

Reimagining the Finnish Hotel Breakfast: Reducing Nature Footprint While Strengthening Local Food Culture and Rural Entrepreneurship.

Aino Tarkkio

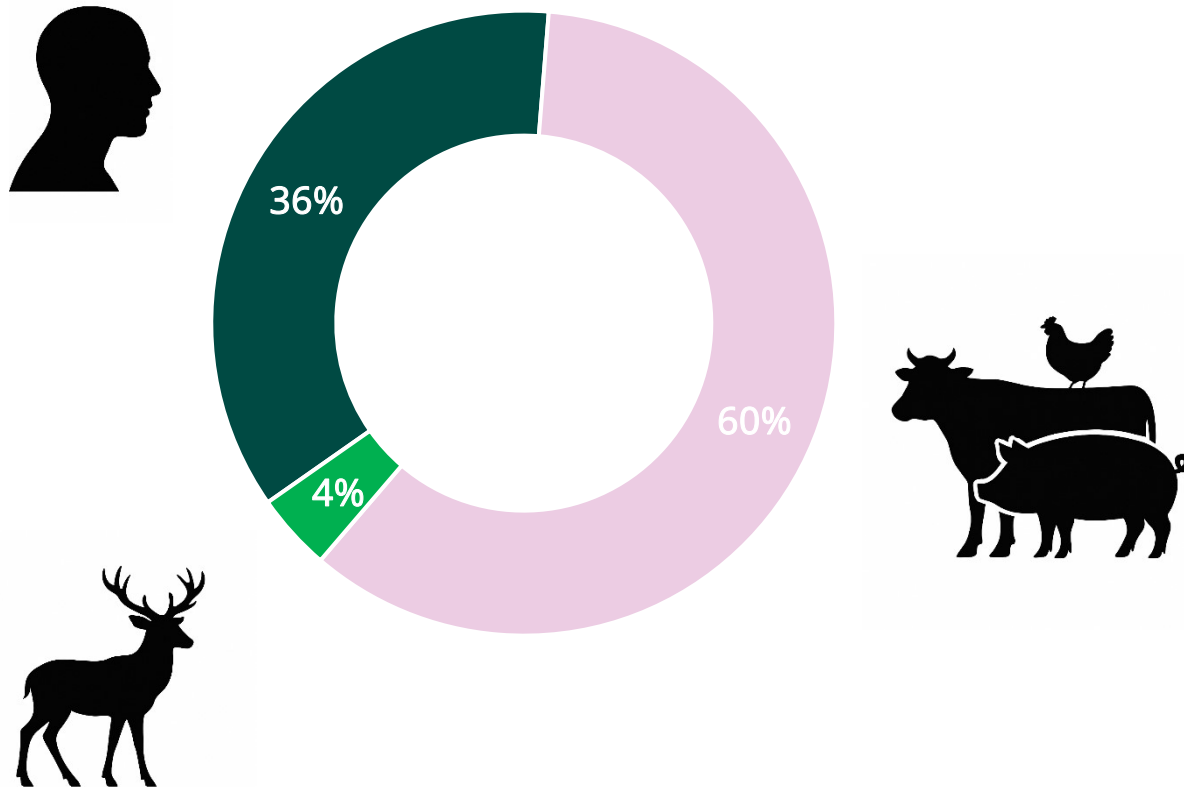
Doctoral researcher

Biodiversity on the plate (LuLa) project

Nutrition and Food Research Center

University of Turku

What proportion of mammals are still wild?





High Biodiversity

vs.



Low Biodiversity

Graphic by Tualatin SWCD.

