

The Atmospheric Commons and Carbon Dividends: Implications for global and national basic income policies.

A paper for the 2019 Congress of the Basic Income Earth Network

Hyderabad, India

Michael W. Howard

University of Maine, USA

mhoward@maine.edu

In this talk I will be discussing the atmosphere as a commons, and carbon dividends as just per capita payments for the use of that commons by those responsible for emitting greenhouse gases, especially carbon dioxide. Since carbon dividends can be seen as a kind of partial basic income, I will discuss some implications of this approach for global and national basic income policies, and describe the United States and India as representative of high-emitting developed countries, and low-emitting developing countries respectively.

On June 28, 2019, France recorded its highest temperature ever, 45.9 Celsius, exceeding previous records by 1.8 C, yet another ominous benchmark of rising global temperature due to greenhouse gas emissions.¹ The United Nations warns that we are now seeing one climate crisis every week, one of the latest being Cyclone Kenneth in Mozambique.² India is experiencing its worst water crisis in history, with 21 cities expected to run out of groundwater by 2020.³ The climate emergency is no longer a thing of the future; it has begun, and will worsen as global warming approaches 1.5° and 2° C, and beyond. Developing countries will suffer disproportionately from the effects of climate change.

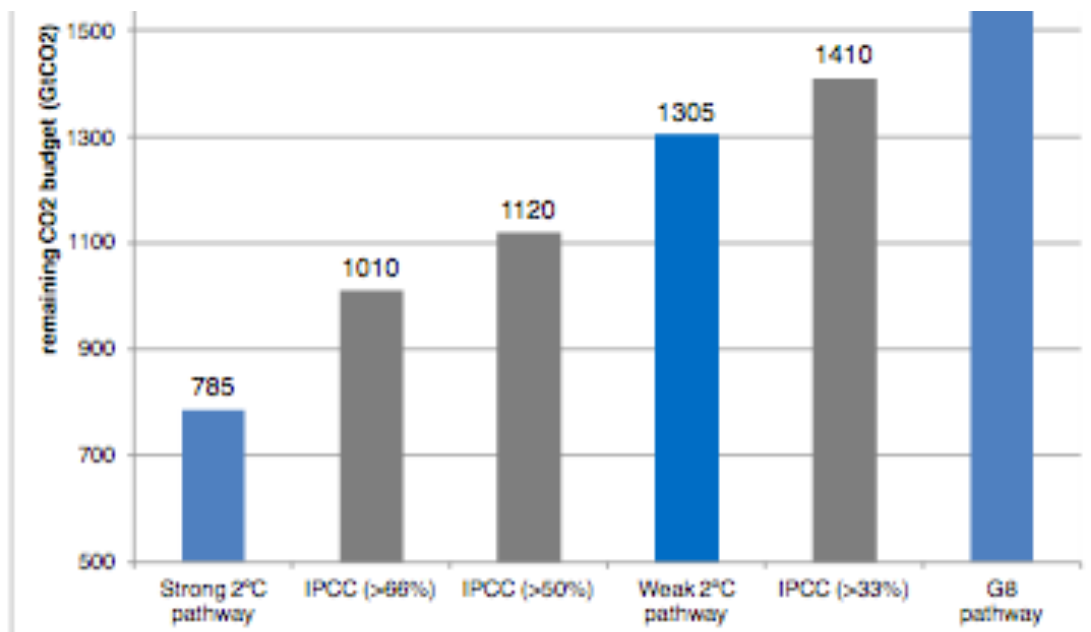
So what will it take to keep global warming well below 2°C? And what role can basic income play in the solution? The first question is actually a more complex question: What will it take to keep global warming below 2°C, *without trapping billions of people in extreme poverty*. The poor need to develop out of poverty, as much as possible on a “green” path, but probably with at least some increase in greenhouse gas (GHG) emissions for some years to come. Therefore, the affluent need to decrease emissions *more than they otherwise would*, to allow for development out of poverty.

