

The Carbon Footprint Effects of Bilateral International Migration Flow to the U.S.A.

Topic: Input-Output Analysis: Sustainable Production and Consumption Policies - II

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The UNEP reported that per capita consumption-based GHG emissions are highly unequal between and within countries. The EORA carbon footprint database also shows that there existed a large difference in the per capita consumption-based CO₂ emissions across countries and the U.S.A. shows higher per capita consumption-based emissions of 20.9 t-CO₂e larger than country average of 8.84 t-CO₂e. The U.S.A. ranks second in the per capita consumption-based emissions in the world in 2021. This implies that lifestyle of the U.S. people was relatively carbon-intensive in a comparison with other countries.

On the other hand, we observe that 740 thousand immigrants obtained permanent resident status in the U.S.A. in 2021 and lived there. An important research question is how the lifestyle of the immigrants changed before and after the migration and what were the net effects of their lifestyle changes on the CO₂ emissions? In addressing this question, this study combines an environmentally-extended multi-regional input-output analysis framework with immigrants flow analysis framework and estimates the net consumption-based CO₂ emissions of immigrants flowing from a specific country to the U.S.A. (i.e., difference in the consumption-based emissions of immigrants before and after the migration). In doing it, we used both the EORA database during 2000 to 2021 and the detailed immigrants flow statistics during 2000 to 2021 provided by the U.S. department of homeland security.

To the best of our knowledge, this study is the first attempt to shed light on the role of the migration in the environment. The empirical results show that 740 thousand immigrants to the U.S. contributed to increasing CO₂ emissions by approximately 9 Mt-CO₂e due to their lifestyle changes in the U.S., accounting for 0.2% of the total CO₂ emissions of the U.S. in 2021. Although it seems that the additional annual CO₂ increase by the immigrants' consumption activity was trivial in 2021, we further found that immigrants flowing to the U.S. during this two decades contributed to more than 250 Mt-CO₂e, accounting for 5% of the U.S. emissions in 2021. Thus, it is crucial in reducing the consumption-based emissions by immigrants in the U.S. Another important finding is that bilateral migration flows from major five countries of India, Mexico, China, Philippines, and Dominican Republic to the U.S.A. occupied a large portion of 57% of the total of the net consumption-based emissions of immigrants to the U.S. in 2021.

Finally, based on the results, this study suggests a more comprehensive migration policy including carbon tax policy to immigrants with higher net consumption-based emissions.