum of the IPCC AR5 range noted in the Appendix. The median of the AR5 range is 3 degrees, and the medians of most estimates published in the recent peer-reviewed literature are around 2 degrees.[12] At lower assumed sensitivities, emissions cuts have smaller effects. The upshot is that the CLC "insurance policy" would provide essentially no insurance at all, but at a very substantial cost, despite the CLC's almost explicit promise of a carbon-tax free lunch, to which we turn in Section VII.

There is a larger problem with the insurance argument for a carbon tax: Even assuming that increasing GHG concentrations pose a low-probability threat of a future problem serious or even catastrophic, the list of potential low-probability catastrophes is long: asteroid impacts, mass volcanic eruptions, powerful earthquakes and resulting tsunamis, mass contagion, a terrorist attack with bioweapons, gamma ray storms, massive crop failures, and on and on. Does the CLC believe that we should spend 1 percent or more of annual GDP on each of them?

III. The Relative Efficiencies of Emissions Taxes and Command-and-Control Regulation

CLC argues that "Economists are nearly unanimous . . . that a carbon tax is the most efficient . . . way to reduce carbon emissions." Or, more specifically, that such a tax on effluents would reduce the overall cost of achieving given emissions cuts below the cost that would obtain under such command-and-control regulations as equipment mandates.

Indeed, there does exist a broad consensus among economists that emissions ("Pigouvian") taxes are more efficient than regulation as a tool for controlling environmental externalities. The reasoning is straightforward: Regulations impose a rough one-size-fits-all approach for the reduction of emissions, while a tax allows each emitter to find the least expensive method with which to achieve its emissions goal. (A cap-and-

[11] See Bjørn Lomborg, "Global Warming's Upside-Down Narrative," Project Syndicate, April 17, 2014, https://www.project-syndicate.org/commentary/bj-rn-lomborg-says-that-the-un-climate-panel-s-latest-report-tells-a-story-that-politicians-would-prefer-to-ignore; Kevin Dayaratna, Nicolas Loris, and David Kreutzer, "The Obama Administration's Climate Agenda: Underestimated Costs and Exaggerated Benefits," Heritage Foundation, November 13, 2014, http://www.heritage.org/environment/report/the-obama-administrations-climate-agenda-underestimated-costs-and-exaggerated; and World Bank, "Gross Domestic Product 2015," February 1, 2017, http://databank.worldbank.org/data/download/GDP.pdf.

[12] See Patrick J. Michaels and Paul C. Knappenberger, "The Collection of Evidence for a Low Climate Sensitivity Continues to Grow," Cato Institute, September 25, 2014, https://www.cato.org/blog/collection-evidence-low-climate-sensitivity-continues-grow. Note also that the Paris agreement established a secondary goal of limiting warming by 2100 to 1.5 degrees rather than the 2 degrees usually demanded. This secondary goal is a tacit admission that limiting temperature increase to 2 degrees already has been "achieved" without any GHG emissions policies at all. See Patrick J. Michaels and Paul C. Knappenberger, *Lukewarming: The New Climate Science That Changes Everything* (Washington, DC: Cato Institute, 2016), https://store.cato.org/book/lukewarming.

trade system of emissions permits is somewhat similar analytically to a tax, a topic outside the focus of this discussion.)

Accordingly, the tax leads the market to achieve a given aggregate reduction in emissions at a total cost lower than that yielded by the regulatory approach, because regulators cannot know the specific conditions characterizing each industrial plant and are likely to have few incentives to discover them in any event. And so the CLC is correct: Economists are nearly unanimous in the view that the tax is a more efficient tool than command-and-control regulation with which to achieve a given emissions goal.[13]

But that is irrelevant: The issue is not whether economists are nearly unanimous on this question, but instead whether that consensus view is correct. Analytic "truth," after all, is not majoritarian or even supermajoritarian, and this nearly unanimous view among economists is very likely to be misguided. The central problem with the consensus view is straightforward: The emissions goal is not fixed. Instead, it must be chosen. "Efficiency" requires both an efficient emissions goal that equates the marginal benefits and costs of emissions reductions, and tools to achieve that amount of reductions that minimize the cost of doing so.

In other words, the "nearly unanimous" economists have failed to recognize that the political choice among tools affects the emissions goal; the latter is not exogenous. Once government derives revenues from a system of carbon taxes, with ensuing political competition for those revenues, it is not difficult to predict that under a broad range of conditions the emissions reduction goal will be inefficiently stringent, that is, the tax rate will be too high in the sense that the marginal costs of emissions cuts will exceed the marginal benefits. Regulators also may have incentives to choose emissions goals that are too stringent, because doing so is consistent with the larger goal of maximizing their budgets (or discretionary budgets), and because overly stringent regulations serve an ideological agenda.[14] But in the case in which Congress must approve or has the power to repeal given regulations, there are strong reasons to believe that a tax approach might prove less efficient overall than the regulatory approach.