This thesis is in line with the United Nations Framework Convention on Climate Change, and the ethical approach I’ll be developing in this paper can be understood as an interpretation of that convention.⁴ The UNFCCC aims for GHG stabilization “on the basis of equity in accordance with their common but differentiated responsibilities and respective capacities.”⁵ I.e., the convention asserts a principle of responsibility, commonly understood as “polluter pays,” and a principle of capacity, or ability to pay. The UNFCCC also asserts a right to sustainable development, which in the past justified exemptions from emission reductions for developing countries. This means that “the developed country Parties should take the lead in combating climate change and the adverse effects thereof.”

The United States is the world's largest emitter of CO₂, responsible for 27 percent of emissions from 1850 to 2011, followed by the European Union (25 percent) and China (11 percent).⁶ However, if we consider GHG emissions from 1990 to 2011, China is almost on par with the United States (15 percent and 16 percent). India is responsible only for 4 percent of global emissions during this period. And now, on an annual basis, China has a larger share of global CO₂ emissions from fuel combustion (28 percent in 2015, versus 15 percent for the US and 6 percent for India).⁷

The United Nations warns that we have only a decade in which to keep global warming below 1.5C.⁸ The carbon budget for 2C will be exhausted in 2035 on the current trajectory, less than 16 years from the date of this congress.⁹

The carbon budget that remains before exceeding 2C is illustrated by the left two bars in the following graph:



from EcoEquity¹⁰

The carbon budget (CO₂) **per person annually** to keep warming below 2C is about **3 metric tons**, for the 30 years from 2014 to 2044. To arrive at this figure we take a carbon budget of about 785-1010 billion metric tons of CO₂, starting from 2014, we divide this by the world population, we take 80 percent of this figure over the next 30 years (leaving only 20 percent of the budget for the last half of the 21st century, getting to net zero carbon). Then we divide by 30 to get the annual budget per capita over these 30 years.¹¹

Now here is the sobering news. Per capita emissions in 2017 **globally** averaged **4.9 tonnes**. At this rate the carbon budget will be exhausted by 2032. This average masks wide variation in national carbon per capita emissions. The **US** in 2017 averaged **15.7 tonnes**, China 7.7, the EU 7, **India 1.8**, and Sub-Saharan Africa .8 (2013). Therein lies a

possible solution to the climate crisis, a solution in which basic income could play an indispensable role.

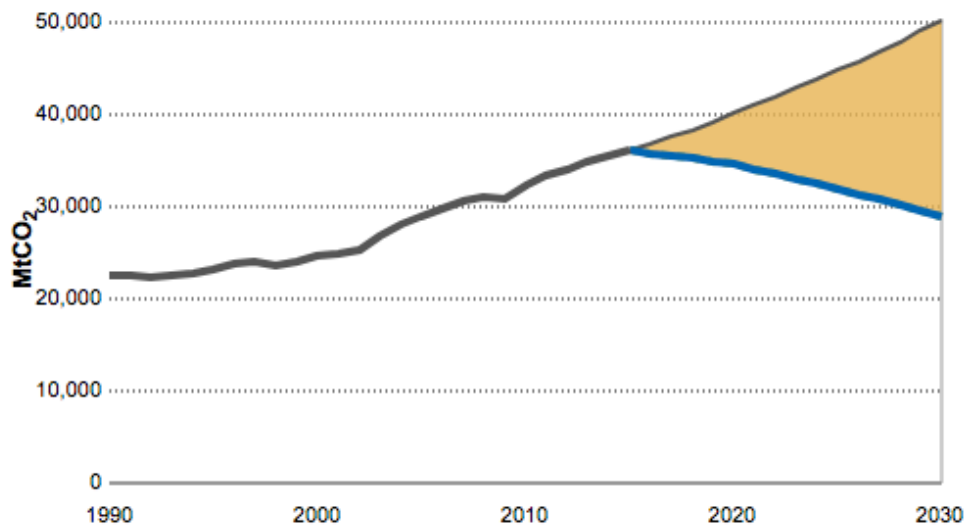
The solution involves massive emissions reductions in developed countries. But since the carbon budget no longer leaves much room for continued emissions from developing countries, the solution must include resource transfers, which could include a basic income, in exchange for developing countries foregoing their rightful per capita shares of the commons, the carbon budget. The developed countries must enable the developing world to develop out of poverty without reliance on fossil fuels. The alternative is the morally indefensible and politically unrealistic expectation that developing countries must choose between, on the one hand, emitting carbon and provoking an environmental crisis which will hit them particularly hard, and, on the other hand, leaving billions of their people stuck in extreme poverty.