Ecosystems provide

For example

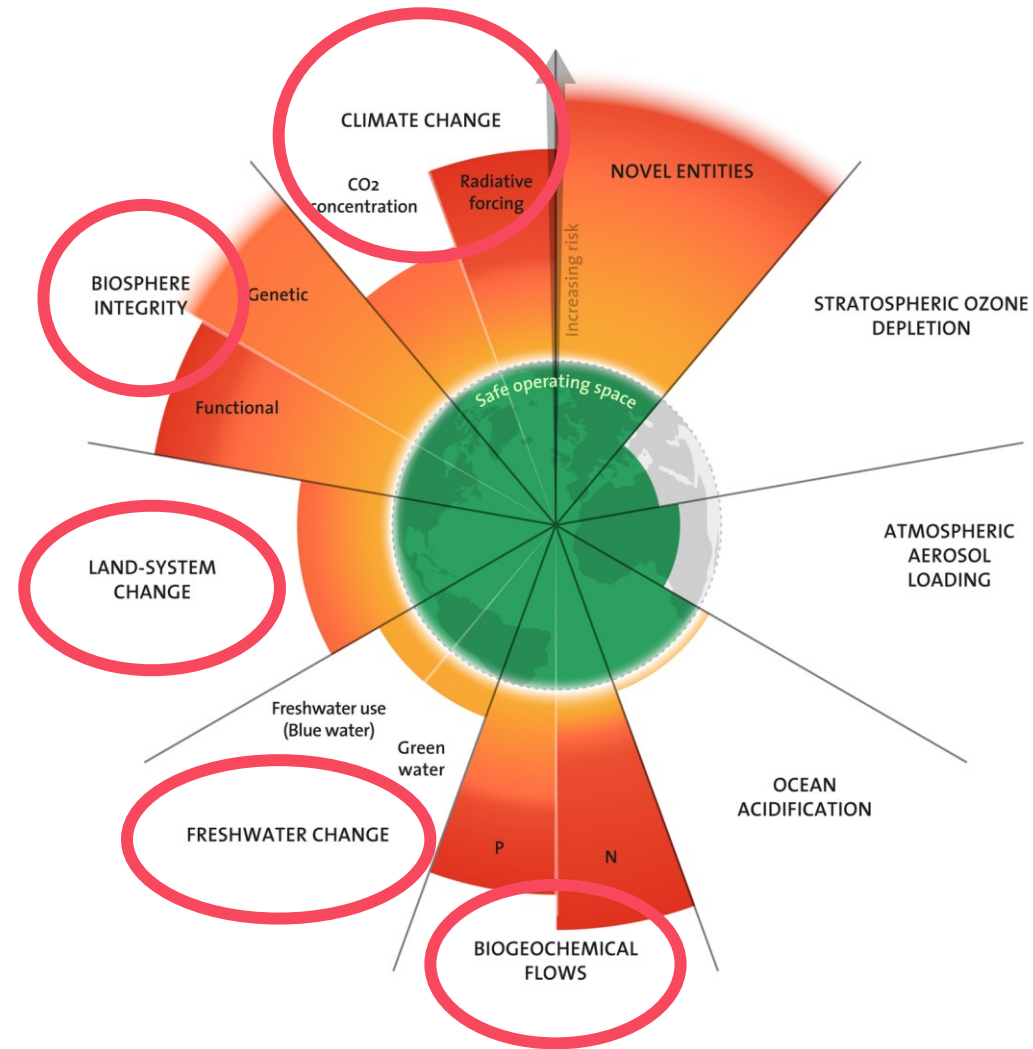
- Pollination
- Nutrient cycling
- Maintain soil condition