It is far from clear that Congress would choose a carbon tax rate reflecting the marginal "uninternalized" social cost of GHG emissions, to be distinguished sharply from the tax rate than maximizes the present value of the revenue stream.[15] This outcome under political competition shaped by democratic institutions depends on the nature of the majority coalition emerging in Congress; both the groups bearing the burden of the carbon tax and the groups enjoying the benefits of the new revenues are likely to be concentrated interests.[16] That is different from the political dynamic under the regulatory approach: The regulated industries and the regulators (i.e., the bureaucracy) are concentrated interests, but the beneficiaries of reduced emissions to a substantial degree are the diffused population writ large.[17] Accordingly, even if the tax is more "efficient" in terms of allowing a cost-minimizing set of actions to reduce emissions, it is far from clear that this effect would outweigh

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[13] See David R. Henderson, ed., *The Concise Encyclopedia of Economics* (Library of Economics and Liberty, 2007), s.vv. "Pollution Controls" by Robert W. Crandall and "Externalities" by Bryan Caplan, http://www.econlib.org/library/CEETitles.html.

[14] See, e.g., William A. Niskanen, "Bureaucrats and Politicians," *Journal of Law and Economics* 18, no. 3 (December 1975): 617–43.

[15] The "uninternalized" part of a social cost or benefit is that part not reflected in market prices, so that market participants are confronted with inefficiently weak incentives to take account of those impacts on third parties.

[16] See, e.g., Mancur Olson Jr., *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, MA: Harvard University Press, 1971), 53–65.

[17] The regulated industries might have incentives to support a regulatory structure more stringent than otherwise might be the case if there are scale economies in adherence to the regulations, as a means of making entry by smaller new competitors more difficult.

the possible inefficiency inherent in a system of carbon taxes in which important interests drive a political equilibrium in which the tax rate is chosen to maximize the revenue stream rather than to yield the efficient level of emissions.

In short, the efficient tax rate is something approximating the marginal social cost of GHG ("carbon"), with perhaps some downward adjustment for the deadweight economic costs ("excess burden") imposed by the tax system on the economy.[18] That is not the same as the revenue-maximizing tax rate, and democratic political institutions can be predicted to opt for the latter under a broad range of assumptions.

"Revenue maximization" means the present value of the revenue stream over some time horizon, that is, at some discount rate. Accordingly, the tax rate that maximizes revenues over a short period is very likely to be higher than that maximizing revenues over the long run, due to the greater ability of market participants to find ways to avoid the tax given more time to do so, in particular when the tax rate is higher rather than lower.[19] Because the marginal members of the congressional majority are likely to be the incumbents in greatest danger of defeat in the next election, it is not difficult to predict that the political equilibrium for a carbon tax will be a rate maximizing revenues over a time period shorter rather than longer, precisely because for those marginal members of the majority the time horizon is the next election. The near unanimity of economists on the relative efficiency of a tax over regulation is far less meaningful in this broader context than the CLC understands.

IV. Returning the Carbon Tax Revenues to "the American People" as Dividends

CLC proposes to return all carbon tax revenues to holders of valid Social Security numbers in the form of equal quarterly lump-sum payments. CLC pretends to believe that this feature in combination with elimination of most of the GHG regulatory framework prevents the carbon tax from increasing the size of government, a premise discussed in Section VI, but for now it is useful to consider precisely what "returning the revenues to the American people" means analytically.

It cannot mean anything other than giving the revenues directly or indirectly to the interest groups able to form a majority coalition in Congress, which inexorably will change over time and is very likely to differ sharply from the "families of four" advertised repeatedly by the CLC. In order to believe that it is the political manifestation of "families of four" that would have the revenues bestowed upon them, one must assume that those interests would prove to be the marginal members of whatever congressional coalition imposes the carbon tax. That certainly is possible, but other outcomes seem far more likely.

Some industries and geographic regions will bear disproportionate burdens attendant upon the tax, and their votes will be necessary to enact the tax, particularly in the US Senate. Will their demands for compensation fall on deaf ears? Given that "coal country" gave heavy political support to President Trump precisely because of the Obama political assault on their economic interests,[20] it is difficult to believe that they will be satisfied with only an equal per capita share of the revenues, as the carbon tax would affect them disproportionately. The tax would affect investment flows and wages more in some sectors and geographic regions than others; would the complex bargaining process shaping legislation simply ignore them? Would "dividends" be paid to the wealthy? To the near wealthy?

The list of potential supplicants is long indeed, each comprising some combination of constituencies to protect and campaign contributions and votes to offer. The central point here is that the

[18] See Ross R. McKitrick, *Economic Analysis of Environmental Policy* (Toronto: University of Toronto Press, 2011), 169–90.

[19] This is the standard axiom that demand and supply elasticities grow over time as market participants increasingly find ways to adjust to changes in market conditions, in this case the imposition of a carbon tax.

[20] See, e.g., David Byler, "How Trump Did (and Didn't) Reshape the Electoral Map," RealClearPolitics, November 18, 2016, http://www.realclearpolitics.com/articles/2016/11/18/how_trump_did_and_didnt_reshape_the_electoral_map__132385.html.

CLC dividend proposal is utterly naive, so much so that it is difficult to believe that the CLC actually expects any such thing to be enacted. That suggests that they are far more interested in the tax part of their proposal than in the dividend dimension, and that the inexorable political competition ("rent-seeking") for the revenues is of little concern, as is the reality that such competition would yield a carbon tax designed to maximize revenues rather than to optimize GHG emissions.