We can work this idea out more precisely using EcoEquity's online Responsibility/Capacity calculator,¹² in the use of which, for this paper, I will assume a. responsibility for pollution since 1990, b. countries with greater capacity (more people with incomes above \$7500/year) should carry more of the cost, and c. a right to development, including, in principle if not in practice, some increase in carbon emissions.

Here is EcoEquity's graph for emissions reductions between 2014 and 2030, to stay below 2C. (From 2019 or 2020, this curve will be steeper, because emissions did not peak in 2014, but have continued to rise.)

Country/region report in 2030 for World

[Show settings](#)

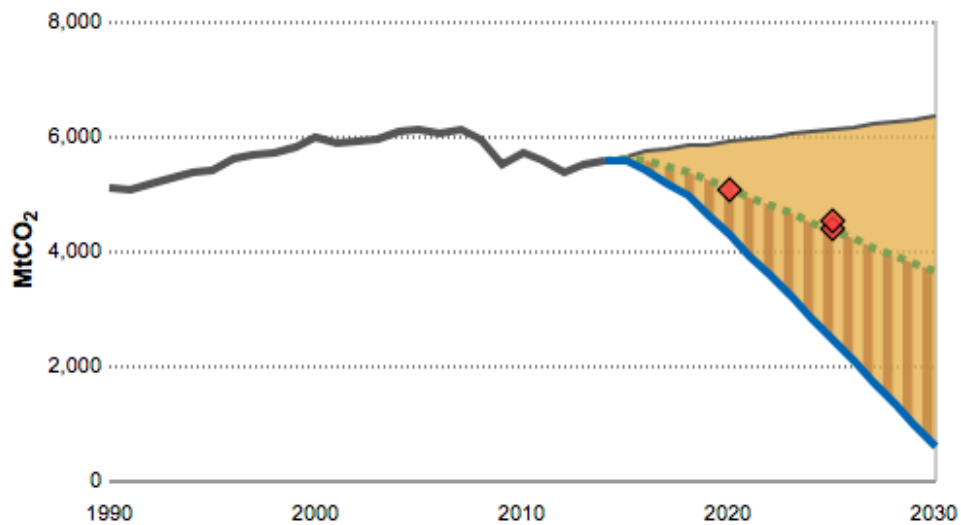


The calculator shows that globally, emissions will have to decline steadily from 4.9 tonnes/person (in 2014) to 3.4 tonnes/person by 2030. (Again, starting in 2020, the starting point is higher, the target will be lower, and the rate of reduction will be more rapid.) The US, although responsible, as we have seen, only for about 15 percent of

carbon emission since 1990, must nevertheless assume responsibility for about 27 percent of these global emissions reductions, because of its greater capacity. If this responsibility were discharged entirely through domestic emissions reductions, US per capita emissions would need to fall from 15.7 tonnes/person to 1.7, or **88 percent below 1990 levels, by 2030**. That is virtually impossible. However, it is still possible to imagine splitting the US responsibility between domestic emissions reductions (say, 44 percent), and assuming the cost of emissions reductions elsewhere, in countries like India. The following graph illustrates this.