→ Biodiversity enables food production

← Food production reduces Biodiversity



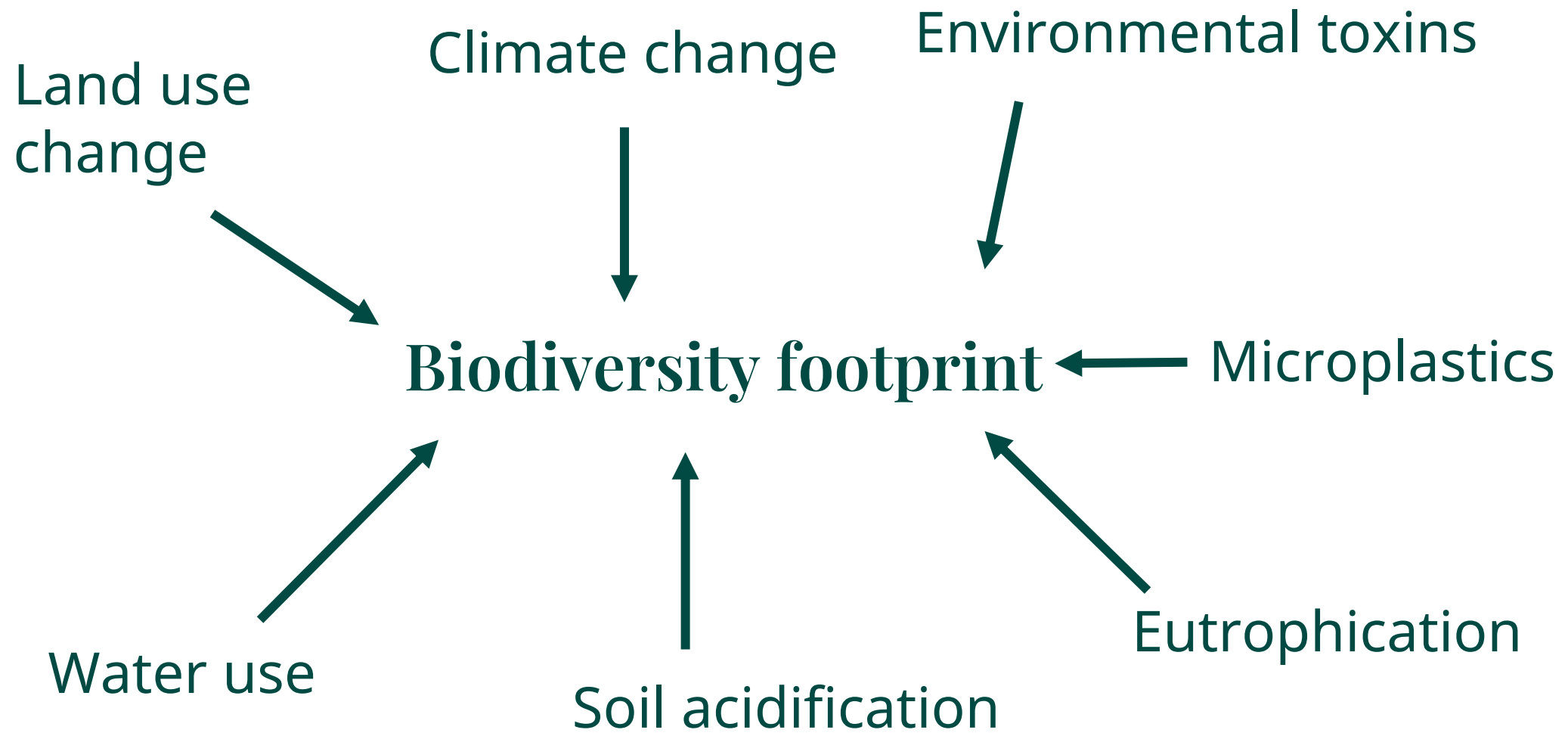
Planetary boundaries



The biodiversity impacts of Finnish food consumption are directed abroad



Weaknesses
Does not consider production method
Data and assumptions



Biodiversity footprint unit PDN·year

= Potentially Disappeared Number of
species

Expresses how many species would be
expected to go extinct if 1 kg of a product
were produced every year for 100 years.