V. The Phaseout of the Obama GHG Policy and the Border Tax Adjustment

CLC proposes to phase out "much" of the EPA regulatory framework over GHG, with a repeal of the Clean Power Plan. (CLC does not address the Obama GHG policies implemented by such other agencies as the Department of Energy, but those are a minor issue if one assumes that the fuel economy standards promulgated formally by the National Highway Traffic Safety Administration are to be considered as EPA regulations.) Since GHG regulations and a GHG tax would affect various constituencies differently, it is difficult to predict how the congressional bargaining process would choose among the various trade-offs, and a plausible outcome (although one not likely under a Trump administration) is adoption of the tax with less elimination of the regulatory framework than envisioned by the CLC. A future administration might choose to expand the regulatory framework even in the context of the tax, unless Congress explicitly proscribes such policies. CLC advocates a tax rate yielding emissions reductions exceeding those of the Obama regulations so as to "sustain a bipartisan consensus."

The political assumption underlying this CLC proposal—the tax/dividend/regulations trade-off—may be correct, but there is some limited and indirect evidence that it is not. Washington State Initiative 732 was defeated in November 2016 by almost 60 percent to 40 percent; it would have imposed a carbon tax on GHG emissions while maintaining revenue neutrality by reducing the sales tax and almost eliminating the business and occupation tax on manufacturers. Many of the mainstream environmental pressure groups opposed it precisely because it cut other taxes; they preferred to use the revenues to subsidize alternative ("renewable") energy programs.[21]

CLC proposes a border tax adjustment, with fees imposed on imports from nations "without comparable carbon pricing systems," and with rebates to exporters for sales into nations without such policies. It is not clear from the CLC discussion how the tax adjustment would be implemented in the case of nations without carbon pricing systems, but with regulations, or subsidies for such alternative energy sources as wind and solar power, or other policies that are purported to reduce GHG emissions.[22] Such adjustments for nontax policies would be complex indeed, requiring an estimate of the tax-equivalent value of the given policies under examination. Does the CLC believe that the bureaucracies producing these estimates will be unpressured to adjust them in various directions depending on which interests are being affected?

The larger problem, also ignored by the CLC, is that of the international supply-chain phenomenon: Goods imported from a given nation are likely to embody components and other inputs from other nations—perhaps many other nations—in vastly differing proportions, and

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[21] For the details of the initiative and the various arguments, see Ballotpedia, "Washington Carbon Emission Tax and Sales Tax Reduction, Initiative 732 (2016)," https://ballotpedia.org/Washington_Carbon_Emission_Tax_and_Sales_Tax_Reduction,_Initiative_732_(2016). See also Benjamin Zycher, "Washington State Initiative 732—All Cost, No Benefit," InsideSources, October 18, 2016, http://www.insidesources.com/washington-state-initiative-732-all-cost-no-benefit/.

[22] It is far from clear that wind and solar power systems actually reduce emissions of GHG or conventional pollutants, as the unreliability of such alternative power requires the use of backup generation units that must be cycled up and down depending on wind and sunlight conditions. Accordingly, the backup units must be operated inefficiently. See Bentek Energy, "How Less Became More: Wind, Power, and Unintended Consequences in the Colorado Energy Market," Wind Watch, April 2010, https://docs.wind-watch.org/BENTEK-How-Less-Became-More.pdf.

those nations' policies on GHG emissions almost certainly will vary considerably. The border adjustment would have to estimate transfer prices—always a subjective and problematic calculation—and the effects of shifting exchange rates, changing input proportions, and a host of other complexities in order to arrive at a border adjustment fee or rebate for a given economy. And even that is an abstraction that shunts aside various political pressures that inexorably will be felt and incorporated.

This means that a new bureaucracy, or perhaps an expanded one at the Internal Revenue Service, will have a vast amount of work to do, with important implications for the allocation of resources. So much for the CLC claim that this policy would streamline "the regulatory state" and shrink "the overall size of government," to which we now turn.

VI. "Shrinking the Overall Size of Government"

The CLC argues that the combination of the tax/dividend program and the elimination of much of the existing GHG regulatory framework will yield a reduction in the overall size of government. That argument is deeply problematic in that it fails to incorporate an appropriate definition of "the size of government," which must mean the volume or proportion of resources allocated by government rather than by market forces through the price mechanism.

Consider the CLC carbon tax. Suppose that the revenues were to be used not solely to fund "dividends" to "the American people." Suppose instead that the revenues were to be spent on defense, transfers to state and localities, expansion of government health coverage programs, or other income transfer programs, ad infinitum. In those cases, the carbon tax clearly would be a fiscal tool financing an expansion of federal spending, and therefore an obvious increase in the "size of government." The actual CLC proposal is for a specific spending program: the dividend payments to Americans, in which the federal government takes resources out of some pockets and shifts them into others. *Ceteris paribus*, that is an increase in government resource allocation, and therefore in the size of government. The only counterargument that the CLC could make is that the dividend payments, unlike, say, defense spending, do not allocate real resources directly; they are merely a transfer among groups. But such transfers would affect resource allocation no less than, say, the Social Security payroll tax and transfer system. Does the CLC want to argue that the Social Security system does not increase the size of government?