Country/region report in 2030 for United States

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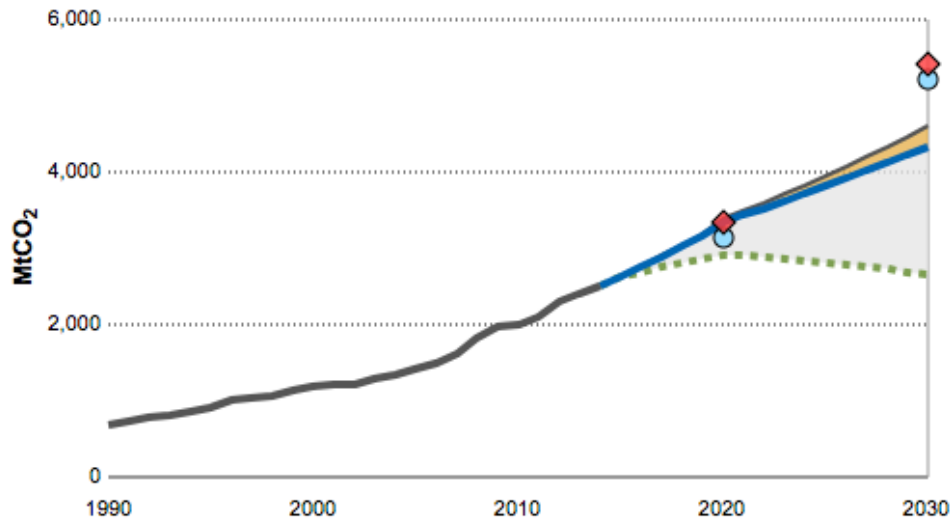


The blue line is the US's Fair Share, based on Responsibility since 1990, and Capacity + \$7500 development threshold. The top shaded portion is domestically funded mitigation. The green line is domestic emissions. The diamond is the unconditional pledge made in the Paris Accord. The shaded/lined area is mitigation funded in other countries.

Now compare India's country report:

Country/region report in 2030 for India

[Show settings](#)



Again, the blue line is India's Fair share. Note that it rises steadily to 2030, because of India's lower responsibility, and much larger share of the remaining carbon budget per capita. However, given the shrinking global carbon budget, India and other developing countries can no longer emit greenhouse gases at an increasing rate if the world is to stay below 2C. The green line represents India's domestic emissions reductions. But note the grey area: the bulk of India's emissions reductions must be funded by other countries. Only the yellow area is domestically funded. The diamond represents India's unconditional pledge, and the blue circle it's conditional pledge. It should be quite clear that countries like India cannot reasonably be expected to forego carbon emissions at the expense of their own development. Their participation in needed carbon emissions reductions will require massive resource transfers. Such transfers are not only necessary to achieve an agreement, they are just.¹³

Now what does this have to do with basic income? First, clearly, this proposal will require enormous cash transfers (on the order of 7 times the goal, and 70 times the pledges of the Green Climate Fund).¹⁴ Second, these transfers may be more or less targeted, the least targeted of which would be a universal basic income (UBI). Here we face a challenge: Isn't there a stronger case for targeting transfers on emissions reductions? The response is that there are ways that less targeting, even UBI, could be an integral part of global emissions reduction policy.

I'll make this point first with respect to a carbon tax (or cap) and dividend. A carbon tax is a likely policy in any effective effort to reduce carbon emissions. However, it is regressive, hence unfair, and politically difficult to introduce at the level needed to bring carbon emissions down rapidly. Returning the revenue of the tax (or the revenue from an auction of carbon permits under a cap) in the form of a per capita dividend—a partial UBI—rectifies the unfairness, and makes the tax more politically feasible.

But is the amount of income from a carbon tax significant? I argue that a little cash can go a long way, particularly internationally. Consider the evidence from the Indian UBI pilot. Each adult received 200 rupees/month, about US\$3.75/month or \$45/year, about 30 percent of subsistence (and half that amount for children). As we have seen, the results of this experiment included improvements in medication, education spending, school attendance, infrastructure, more economic activity, savings, and more.¹⁵ Others at the congress will have presented the evidence in detail. The question I raise is, how might such a UBI be funded nationally?

Paul Segal (In Widerquist and Howard, *Exporting the Alaska Model*, 2012) showed that “if all developing countries were to implement [a resource dividend] then **global poverty would be better than halved.**” Here is a summary of Segal’s data, including his estimate of resource rents that could support a resource dividend in India:

- Rents % of GDP: 4.9
 - **RESOURCE DIVIDEND, monthly:**
 - **2005 prices: \$2.90 (\$34.80/year)** [2019 dollars: \$45.94]
 - rural: \$11.10 (PPP\$)
 - urban: \$7.30 (PPP\$)
 - Current poverty headcount, million: 455.4 (<PPP\$1.25/day)
 - 41.6%
 - Poverty headcount with RD, million: 247.8
 - 22.6%
 - Gini, current: 34.9
 - Gini, with RD: 29.8
- Segal 2012¹⁶

It might be difficult in India, as in other countries, to collect all the resource rents. However, if all of India’s carbon dioxide emissions (2.5 billion tons) were taxed at **\$20 per ton**, and distributed as a per capita dividend, the dividend would be more than Segal’s resource dividend (not counting reduced emissions): **\$37/person/year and rising (to perhaps \$300+)**. Over time the tax is ratcheted up, but emissions decline; dividends will rise, then decline, so the precise peak of the dividend is difficult to predict.