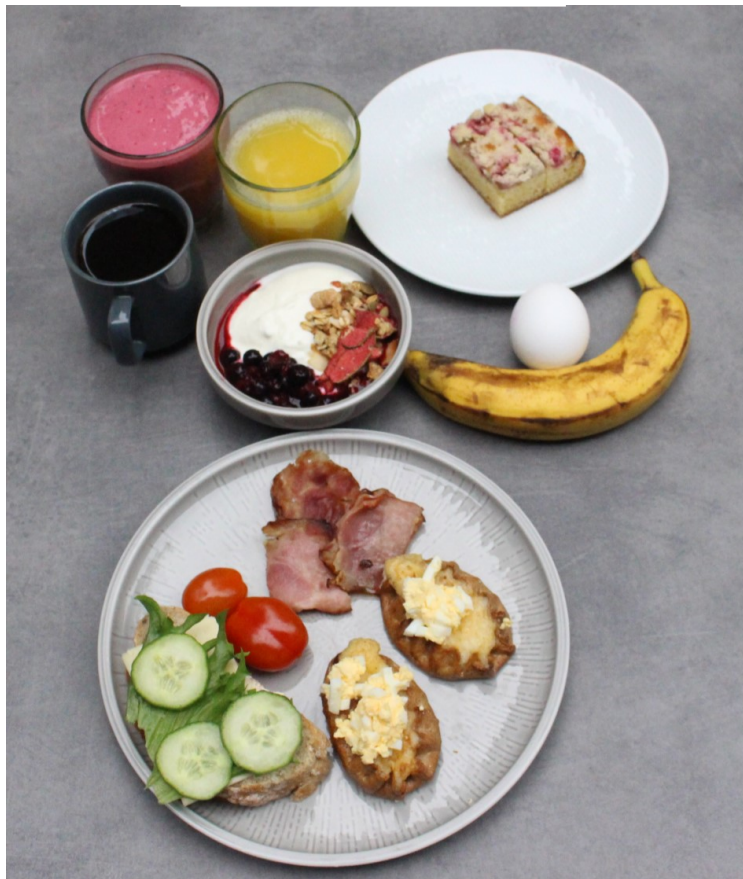


The biodiversity footprint of hotel breakfast

Heavy

