

Reducing climate change impacts and inequality of the global food system through diet shifts

Li, Yanxian; He, Pan; Shan, Yuli; Li, Yu; Hang, Ye; Shao, Shuai; Ruzzenenti, Franco; Hubacek, Klaus

DOI:

[10.5194/egusphere-egu24-14983](https://doi.org/10.5194/egusphere-egu24-14983)

License:

Creative Commons: Attribution (CC BY)

Document Version

Publisher's PDF, also known as Version of record

Citation for published version (Harvard):

Li, Y, He, P, Shan, Y, Li, Y, Hang, Y, Shao, S, Ruzzenenti, F & Hubacek, K 2024, Reducing climate change impacts and inequality of the global food system through diet shifts. in *EGU General Assembly 2024.*, EGU24-14983, EGU sphere, EGU General Assembly 2024, Vienna, Austria, 14/04/24.
<https://doi.org/10.5194/egusphere-egu24-14983>

[Link to publication on Research at Birmingham portal](#)

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.

EGU24-14983, updated on 14 Mar 2024
<https://doi.org/10.5194/egusphere-egu24-14983>
EGU General Assembly 2024
© Author(s) 2024. This work is distributed under
the Creative Commons Attribution 4.0 License.



Reducing climate change impacts and inequality of the global food system through diet shifts

Yanxian Li¹, Pan He², Yuli Shan³, Yu Li⁴, Ye Hang³, Shuai Shao⁵, Franco Ruzzenenti¹, and Klaus Hubacek¹

¹Integrated Research on Energy, Environment and Society (IREES), Energy and Sustainability Research Institute Groningen, University of Groningen, Netherlands

²School of Earth and Environmental Sciences, Cardiff University, Cardiff CF10 3AT, UK

³School of Geography, Earth and Environmental Sciences, University of Birmingham, Birmingham B15 2TT, UK

⁴School of Public Administration, Chongqing Technology and Business University, Chongqing 400067, China

⁵School of Business, East China University of Science and Technology, Shanghai 200237, China

How much and what we eat and where it is produced can create huge differences in greenhouse gas emissions. Bridging food consumption with detailed household-expenditure data, this study estimates dietary emissions from 13 food categories consumed by 201 expenditure groups in 139 countries, and further models the emission mitigation potential of worldwide adoption of the *EAT-Lancet* planetary health diet. We find that the consumption of groups with higher expenditures generally creates larger dietary emissions due to excessive red meat and dairy intake. As countries develop, the disparities in both emission volumes and patterns among expenditure groups tend to decrease. Global dietary emissions would fall by 17% if all countries adopted the planetary health diet, primarily attributed to decreased red meat and grains, despite a substantial increase in emissions related to increased consumption of legumes and nuts. The wealthiest populations in developed and rapidly developing countries have greater potential to reduce emissions through diet shifts, while the bottom and lower-middle populations from developing countries would cause a considerable emission increase to reach the planetary health diet. Our findings highlight the opportunities and challenges to combat climate change and reduce food inequality through shifting to healthier diets.