Now consider a global carbon tax starting at \$20/ton on CO2 emissions. This would yield an annual dividend globally starting at **\$97 per person** (about twice the dividend of the Indian pilot BI). It would be greater in India than a national carbon tax or resource dividend alone.¹⁷

A global carbon tax and dividend encounters a political difficulty. A globally egalitarian policy would increase inequality, and probably weaken support for carbon taxing, in affluent countries like the US, where a \$20 per ton carbon tax could otherwise be used for a **per capita annual dividend nationally beginning at \$320** (again, not discounting for declining emissions).¹⁸ To surmount this political difficulty, it may be necessary to compromise with a just solution, and divide the results of national carbon taxes into a national share, and a contribution to a global fund to be distributed on a per capita basis

globally. If the division were 50 percent to the national dividend, and 50 percent to the global dividend, India and the US would fare as follows:

- US: \$160 (half of national carbon tax) + 49 (global dividend) = **\$209/person/year**
- India: \$19 (half of national carbon tax) + 49 (global dividend) = **\$68/person/year**
(1.5x the Indian pilot BI)

But is this the best use of the carbon tax revenue? The most compelling argument is that without a policy (such as the carbon dividend) addressing the unfairness of the carbon tax, a robust carbon tax is unlikely to be instituted. A second argument, which I present as a suggestion for discussion, is that a UBI, by reducing poverty, could help to slow population increase, one of the key drivers of global warming. And although a UBI may increase energy consumption—by putting more cash in the hands of low income households that spend a higher proportion of their incomes—with some nudges the increased consumption could be on a more sustainable path. Carbon fee and dividend cannot do all of the work, and UBI would need to be paired with education about sustainable alternatives, about family planning, etc.

It is beyond the scope of this talk, but I will mention in closing that a global carbon dividend could be part of a more ambitious “degrowth” strategy, involving a more substantial UBI to enable a. sustainable growth out of poverty (i.e, poverty alleviation through cash transfers, not GDP growth), and b. reduction of energy consumption in developed countries (reduced work time, less energy-consuming work in the informal sector, etc.). We thus envision a convergence to equal opportunity for a flourishing life. In developed countries this means a fall in overconsumption to a sustainable maximum. In developing countries it involves a rise to the minimum material consumption necessary for a full life.

This talk is an updated and shortened version of a paper presented at the BIEN 2018 Congress in Tampere, Finland. That paper is available here: <https://basicincome.org/wp-content/uploads/2018/09/Cosmopolitanism-and-an-ecological-basic-income.pdf> Also relevant is the overlapping paper posted in the USBIG Discussion Paper series, presented at the NABIG Congress, Hamilton, Ontario, 2018: [https://usbig.net/papers/\(Howard\)_The_Ecological_Case_for_Basic_Income_A_Challenge_for_Convergence.pdf](https://usbig.net/papers/(Howard)_The_Ecological_Case_for_Basic_Income_A_Challenge_for_Convergence.pdf) Contact the author for access to the video of the talk in Hyderabad.

¹ <https://www.theguardian.com/news/2019/jul/03/temperatures-hit-new-highs-in-european-heatwave>

² https://www.theguardian.com/environment/2019/jul/07/one-climate-crisis-disaster-happening-every-week-un-warns?utm_term=RWRpdG9yaWFsX0dyZWVuTGlnaHQoMTkwNzEy&utm_source=es&utm_medium=Email&utm_campaign=GreenLight&CMP=greenlight_email

“Estimates put the cost of climate-related disasters at \$520bn a year, while the additional cost of building infrastructure that is resistant to the effects of global heating is only

about 3%, or \$2.7tn in total over the next 20 years.” i.e., 135 billion/year, one quarter the cost of the disasters.

