

Abstract

# Greenhouse Gas Emissions from Food Consumption: Results from the Icelandic National Dietary Survey 2019–2021 <sup>†</sup>

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**Abstract:** Food is one of the main drivers of global greenhouse gas (GHG) emissions. Therefore, it is crucial to investigate the environmental impact of food choices. A National Dietary Survey (NDS) is executed every ten years in Iceland. However, the dietary carbon footprint (DCF) based on the results from the NDS has not been estimated for Iceland before. Thus, the objective was to assess the DCF of dietary habits of adults living in Iceland. A carbon footprint modelling tool was implemented using data from three independent LCA databases from Denmark, the US, and France. The DCF was calculated using results from the latest NDS, including data from 2019 to 2021. This was a random study sample of 18–80 year old inhabitants living in Iceland with 822 participants, including 428 (52%) females and 394 (48%) males. The participation rate in the NDS was 51%. The average total DCF from the three databases was 5.7 kg CO<sub>2</sub>-eq/day. The highest emissions originated from the consumption of meat and meat products (49%) (median intake 850 g/week) and dairy products (15%) (median intake 250 g/day), while emissions from the consumption of seafood (median intake 130 g/week) had a broader range (3–10%). Beverages also contributed to a significant proportion (12%), plant sources contributed 3%, and other food groups combined contributed 13% of the DCF in all three databases. The DCF for the participants following the Planetary Health Diet, the Nordic Nutrition Recommendations, and the Danish food-based dietary guidelines for intake levels of meat and dairy products was an average of 2.6 kg CO<sub>2</sub>-eq/day. The main driver of GHG emissions from food consumption, identified by the three databases, was meat and dairy products, contributing to an average of 64% of the total DCF. When estimating the DCF for participants following recommendations for meat and dairy consumption, a similar pattern emerged, where the DCF decreased from 5.9–2.6 kg CO<sub>2</sub>-eq. These consistent results suggest that uncertainties in estimating the DCF from different food groups using the three databases are not critical in identifying key drivers of GHG emissions.

**Keywords:** national dietary surveys; food consumption; life cycle assessment; greenhouse gas emissions; environmental impact; food based dietary guidelines



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