The CLC reduction in regulation does not restore this CLC argument, precisely because the proposed tax rate "should be set to exceed the emissions reductions of current regulations." Regardless of whether that is a sound (efficient) objective on benefit/cost grounds (see Section II), it is an increase in resource allocation by government: Fossil-fuel use will decline below levels that otherwise would be observed, in favor of some other allocational outcome. Moreover, the border tax adjustment is likely to yield a large increase in government regulatory activity outside the EPA, as discussed in Section V. CLC might argue that the economy will be bigger because of the assumed greater efficiency of the tax over regulation, but as discussed in Section III, that premise is far from obviously correct, notwithstanding the broad consensus among economists. The CLC then offers a broader "investment" argument asserting the pro-growth implications of its proposal, to which we now turn.

VII. The Broken-Windows Fallacy: Infrastructure Substitution and Policy Predictability

It is useful to quote the CLC position on the effect of the carbon tax on economic growth and innovation:

> A carbon tax would . . . encourage technological innovation and large-scale substitution of existing energy and transportation infrastructures, thereby stimulating new investment. Second, the plan would offer companies, especially those in the energy sector, the predictability they now lack.

The CLC actually is arguing that the tax, by making some part of the existing (energy) capital stock uneconomic, will induce the market to shift resources into "new investment," and thus create stronger growth!

Wow. Have the CLC economists never heard of the broken-windows fallacy? First discussed by Frédéric Bastiat in 1850, the fact that a window pane has been broken and must be replaced provides work for the window repair industry, but the resources used to repair the window cannot be employed elsewhere.[23] Accordingly, the broken window is a net loss of wealth in the aggregate. Consider a massive earthquake damaging and destroying a substantial amount of the physical capital stock, which then would be rebuilt. Would that be pro-growth?

The loss of the economic value of some part of the "existing energy and transportation infrastructures" analytically is identical to the broken window, unless the loss yields improvement in some other economic dimension—environmental quality—more than offsetting the reduction in the market value of the capital stock. (As discussed in Section II, the environmental effect of the proposed tax would be effectively zero.) The "new investment"—the use of scarce resources—to be stimulated by the CLC carbon tax therefore is a social cost rather than a benefit, particularly given that the new energy and transportation infrastructures created with the new investment are almost certain to be uneconomic.[24] That the CLC economists have endorsed this reasoning is deeply troubling.

As for the CLC argument that the tax/dividend policy would yield greater "predictability" for business firms: What is the basis for the implicit assumption that a tax is more "predictable"—that is, more stable—than a regulatory regime? After all, both tax policies and regulations can be changed. CLC itself utterly refutes its own "predictability" argument by proposing that "at the completion of a five-year period, a Blue Ribbon Panel could recommend whether the tax rate should increase further, based on the best climate science available at the time."

VIII. The Bottom 70 Percent of Americans

The CLC notes that "the Department of Treasury estimates that the bottom 70% of Americans would come out ahead under such a program."

Actually, that is not what the Treasury study found.[25] That study notes explicitly that all of the revenue-recycling options examined, including the full per-person rebate option, are "static," that is, they "assume no change in family income." The Treasury study concludes that the per-person rebate option "results in a very progressive change in *tax burdens*" (emphasis added), that is, after-tax income determined by the tax code in combination with the per-person rebate of the carbon tax revenues. In the Treasury analysis, the bottom seven income deciles would enjoy an increase in that after-tax income.

That is very different from saying that "the bottom 70% of Americans would come out ahead under such a program," because an increase in energy costs driven by a new tax (as distinct from, say, strong economic growth) is very likely to reduce employment, and real wages also as the outcome of the reduction in labor demand.[26] Consider Figure 1, which displays US data for total energy consumption and total nonfarm employment for 1985–2015.

