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**Title:** Analysis and valuation of the health and climate change co-benefits of dietary change

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What we eat greatly influences our personal health and the environment we all share. Recent analyses have highlighted the likely dual health and environmental benefits of reducing the fraction of animal-sourced foods in our diets. Here we couple for the first time a region-specific global health model based on dietary and weight-related risk factors with emissions accounting and economic valuation modules to quantify the linked health and environmental consequences of dietary changes. We find that the impacts of dietary changes towards less meat and more plant-based diets vary greatly amongst regions. The largest absolute environmental and health benefits result from diet shifts in developing countries while Western high-income and middle-income countries gain most in per-capita terms. Transitioning towards the more plant-based diets that are in line with standard dietary guidelines could reduce global mortality by 6-10% and food-related greenhouse gas emissions by 29-70% compared to a reference scenario in 2050. We find that the monetised value of the improvements in health would be comparable to, or exceed, the value of the environmental benefits, though the exact valuation method used considerably affects the estimated amounts. Overall, we estimate the economic benefits of improving diets to be USD 1-31 trillion which is equivalent to 0.4-13% of global GDP in 2050. However, significant changes in the global food system would be necessary for regional diets to match the dietary patterns studied here.