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The Flyer’s dilemma and the Logger’s case for climate justice

Matthew Jurjonas a, *, Lesly Aldana b

a Fulbright-García Robles U.S. Scholar at the Universidad Nacional Autónoma de México, Mexico
b Rainforest Alliance, Mexico

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ABSTRACT

The Paris Agreement and the United Nations Framework Convention on Climate Change outline mitigation goals by sector. However, this framing is likely to create climate justice issues as it does not explicitly address the contributions of individuals. High emissions from luxury activities like commercial air travel are addressed with voluntary and behavioral change approaches for mitigation while the global rural communities who are dependent on forestry-based livelihoods face carbon credit schemes as well as federal and international conservation interventions despite having a lower per capita carbon footprint. To illustrate this point, the emissions of the average air traveler and several international flights are compared to the average forest user in relation to land use change emissions. In many cases, a single round-trip international flight emits more CO2 per person than the yearly national average of India, Mexico, and Tanzania; all countries with important forestry sectors and indigenous people that depend on forestry-based livelihoods. The disproportionate regulatory burden of forest users in the developing world contrasts their relative contribution to climate change and the unregulated individual behaviors of the global elite. It is time for mandatory offset charges on airline tickets and regulatory framing of mitigation by per capita contributions instead of sector-based approaches.

1. Individual emissions as climate justice

The Paris Agreement lays out a framework for the reduction of greenhouse gas emissions to reach climate change mitigation goals (UNFCCC, 2015). The Agreement considers CO2 emissions based on nations, sub-national entities, and sectors (e.g. transportation, land use change, and energy) (Bhowmik et al., 2020). However, considering emissions by sector alone could abscond the more complex nature of individual contributions and create climate justice issues as specific reduction targets for individuals are notably absent (Higham, Ellis, & Maclaurin, 2019). In addition, most public messaging efforts for climate change mitigation are broadly framed as a collective action issue; if each person would do their part and change their lifestyle, progress could be made (Higham et al., 2019; Adger, 2003). However, research on the distribution of emissions shows that generally the top 10% of individual emitters are responsible for up to 50% of total emissions (Oswald, Owen, & Steinberger, 2020; Bel & Rosell, 2017; Brand and Boardman, 2008). Given that emissions are highly correlated with income (Boucher, 2017), framing mitigation as a class struggle is increasingly necessary to mark the difference between subsistence and luxury emissions (Schlosberg, 2019). In this light, the mitigation movement needs to address the individuals who are making the greatest contributions to climate change.

Distributing the carbon budget using climate justice criteria has been proposed to address fairness in mitigation efforts (Gach, 2019; Bel & Rosell, 2017; Chakravarty et al., 2009). Nonetheless, distinct sectors are treated differently by mitigation policy. For example, deforestation and logging have been subject to decades of conservation efforts and increasingly strict regulation for emissions mitigation (García-López, 2018; Osborne, 2015). Yet, given the relative size of the population involved, it is likely that their per capita emissions are less than the global elite who maintain high-emissions lifestyles with luxury activities like frequent air travel among others (Schlosberg, 2019). A single flight could potentially emit more per person in a day than the average logger in Mexico might do in a year, whose livelihood is also at stake (Jurjonas & Seekamp, 2019). Therefore, new messaging is needed to appropriately value air travel relative to more commonly promoted green behaviors like recycling, plant-based diets, or driving an electric car (Wynes & Nicholas, 2017), while rural activities in developing countries need to be contextualized through fairness. In this opinion, per capita emissions of generally more regulated activities like forest use and logging (Kashwan, 2017) are compared to the entirely unregulated behavior of air travel...
(Higham et al., 2019), to raise questions about why the forest users of developing countries are subject to disproportionate regulation.