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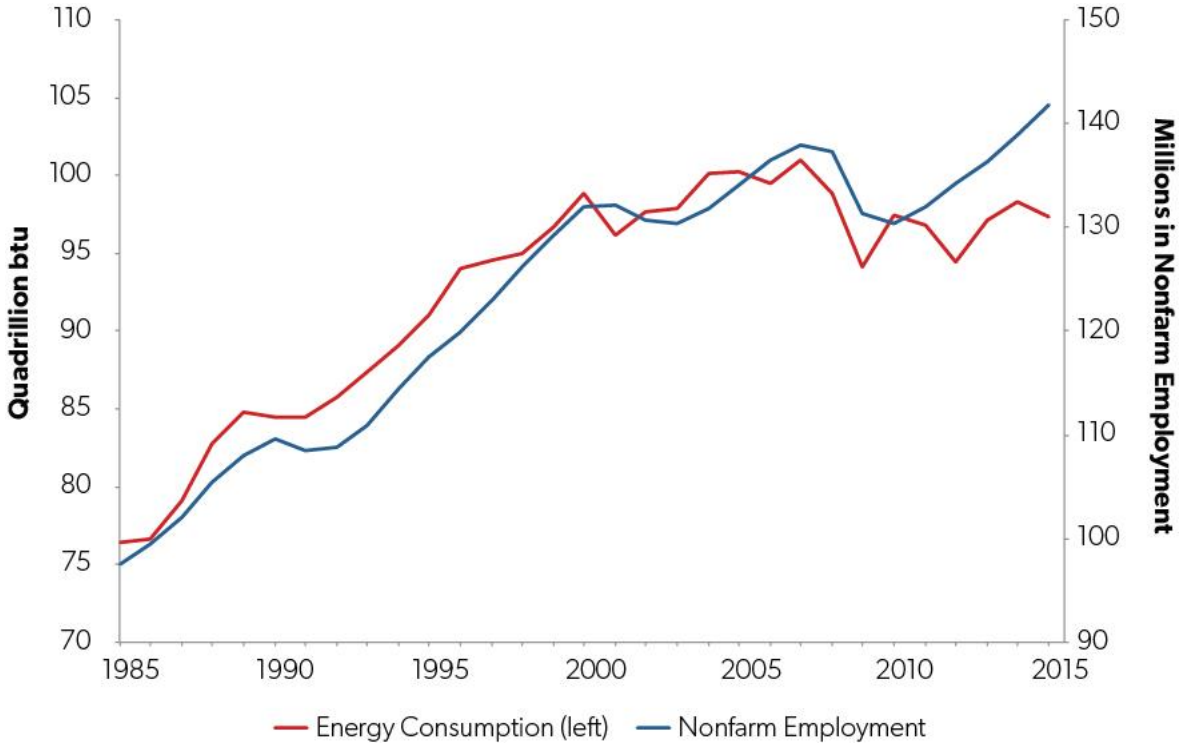
[23] Frédéric Bastiat, "What Is Seen and What Is Not Seen," in *Selected Essays on Political Economy* (1850; Irvington-on-Hudson, NY: Foundation for Economic Education, 1995), http://www.econlib.org/library/Bastiat/basEss1.html.

[24] See Benjamin Zycher, *Renewable Electricity Generation: Economic Analysis and Outlook* (Washington, DC: AEI Press, 2011), http://www.aei.org/publication/renewable-electricity-generation/.

[25] John Horowitz et al., "Methodology for Analyzing a Carbon Tax," US Department of the Treasury, Office of Tax Analysis, Working Paper 115, January 2017, esp. 25–26, https://www.treasury.gov/resource-center/tax-policy/tax-analysis/Documents/WP-115.pdf.

[26] An increase in energy costs or prices driven by strong economic growth would not have those effects, as the data suggest that energy and employment are strong complements, and strong growth ought to drive up the demand for labor and thus employment and wages.

Figure 1. Energy Consumption and Nonfarm Employment



Sources: US Energy Information Administration, Annual Energy Review, http://www.eia.gov/totalenergy/data/annual/index.php; and Federal Reserve Bank of St. Louis, "All Employees: Total Nonfarm Payrolls (PAYEMS)," https://fred.stlouisfed.org/series/PAYEMS.

The simple correlation between the two series in Figure 1 is 0.959; for percentage changes in the two series, the simple correlation is 0.545. Correlation clearly is not causation, but surely the CLC would not want to argue that the correlation between energy use and employment is spurious. Energy use and employment are obviously complements to some substantial degree, and an increase in energy costs driven by a carbon tax will not prove salutary for employment.

In short, a carbon tax increases energy costs with no offsetting environmental benefits. That means a smaller aggregate economy, less employment, and almost certainly lower real wages under reasonable assumptions about the elasticities of demand and supply for labor. Moreover, the carbon tax/dividend system increases government resource allocation, notwithstanding the CLC assertions discussed in Section VI, and unless we believe that the federal government will use resources more productively than the private sector—a rather strange stance for "conservatives"—that effect also will result in a smaller economy. These aggregate effects cannot be salutary for "the bottom 70 percent of Americans," regardless of the narrow impacts on after-tax income ignoring changes in wages and employment; this set of assertions by the CLC simply shunts the central economic issues aside.

IX. Further Observations and Conclusions

The CLC puts itself in a curious position by arguing that command-and-control regulation of GHG is growth-inhibiting, but a carbon tax yielding even greater emissions reductions—energy even more expensive—would strengthen the US economy. Note again that the CLC carbon tax rises over time. At some point along the relationship ("Laffer curve") between the tax rate and revenues, there is a revenue-maximizing tax

rate, and at higher tax rates, revenues fall. Precisely how will the dividend mechanism compensate Americans for higher energy costs then? The CLC cannot answer that demand conditions at that high tax rate might be relatively "elastic" (greater than one in absolute value) so that energy spending (energy consumers' bills) would fall. After all, if we simply prohibited the use of conventional energy, such spending would be zero, but the cost of such a policy would be enormous.

If the CLC answer is to lower the tax rate, then the advertised "predictability" of the tax/dividend policy is an illusion. If the answer is additional funding from other revenue sources, then the already dubious argument that this proposal will shrink "the overall size of government" (see Section VI) will come a cropper. Either other programs will be cut to pay for the carbon dividend—not a wise bet—or other taxes will be increased or federal borrowing will rise. Such are the fruits of a failure to think through the public choice dimensions of policy proposals.