³ <https://www.theguardian.com/world/2019/jun/28/our-whole-life-is-disrupted-hope-dries-up-as-chennai-battles-historic-drought>

Image: women collecting water from a makeshift well in Chennai (pop. 10 million)

“A government report estimates that 21 cities will run out of groundwater by 2020.”

3 years ago India recorded a record high temperature of 51C (123.8 F).

<https://www.theguardian.com/world/2016/may/20/india-records-its-hottest-day-ever-as-temperature-hits-51c-thats-1238f>

⁴ I am indebted for the ethical approach not only to Athanasiou et al. (see below), and to the work of Simon Caney, who also combines principles of responsibility and capacity in his estimate of global justice concerning climate change.

⁵ Article 3.

https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf

⁶ World Resources Institute

http://www.wri.org/sites/default/files/uploads/historical_emissions.png

⁷ Union of Concerned Scientists, based on IEA data.

⁸ According to the Guardian, 8 October, 2018, “The world’s leading climate scientists have warned there is only a dozen years for global warming to be kept to a maximum of 1.5C, beyond which even half a degree will significantly worsen the risks of drought, floods, extreme heat and poverty for hundreds of millions of people.”

“The half-degree difference could also prevent corals from being completely eradicated and ease pressure on the Arctic, according to the 1.5C study,”

“At 1.5C the proportion of the global population exposed to water stress could be 50% lower than at 2C, it notes. Food scarcity would be less of a problem and hundreds of millions fewer people, particularly in poor countries, would be at risk of climate-related poverty.”

“At 2C [extremely hot](#) days, such as those experienced in the northern hemisphere this summer, would become more severe and common, increasing heat-related deaths and causing more forest fires.

But the greatest difference would be to nature. Insects, which are vital for pollination of crops, and plants are almost twice as likely to lose half their habitat at 2C compared with 1.5C. Corals would be 99% lost at the higher of the two temperatures, but more than 10% have a chance of surviving if the lower target is reached.”

“Sea-level rise would affect 10 million more people by 2100 if the half-degree extra warming brought a forecast 10cm additional pressure on coastlines. The number affected would increase substantially in the following centuries due to locked-in ice melt.”

Carbon Tracker:

<https://www.carbontracker.org/carbon-budgets-explained/>

“The 1.5°C target

Following the ambition of the COP21 Paris Agreement there is ongoing work to understand the implications and feasibility of limiting anthropogenic warming to 1.5°C. Recent academic studies estimate the 1.5°C carbon budget is likely to be 200-415GtCO₂ from 2011 to 2100 for different likelihoods.^[xvii] The IPCC AR5 estimates for the same time period are slightly higher – from 400-550GtCO₂. In both instances, however, removing the CO₂ emissions from the fossil fuel sector from 2011 to date leaves very little budget left for the sector to the end of the century.”

“The IPCC will publish a report in 2018 on 1.5°C emissions pathways. An early version of this document was leaked to the media in January. This working document confirmed that there is a ‘high risk’ temperatures are not kept to 1.5°C of warming, and that ‘with a 66% probability, it [the 1.5°C target] lies beyond our capabilities’.^[xviii] Having any chance of hitting the 1.5°C target requires drastic, immediate cuts in fossil fuel use, as indicated by the work of initiatives like Mission 2020.”

⁹ <http://www.trillionthtonne.org/> accessed August, 2019. To avoid confusion, note that Trillionthtonne uses carbon, not CO₂. The distinction is also important for understanding the carbon (dioxide) budgets. Joe Romm explains: “Some people use carbon rather than carbon dioxide as a metric. The fraction of carbon in carbon dioxide is the ratio of their weights. The atomic weight of carbon is 12 atomic mass units, while the weight of carbon dioxide is 44, because it includes two oxygen atoms that each weigh 16. So, to switch from one to the other, use the formula: **One ton of carbon equals 44/12 = 11/3 = 3.67 tons of carbon dioxide**. Thus 11 tons of carbon dioxide equals 3 tons of carbon, and a price of \$30 per ton of carbon dioxide equals a price of \$110 per ton of carbon.”
<https://thinkprogress.org/the-biggest-source-of-mistakes-c-vs-co2-c0b077313b/>

¹⁰ CO₂ budget, not carbon budget [My 3 tons CO₂ is between strong 2C and IPCC >66%]]

This budget DOES NOT APPEAR TO INCLUDE NON-CO₂ GHGs.