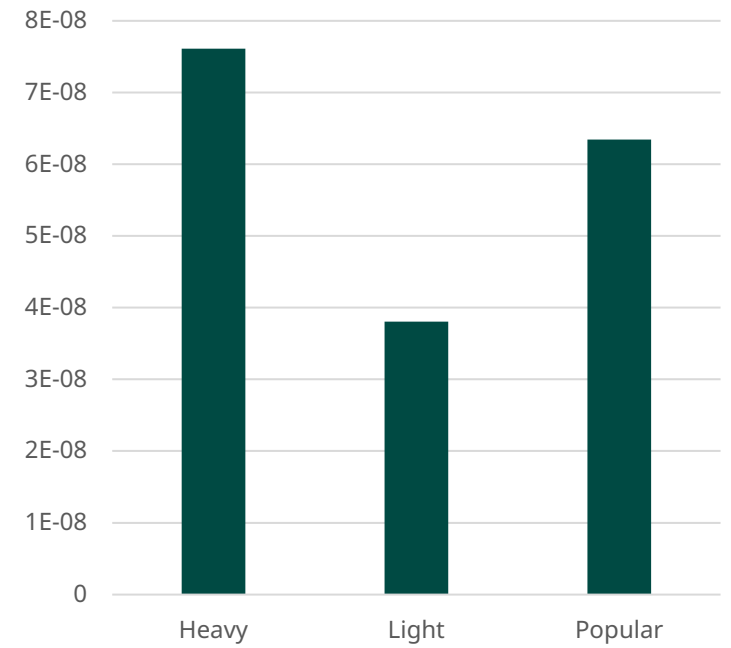


Popular

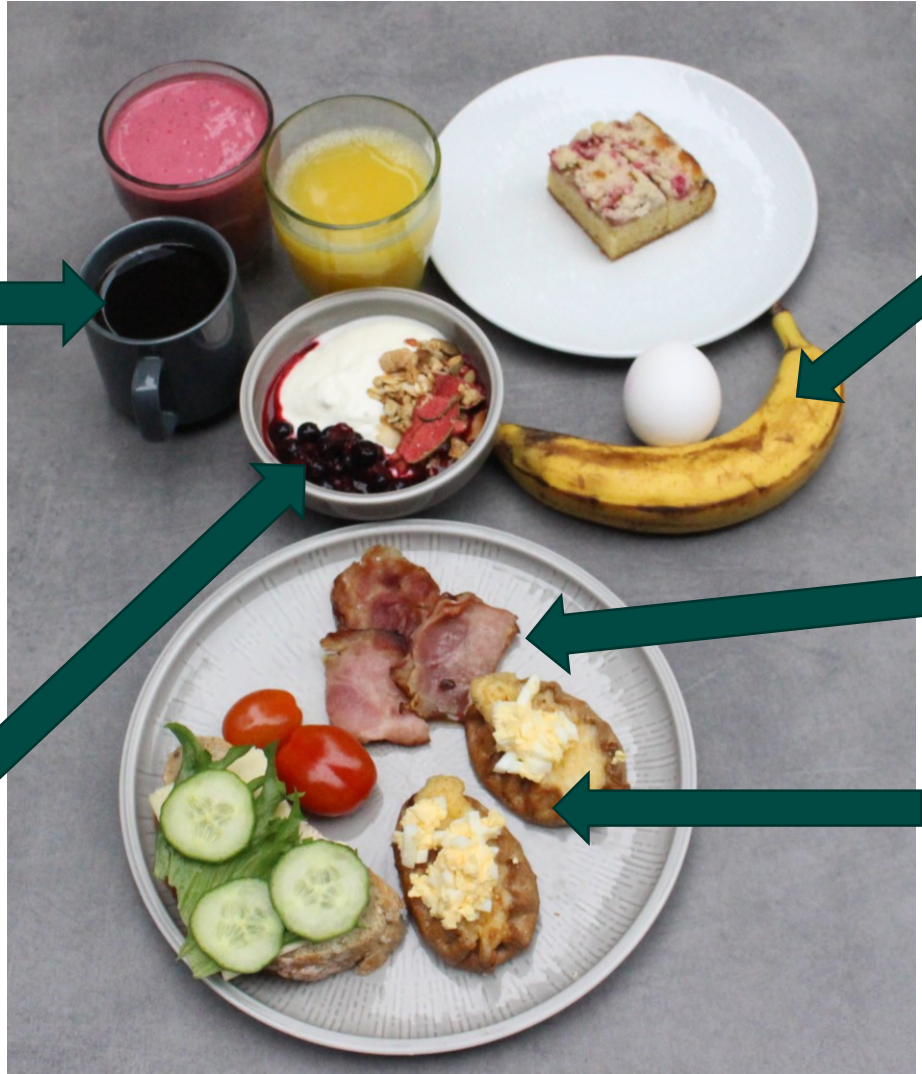
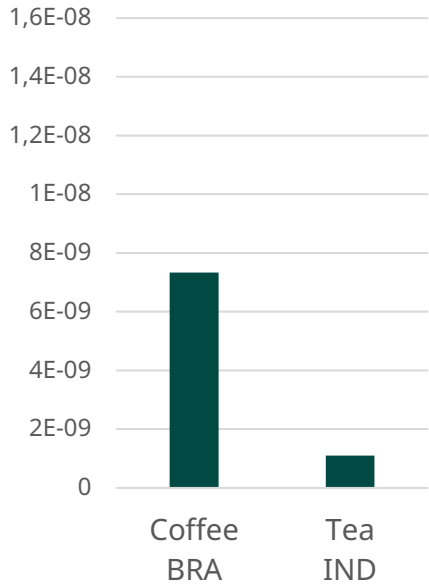