The CLC proposal simply accepts the dominant argument on the effects of increasing GHG concentrations while offering no evidence at all. It makes an insurance argument without doing the most basic of benefit-cost analyses: What future temperature and climate effects would the proposal yield? The assertion that a tax is a more efficient policy tool than regulation is not defended other than with an appeal to a consensus among economists, a consensus that is real but irrelevant in that it asks the wrong question. The assumption that political competition will return the tax revenues to "the American people" in equal lump-sum fashion is deeply dubious, and the CLC offers no arguments as to why that would prove to be a political equilibrium. The combination of the proposed phaseout of the Obama regulations and the border adjustment rebate/fee is likely to increase resource allocation by government, and the dividend policy is a new spending program notwithstanding the effort by the CLC to obfuscate that reality. The CLC actually argues that destroying part of the economic value of the existing energy capital stock and forcing new investment flows into alternatives will yield a bigger economy; that is the broken-windows fallacy in all of its glory. And the CLC reports the findings of a Treasury Department study incorrectly; given the strong complementarity between energy consumption and employment, the conclusion that the tax/dividend policy would make the bottom seven deciles of the income distribution better off is highly problematic.

The CLC proposal is poor conceptually and deeply unserious.

About the Author

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Appendix: Evidence and Risks of Climate Change

It is not quite clear precisely what CLC means by "evidence of climate change [that] is growing too strong to ignore," and one reasonably would expect scholars and serious policy types to justify that assertion. It certainly is true that anthropogenic climate change is "real" in the sense that increasing atmospheric concentrations of GHG are having a detectable effect, important evidence of which is declining temperatures in the lower stratosphere.[27]

But the surface and lower-atmosphere temperature records are not consistent with a looming crisis view: Surface temperatures have been roughly flat since 1998 (or perhaps since the early 2000s, as 1998 was a strong El Niño year).[28] The satellite record is very similar.[29] More generally, the record of temperature anomalies[30] since the late 19th century does not correlate well with increasing GHG concentrations;[31] how, for example, do the authors of the CLC report propose to explain the warming from 1910 through roughly 1940?

Moreover, almost all of the climate models have overestimated the recent temperature record.[32] Global temperatures appear to be on a long-term upward trajectory, but the degree to which that trend is anthropogenic is far from clear, as the earth since roughly 1850 has continued to emerge from the Little Ice Age.[33] The degree to which warming over, say, 1977–98 was anthropogenic—the "climate sensitivity" of the atmosphere—is unsettled in the scientific literature;[34] and the Intergovernmental Panel on Climate Change

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[27] See Oak Ridge National Laboratory, "Annual Temperature Anomalies—Global (1958–2004), http://cdiac.ornl.gov/trends/temp/sterin/graphics/global.gif; and Alan Longhurst, *Doubt and Certainty in Climate Science*, September 2015, 99–100, https://curryja.files.wordpress.com/2015/09/longhurst-final.pdf.

[28] See Global Warming Policy Foundation, "Global Mean Temperature in January Drops Back to Where It Was in 1998," February 15, 2017, http://www.thegwpf.com/global-mean-temperature-drops-back-to-where-it-was-in-1998/; and David Whitehouse, "Data, Deflection and the Pause," Global Warming Policy Foundation, February 12, 2017, http://www.thegwpf.com/data-deflection-and-the-pause/ and http://www.thegwpf.com/content/uploads/2017/02/hadpauseerrors.jpg. On the 1998 El Niño, see National Oceanographic and Atmospheric Administration, "El Niño and Climate Change: Record Temperature and Precipitation," June 8, 1998, http://www.publicaffairs.noaa.gov/stories/sir3.html.

[29] See Roy Spencer, "UAH Global Temperature Update for February, 2017: +0.35 deg. C.," March 2, 2017, http://www.drroyspencer.com/2017/03/uah-global-temperature-update-for-february-2017-0-35-deg-c/ and http://www.drroyspencer.com/wp-content/uploads/UAH_LT_1979_thru_January_2017_v6.jpg.

[30] See National Oceanographic and Atmospheric Administration, "Climate at a Glance," https://www.ncdc.noaa.gov/cag/time-series/global/globe/land_ocean/ytd/12/1880-2016.

[31] See National Oceanographic and Atmospheric Administration, "Use of NOAA ESRL Data," February 14, 2017, ftp://aftp.cmdl.noaa.gov/products/trends/co2/co2_annmean_mlo.txt.

[32] See Roy Spencer, "95% of Climate Models Agree: The Observations Must Be Wrong," February 7, 2014, http://www.drroyspencer.com/2014/02/95-of-climate-models-agree-the-observations-must-be-wrong/ and http://www.drroyspencer.com/wp-content/uploads/CMIP5-90-models-global-Tsfc-vs-obs-thru-2013.png; Pat Michaels and Chip Knappenberger, "Climate Models Versus Climate Reality," Climate Etc., December 17, 2015, https://judithcurry.com/2015/12/17/climate-models-versus-climate-reality/; Judith Curry, "Lukewarming," Climate Etc., November 5, 2015, https://judithcurry.com/2015/11/05/lukewarming/; and Patrick J. Michaels and Paul C. Knappenberger, *Lukewarming: The New Climate Science That Changes Everything* (Washington, DC: Cato Institute, 2016), https://store.cato.org/book/lukewarming.