From Eco_Equity (Athanasίου et al.):

Re 1.5C: The IPCC provides less explicit information on the likelihood of exceeding 1.5°C, but based on the information given, it is possible to conclude that the Strong 2°C path’s chance of keeping warming below 1.5°C is “more unlikely than likely” (less than 50%) and the Weak 2°C and G8 paths are both “unlikely” (less than 33%).

Source of the graph: Athanasίου, T., Baer, P., Kartha, S., and Kemp-Benedict, E. (2014). Three salient global mitigation pathways, assessed in light of the IPCC carbon budgets. Greenhouse Development Rights, EcoEquity, and Stockholm Environment Institute.

<http://gdrights.org/three-salient-global-mitigation-pathways-assessed-in-light-of-the-ipcc-carbon-budgets/>

¹¹ The world population is about 7 billion, but as it is expected to rise to 9 billion by mid-century, this figure leads us to overstate the quote per person. I therefore used 8 billion to get a lower range, so 112-144 with 7 million, 98-126 for 8 million, and overall 98-144.

Note: is this CO₂ or CO₂e? I assume the former.

The carbon budget then is between 2.6 and 3.4 metric tons per person per year globally.

CO2 emissions in 2014 35.7 Mtonnes CO2 22-28 years at 2014 rate of emissions.

https://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions

Note: since we have continued to burn carbon at twice our allotment since 2014, the actual budget per person is closer to 2.6 tonnes/person between now (2019) and 2044.

¹² <https://calculator.climateequityreference.org/>

¹³ For more on the theory of justice invoked here, see my paper for the Finland BIEN Congress in 2018, cited at the end of this paper.

¹⁴ Note: A global dividend of \$97/person represents over \$700 billion annually (assuming 7.7 billion population in 2019). For comparison, the Green Climate Fund is supposed to receive \$100 billion annually from wealthier countries by 2020, and currently has pledges of \$10.3 billion for 2015-18 “Initial Resources Mobilization”.

<https://www.ecowatch.com/climate-catastrophe-2485745545.html>

https://www.greenclimate.fund/documents/20182/761223/Initial_Strategic_Plan_for_the_GCF.pdf/bb18820e-abf0-426f-9d8b-27f5bc6fafeb

¹⁵ For more on the Indian UBI pilot, see Standing, Guy. “Can Basic Income Cash Transfers Transform India?” *Basic Income News*, February 4, 2013.

<http://binews.org/2013/02/opinion-can-basic-income-cash-transfers-transform-india/> ; more detail in

http://www.guystanding.com/files/documents/Basic_Income_Pilots_in_India_note_for_inaugural.pdf ; the final report: *Basic Income: A Transformative Policy for India* (G. Standing, S. Davala, R. Jhabvala and S.Kapoor Mehta (London and New Delhi, Bloomsbury Academic, 2015)

¹⁶ These are 2005 dollars. In 2019, assuming 2% inflation, \$1 = \$1.32 in 2019
Thus 34.80 = \$45.94

<https://www.dollartimes.com/inflation/inflation.php?amount=1&year=2005>

- ¹⁷ India emits only 6.8 % of the over 30 billion tons of CO2 emitted globally per year.
- US, with 4 % of the world’s population, produces 14 % of the CO2 emissions (and much more per capita than most other countries; and a much higher percentage of historical emissions (nearly 30 percent between 1850 and 2000)

Also about a third of global mitigation and adaptation costs per capita.

https://en.wikipedia.org/wiki/World_population

2016:

https://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions 2015

Note: Climate Leadership Council proposes a carbon tax starting at \$40/ton

¹⁸ Carbon Tax Center’s calculator shows a figure in the same ballpark (\$334), and rising annually through 2040, as far as the simulation goes, to \$2736 per capita, with annual increments of \$10/yr. Starting at \$20. <https://www.carbontax.org/> Accessed 8/10/2018.