Light

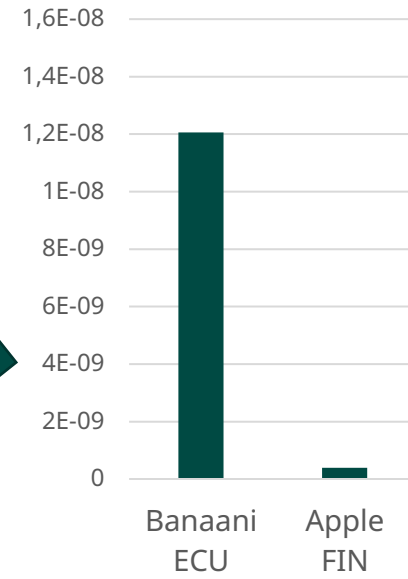
Serving / PDN-year



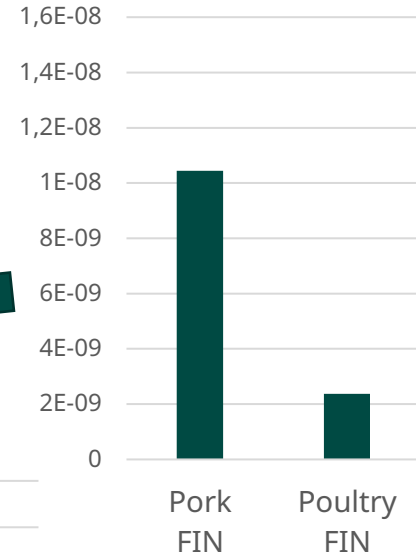
Serving / PDN·year



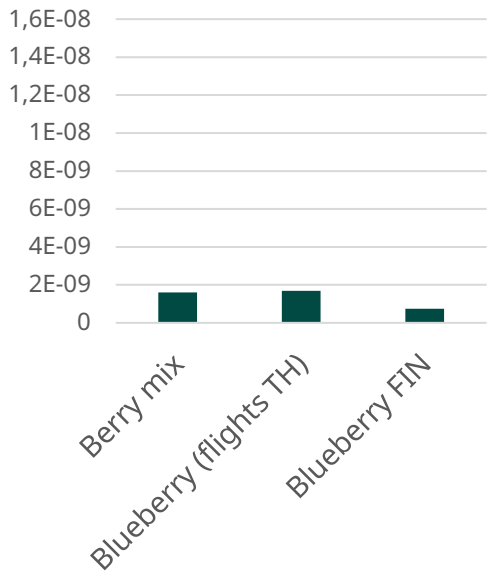
Serving / PDN·year



