

Carbon footprint mitigation of Japanese households for achieving the Paris Agreement under the demographic and income scenarios

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In 2015, the Paris Agreement was ratified by 197 countries in order to strengthen the global response to the threat of climate change by keeping the global temperature rise below 2 degrees Celsius above pre-industrial levels (UNFCCC, 2016). In line with this agreement, the government of Japan determined to reduce 26% of territorial greenhouse gas (GHG) emissions at the 2013 level by 2030. The government also introduced a set of policies, "Society in Which All Citizens are Dynamically Engaged," which aim to overcome barriers to economic growth by improving the birth rate and employment. It would be expected, however, that increases in population and household income will lead to the boost in the GHG emissions associated with household consumptions (e.g., Wier et al., 2001). This study estimated the impact of "Dynamically Engaged Citizens" policies on the carbon footprint of Japanese households in 2030 with a focus on structural changes in the population, household, and employment. This study further investigated the trade-off between the economic policies and the Paris Agreement target. For the policy-based footprinting analysis, this study used the Environmentally Extended Input-Output Table, National Survey of Family Income and Expenditure (NSFIE) and the population statistics of Japan. From the results, we found that the domestic carbon footprint of households in the economic policy scenario is estimated to be 6.0% larger than that of the BaU scenario showing that future household structure and consumption patterns are fixed at the current level. We conclude that Japan would need an additional 6.0% reduction of the household carbon footprint in 2030 in order to meet the Paris mitigation target, considering that the economic policy (i.e., "Dynamically Engaged Citizens" policies) will affect the structure of household expenditures due to increases in the number of children and the share of double-income households.