[33] See Michael E. Mann, "Little Ice Age," in *The Earth System: Physical and Chemical Dimensions of Global Environmental Change*, ed. Michael C. MacCracken and John S. Perry, vol. 1 of Ted Munn, ed., *Encyclopedia of Global Environmental Change* (Chichester: John Wiley & Sons, 2002), http://www.meteo.psu.edu/holocene/public_html/shared/articles/littleiceage.pdf.

[34] See Patrick J. Michaels and Paul C. Knappenberger, "Quantifying the Lack of Consistency Between Climate Model Projections and Observations of the Evolution of the Earth's Average Surface Temperature Since the Mid-20th Century," https://object.cato.org/sites/cato.org/files/articles/agu_2014_fall_poster_michaels_ knappenberger.pdf; and Patrick J. Michaels and Paul C. Knappenberger, "The Collection of Evidence for a Low Climate Sensitivity Continues to

(IPCC) in its fifth assessment report (AR5) has reduced its estimated range of the effect in 2100 of a doubling of GHG concentrations from 2.0–4.5 to 1.5–4.5 degrees Celcius.[35]

More to the point, there is little evidence of severe or even "strong" climate effects attendant upon increasing GHG concentrations. Increases in sea levels have been roughly constant at about 3.3 mm per year since the early 1990s, despite increasing GHG concentrations.[36] There appears to be a close correlation between sea levels and the El Niño/Southern Oscillation.[37] The data[38] presented in the IPCC AR5 for the 20th century are not consistent with the crisis view, and increases in sea levels appear to have been more-or-less constant for the past 8,000 years.[39] For the more recent decades, as we do not know the extent to which rising temperatures are anthropogenic, the same follows for temperature effects on sea levels, as the latter can be due to ice melt and thermal expansion not anthropogenic in origin.[40]

The data on the arctic and Antarctic sea ice extents are mixed.[41] Relative to the 1981–2010 average, the arctic sea ice in recent years crudely is below or at the bottom of the 95-percent confidence interval surrounding that mean,[42] although the newest data show that the 2017 arctic sea ice is at the same level as in 2006.[43] For the Antarctic, recent years are above or at the top of the confidence interval. There is some evidence that the eastern Antarctic ice sheet (about two-thirds of the continent) is gaining mass, while the western ice sheet and the peninsula are losing mass, with a net gain for the continent as a whole.[44] There does not appear to be an accepted explanation for this phenomenon in the peer-reviewed literature.

There has been no trend in total U.S tornado activity since 1954, and a declining trend in strong to violent tornadoes.[45] There has been no trend in the frequency of tropical cyclones since the early 1970s, no trend in

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Grow," Cato Institute, September 25, 2014, https://www.cato.org/blog/collection-evidence-low-climate-sensitivity-continues-grow.

[35] See IPCC, "Special Report on global warming of 1.5°C," https://www.ipcc.ch/; and IPCC, "Fifth Assessment Report," https://www.ipcc.ch/report/ar5/.

[36] See Anny Cazenave et al., "The Rate of Sea-Level Rise," *Nature Climate Change* 4 (2014): 358–61, http://www.nature.com/nclimate/journal/v4/n5/full/nclimate2159.html. See also the Global Warming Policy Foundation, "Reality Check: Sea Level Rise Not Accelerating," June 8, 2011, http://www.thegwpf.com/reality-check-sea-level-rise-not-accelerating/.

[37] See CU Sea Level Research Group, "2016_rel4: Global Mean Sea Level Time Series (seasonal signals removed)," University of Colorado at Boulder, Colorado Center for Astrodynamics Research, December 12, 2011, http://sealevel.colorado.edu/.

[38] See Judith Curry, "Slowing Sea Level Rise," Climate Etc., April 24, 2014, https://judithcurry.com/2014/04/24/slowing-sea-level-rise/ and https://curryja.files.wordpress.com/2014/04/sea-level.jpg.

[39] See Tony Brown, "Historic Variations in Sea Levels. Part 1: From the Holocene to Romans," Climate Etc., July 12, 2011, https://judithcurry.com/2011/07/12/historic-variations-in-sea-levels-part-1-from-the-holocene-to-romans/.

[40] See Rud Istvan, "Sea Level Rise Tipping Points," Climate Etc., May 18, 2014, https://judithcurry.com/2014/05/18/sea-level-rise-tipping-points/.

[41] For interactive charts, see National Snow and Ice Data Center, "Ch*arctic* Interactive Sea Ice Graph," http://nsidc.org/arcticseaicenews/charctic-interactive-sea-ice-graph/.

[42] See Judith Curry, "Why Is the Arctic Climate and Ice Cover So Variable?" Climate Etc., October 4, 2015, https://judithcurry.com/2015/10/04/why-is-the-arctic-climate-and-ice-cover-so-variable/.

[43] For a discussion of the data from the National Snow and Ice Data Center, see Polar Bear Science, "Polar Bear Habitat Update: As Much Sea Ice in 2017 as 2006 at 18 January," January 22, 2017, https://polarbearscience.com/2017/01/22/polar-bear-habitat-update-as-much-sea-ice-in-2017-as-2006-at-18-january/.

[44] See the National Aeronautics and Space Administration, "Mass Gains of Antarctic Ice Sheet Greater Than Losses," October 30, 2015, https://www.nasa.gov/feature/goddard/nasa-study-mass-gains-of-antarctic-ice-sheet-greater-than-losses.