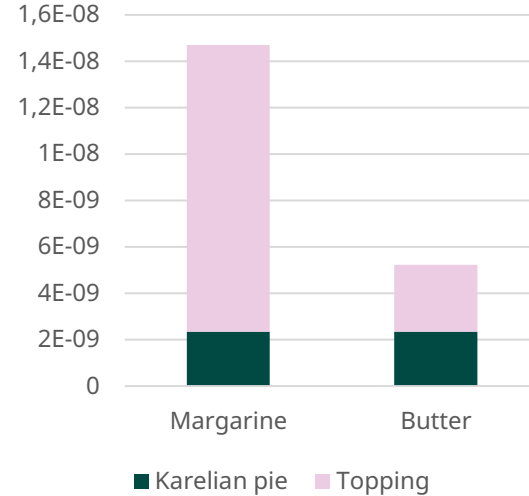
Serving / PDN·year



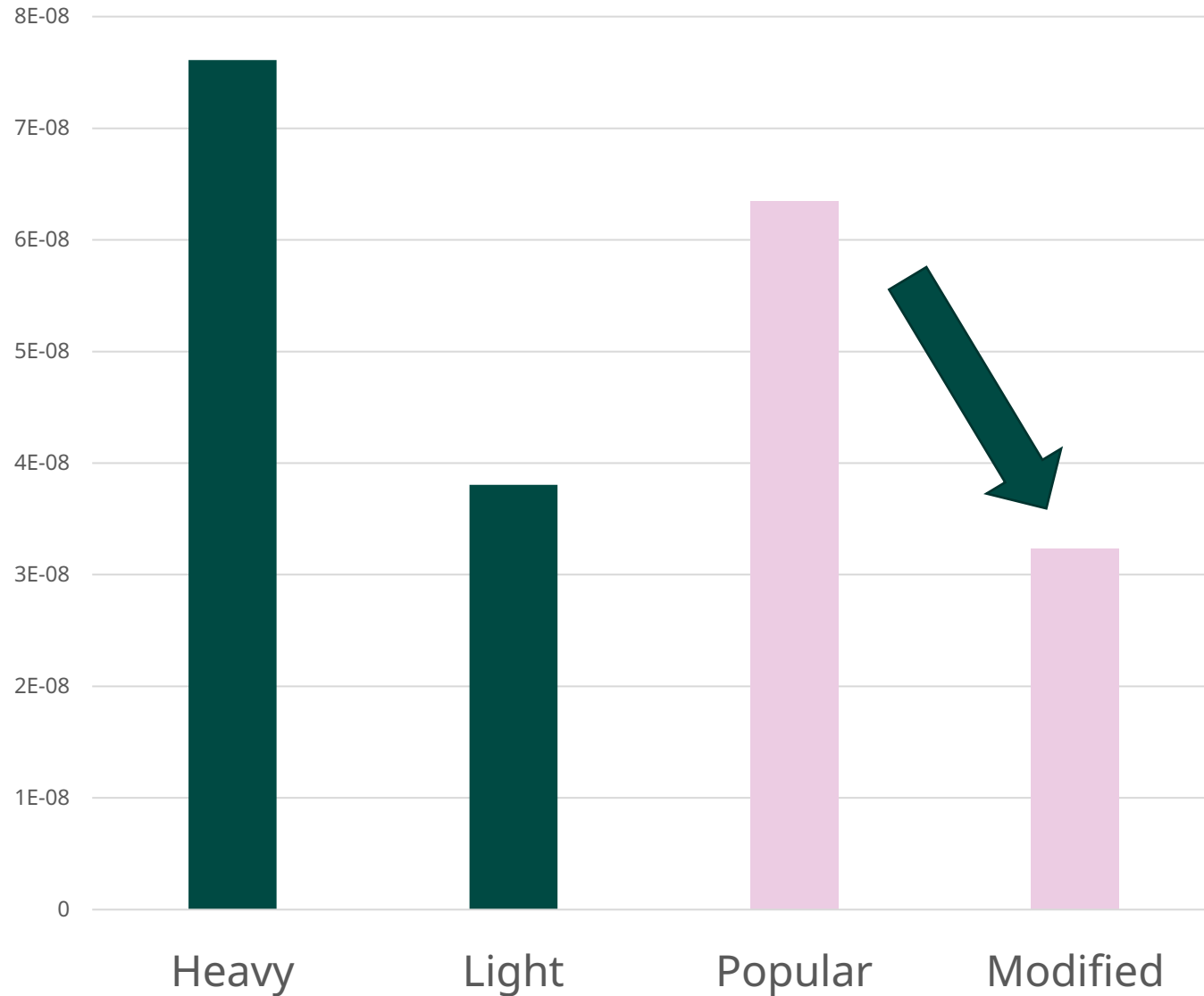
Serving / PDN·year



Serving / PDN·year



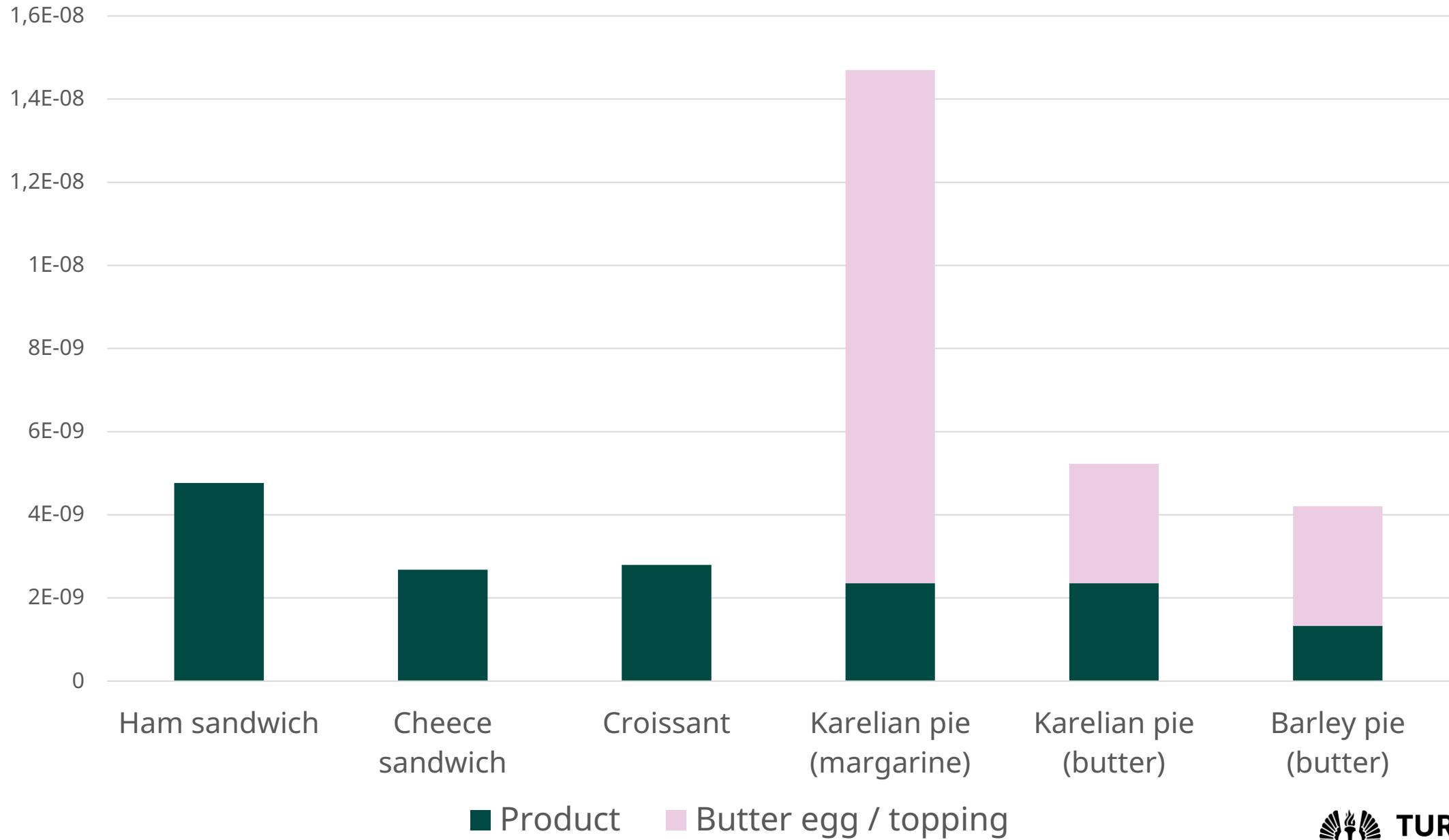
Serving / PDN-year



Coffee → Tea