2. The impact of air travel

Air travel represents a growing challenge to the global carbon budget as it is expected to increase by 300% by 2050 (Higham et al., 2019; ICAO, 2016). In addition, tourism demands are expected to contribute to 40% of global CO2 emission by 2050 (Dubois & Ceron, 2006), of which aviation adds the largest share (Higham, Cohen, & Cavaliere, 2013). While transportation is responsible for 23% of annual greenhouse gas emissions, emissions specific to aviation are about 4–5% (Larsson et al., 2018; Higham et al., 2014). There are about 4.23 billion total airline passengers per year (ICAO, 2018). However, only about 6% of the global human population travel by air in any given year and about 20% of people have flown in their lives (Negroni, 2016). This would make roughly 455,640,000 people responsible for the 1660 Mt of annual CO2 emissions from air travel (4% of 41,500 Mt Global CO2 Emissions in 2018; Le Quéré et al., 2018). This results in a per person annual impact of 3.64 t\textsubscript{CO2} when divided evenly. Therefore, this behavior alone places this 6% as one of the highest emitting populations globally, well above the yearly per capita average of many nations (World Bank, 2015). Concerning Covid-19, many of these air travel projections will need reassessment to account for the travel slump during the pandemic. Nonetheless, air travel is likely to recover and the passengers who fly in the interim will have inflated footprints if their flights are not full. To contextualize the impact of air travel relative to national averages, a single round-trip flight is compared to the average per capita emissions of the developing countries where Kashwan (2017) documents conservation conflict with community forestry enterprises (Table 1).

To address climate change mitigation for air travel, a growing body of literature considers its disproportionate impact (Brand and Boardman, 2008). There is an attitude and behavioral gap when it comes to individual considerations for air travel (Bel & Rosell, 2017). Even people who are concerned about climate change appear unwilling to change their travel behavior or purchase offsets, developing rationalizations to justify their own air travel (Brouwer, Brander, & Van Beukering, 2008). Air travelers cite professional development (Wynes & Donner, 2018), positive social benefits from experiencing new cultures, and leisure benefits as reasons for continued flight (Becken, 2007), which are all personal, as opposed to collective, reasons that lead to unwillingness to compromise air travel (Boucher, 2017).

3. Deforestation and logging

Tropical deforestation is responsible for 11% of global CO2 emissions (Tyukavina et al., 2015). This figure includes clearing from logging as well as agriculture (Ellis et al., 2017). Compared to air travel, individual users in the forestry sector of developing countries are subject to extensive regulation and have also lost rights due to top-down conservation governance (García-López, 2018; Kashwan, 2017). Additionally, the United Nations Framework Convention on Climate Change (UNFCCC) has a specific focus on land use change emissions and deforestation (UNFCCC, 2015). As a result, logging generally requires a permit and restrictions on forest use are legally mandated (Kashwan, 2017). While industrial agriculture is the major culprit of land use change (Nolte et al., 2017; Barsimantov & Navia Antezana, 2015), many small-scale producers and forest dependent indigenous people get grouped into these rural regulatory frameworks that challenge their livelihoods (Jurjons & Seekamp, 2019), despite having demonstrated better conservation outcomes than protected areas in many cases (Pazos-Almada and Bray, 2018; Van Vleet, Bray, & Duran, 2016), and international carbon credit and ecosystem service payment interventions frequently provide unjust pricing (Sikor et al., 2014; Corbera et al., 2007).

Alternatively, forest use and even illegal logging, can be considered as a per capita issue. There are about 3.4 billion people in the rural regions of the world (World Bank, 2018), of which about 1.6 billion are dependent on forests, to some degree, to maintain their lifestyle (Hecht et al., 2015) To arrive at a per capita calculation for the emissions generated from land use change, a population must be determined. If we use this 1.6 billion; thus, blaming only forest dependent people, forest users would have an average of 2.85 t per capita per year, which is still significantly less than the average air traveler, and they are generally not considered the main culprits of land use change (Nolte et al., 2017; Rendón & Morales, 2008). Furthermore, emissions in rural regions and logging communities are generally less than national averages (Jurjons & Seekamp, 2019). For example, Mexico, Tanzania, and India—which have realized resource conflict with federal governments and illegal logging as a result of stricken land rights—have 4.00 t, 1.7 t, and 0.2 t per capita CO2 emissions rates, respectively (Kashwan, 2017; World Bank, 2015).

