ENOUGH
EUROPEAN FOOD CHAIN SUPPLY TO REDUCE GHG EMISSIONS BY 2050

Final practice abstract WP1 2025

Final practice abstract WP1: Baseline (1990) current (2019) and future (2030 and 2050) carbon emissions

The ENOUGH project identified carbon emissions in Europe for 1990 and 2019 and developed predictive models for 2030 and 2050 emissions of the food supply chain. Two independent models which predicted carbon emissions on the food chain were developed.

Food accounts for between 10-24% of the total emissions in selected European countries today, and there is a need for the food sector to decarbonise.

Integrated System Dynamics and Linear Programming models were used to forecast meat consumption trends and design optimized diets that maintain nutritional adequacy while substituting meat with alternative proteins. Up to 32% GHG emission reductions were demonstrated through replacement of meat with alternative proteins. The study recommends that policymakers and public health authorities support a gradual transition from meat to nutritionally appropriate alternative proteins, accompanied by public awareness campaigns. Industry stakeholders are encouraged to innovate and diversify alternative protein offerings to better match nutritional profiles and consumer preferences.

A cross-national model incorporating behavioural, regulatory, and technological drivers to project food supply chain emissions was developed. Over 60% emission reduction potential was found under a Low Emissions scenario, with grid decarbonisation, oil/gas transition, and energy labelling as the most effective interventions. The findings highlight the need for coordinated efforts across sectors: industries should prioritise electrification and energy-efficient technologies, policymakers must strengthen climate-aligned regulations and incentives, and society should embrace low-emission consumption

[1]*FAOSTAT Analytical Brief 50: GHG emissions from agrifood systems: Global, regional and country trends.*

ENOUGH webpage: https://enough-emissions.eu/
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