

Designing a healthy and sustainable diet for the UK

Food production is possibly the most overlooked source of greenhouse gas (GHG) emissions. Globally, food systems are estimated to account for 21-37% of all GHG emissions [1]. On our current trajectory, emissions from food systems alone will lead to us exceeding 1.5°C warming and likely 2°C [2]. Therefore, it is imperative that we adapt and transform our diets to stay within planet boundaries. In this study I will utilise mathematical optimization to generate diets with minimised GHG emissions constrained by essential nutrient targets. I will then compare the environmental impact and nutritional profiles of these sustainable diets to the current average UK diet.

1. Gibbs, J.; Cappuccio, F.P. Plant-Based Dietary Patterns for Human and Planetary Health. *Nutrients* **2022**, *14*, 1614.
2. Clark, M.A.; Domingo, N.G.G.; Colgan, K.; Thakrar, S.K.; Tilman, D.; Lynch, J.; Azevedo, I.L.; Hill, J.D. Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets. *Science* **2020**, *370*, 705-708, doi:10.1126/science.aba7357.