4. A call for climate justice

Emissions are correlated with income making poverty an important explanation for the low per capita CO2 emissions in developing countries, but what explains the disproportionate regulation by type of emissions activity? Many rural and frequently indigenous communities face increasing environmental regulation and forest use restrictions despite their relatively smaller carbon footprints (Jurjons & Seekamp, 2019; Corbera et al., 2007), as well as international pressure from aid and conservation NGOs (Osborne, 2015), despite a record of good stewardship in many cases (Pazos-Almada and Bray, 2018; Kashwan, 2017). Meanwhile, transportation emissions—including air travel—are approached from an engineering perspective to improve efficiency or with a behavioral change approach to promote more responsible consumers (Rbwomuk et al., 2020; Higham et al., 2019), while individualized regulation or top-down approaches face heavy resistance (Boucher, 2017; Becken, 2007). Ultimately, flight as a contribution to climate change is externalized and rationalized (Becken, 2007) and carbon credit schemes or carbon taxes remain distant solutions (Boucher, 2017).

Table 1

The percent of average yearly per capita emissions of roundtrip flights compared to annual national per capita averages. The calculations use the effective climate impact of flying at 0.189 kg/km\textsuperscript{1} from Larsson et al. (2018) for international flights. Great circle distances were taken from Google Earth. Average annual per capita emissions were taken from the World Bank (2015).

| Country   | Average annual per capita emissions t/ person | One round-trip flight t/person | Percent of the average annual per capita emissions of the round-trip flight |
|-----------|---------------------------------------------|-------------------------------|---------------------------------------------------------------------|
| Global Average | 4.98                                       | 2.10                          | 42%                                                                  |
| United States | 16.50                                      | 2.10 (New York to London)    | 13%                                                                  |
| Mexico     | 4.00                                        | 3.37 (Mexico City to London) | 84%                                                                  |
| India      | 1.70                                        | 2.54 (New Delhi to London)   | 149%                                                                 |
| Tanzania   | 0.20                                        | 2.75 (Dodoma to London)      | 1373%                                                                |

\footnote{1 SI Megaton (Mt)  
2 SI Metric ton (t)}
It appears that the developing world is likely to not only suffer from more climate change impacts (Schlosberg, 2019), but also regulation that disproportionately targets their specific behaviors (Gach, 2019; Osborne, 2015). From a climate justice perspective, we must ask if emitters with less relative power and voice in government procedure, as well as at the international level government negotiations, face unfair regulation. Specifically, why does the global north, with whiter emitters, face only behavior change or voluntary approaches while developing countries face top-down approaches? New lines of research must begin to consider this conflation of sector vs individual emissions, to more thoroughly explore the psychological externalizations of behavior that lead to the belief that air travel is a human right, while interrogating the justice implications facing forest users in developing countries. Meanwhile, it is time to make offset payments mandatory for all airline tickets—as the purchasers are some of the largest individual contributors to climate change—so that the loggers in developing countries receive a payment for their lower emissions lifestyle. As the airline industry adapts to the pandemic and plots a course for recovery, now might be an opportune moment to include a more sustainable agenda moving forward.

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6. Disclosure statement

While Rainforest Alliance Mexico (the second author’s affiliation at the time of publication) has no current involvement in carbon markets and their involvement in REDD ended in 2017, the global organization and their partners may be positioned to benefit from carbon offsets being added to airline ticket prices in the future, as recommended by this perspective article.

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Matthew Jurjonas is currently the Bailey Conservation Fellow at The Nature Conservancy’s Michigan Chapter and the Cooperative Institute for Great Lakes Research. Prior to joining The Nature Conservancy to work on Great Lakes coastal management issues, his research focused on community forestry enterprises in Mexico as a Fulbright-García Robles U.S. Scholar. His research interests include community resilience, collective action, and climate justice.

Lesly Aldana is a Senior Projects Manager at Rainforest Alliance Mexico. She is the Chief of Party for the USAID funded project named “Alliance for Sustainable Landscapes and Markets” and also leads the “Alliance for Sustainable Markets” initiative nationally. Her interests include sustainable development, climate change, and marketing sustainable products.

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