[45] See the National Oceanic and Atmospheric Administration, National Centers for Environmental Information, "Historical Records and Trends," https://www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology/trends.

Table 1. IPCC AR5 on Proposed Abrupt/Irreversible Earth System Changes

Change in Climate System Component	Projected Likelihood in 21st Century	
	Probability	Confidence Level
Collapse of Atlantic meridional overturning circulation	very unlikely	high
Ice sheet collapse	exceptionally unlikely	high
Permafrost carbon release	possible	low
Clathrate methane release	very unlikely	high
Tropical forests dieback	–	low
Boreal forests dieback	–	low
Disappearance of summer arctic sea ice	likely	medium*
Long-term droughts	–	low
Monsoonal circulation [collapse]	–	low

*Under RCP8.5

Note: For a description of the representative concentration pathways, alternative scenarios of increases in atmospheric concentrations of GHG over time, see Detlef P. van Vuuren et al., "The Representative Concentration Pathways: An Overview," *Climactic Change* 109 (2011): 5–31, http://link.springer.com/article/10.1007%2Fs10584-011-0148-z. For a simplified discussion, see Graham Wayne, "The Beginner's Guide to Representative Concentration Pathways," August 2013, https://skepticalscience.com/docs/RCP_Guide.pdf. For the AR5 analysis of the disappearance of the summer arctic sea ice, RCP8.5 is the most extreme of the four RCPs used in the AR5, useful for sensitivity analysis but far less so for purposes of policy formulation. Under RCP8.5, GHG concentrations are assumed to grow to about 1,370 ppm by 2100, from about 404 ppm in 2016, or an average annual increase of about 11.5 ppm. See National Oceanic and Atmospheric Administration, CO2 annual mean, March 6, 2017, ftp://aftp.cmdl.noaa.gov/products/trends/co2/co2_annmean_mlo.txt. Since 1959 the single largest annual increase in GHG concentrations was about 3 ppm, in 2015. See National Oceanic and Atmospheric Administration, annual CO2 mole fraction increase, March 6, 2017, ftp://aftp.cmdl.noaa.gov/products/trends/co2/ co2_gr_mlo.txt. Accordingly, under RCP8.5 the average annual increase is almost four times larger than the single largest increase observed since 1959.

Source: Intergovernmental Panel on Climate Change, Working Group I, "Long-Term Climate Change: Projections, Commitments and Irreversibility—Final Draft Underlying Scientific-Technical Assessment," September 30, 2013, 77–84 and Table 12.4, http://www.climatechange2013.org/images/uploads/WGIAR5_WGI-12Doc2b_FinalDraft_Chapter12.pdf.

the frequency of global hurricanes, and no trend in tropical accumulated cyclone energy (crudely, the destructiveness of cyclones and the cyclone season); but accumulated cyclone energy in 2016 increased to the level observed in 2006.[46] The annual number of US wildfires shows no trend since 1985. The Palmer Drought Severity index shows no trend since 1895.[47] There is no correlation between US flooding and increasing GHG concentrations.[48]

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[46] For trends on tropical accumulated cyclone energy and the frequency of tropical cyclones and global hurricanes, see Ryan N. Maue, "Global Tropical Cyclone Activity," http://models.weatherbell.com/tropical.php. On the accumulated cyclone energy index, see National Weather Service, "Background Information: The North Atlantic Hurricane Season," http://www.cpc.ncep.noaa.gov/products/outlooks/background_information.shtml.

[47] See US Environmental Protection Agency, "Climate Change Indicators: Drought," https://www.epa.gov/climate-indicators/climate-change-indicators-drought; and National Oceanic and Atmospheric Administration, National Centers for Environmental Information, "Historical Palmer Drought Indices," https://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/.

[48] See R. M. Hirsch and K. R. Ryberg, "Has the Magnitude of Floods Across the USA Changed with Global CO_2 Levels?" *Hydrological Sciences Journal* 57, no. 1 (2012): 1–9, http://www.tandfonline.com/doi/full/10.1080/02626667.2011.621895.

IPCC in the AR5 is deeply dubious about the various severe effects often hypothesized (or asserted) as future impacts of increasing GHG concentrations.[49] Table 1 summarizes the AR5 analysis.

In short, IPCC views only the disappearance of the summer arctic sea ice as "likely," with "medium confidence," and only under the most extreme assumption about future GHG concentrations.

The CLC assertion of "evidence of climate change . . . growing too strong to ignore" is difficult to reconcile with the available data and analyses. Has the CLC bothered actually to review the data? Or are they content merely to adopt the conventional climate wisdom repeated endlessly?

Note that carbon dioxide is not "carbon," and it is not a pollutant, as a certain minimum atmospheric concentration of it is necessary for life itself. Water vapor is the most important GHG in terms of the radiative (warming) properties of the troposphere, but no one calls it a "pollutant." But why not? Is it because ocean evaporation is a natural process? So are volcanic eruptions, but no one would argue that the massive amounts of particulates and toxins emitted by volcanoes are not pollutants. The CLC and many others would do well to replace "carbon pollution" and other such phrases with the term GHG, which has the virtue of scientific accuracy while not assuming the answer to the underlying policy question.