Tropical fruit → Domestic fruit (FIN)
Bacon → Poultry
Margarine → Butter

- 50 %

Serving / PDN·year



PDN·year (kg)

0,0000012

0,000001

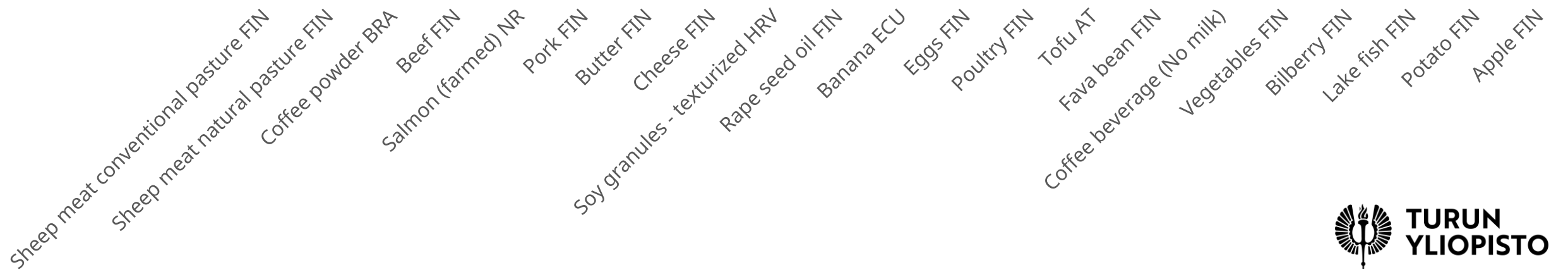
0,0000008

0,0000006

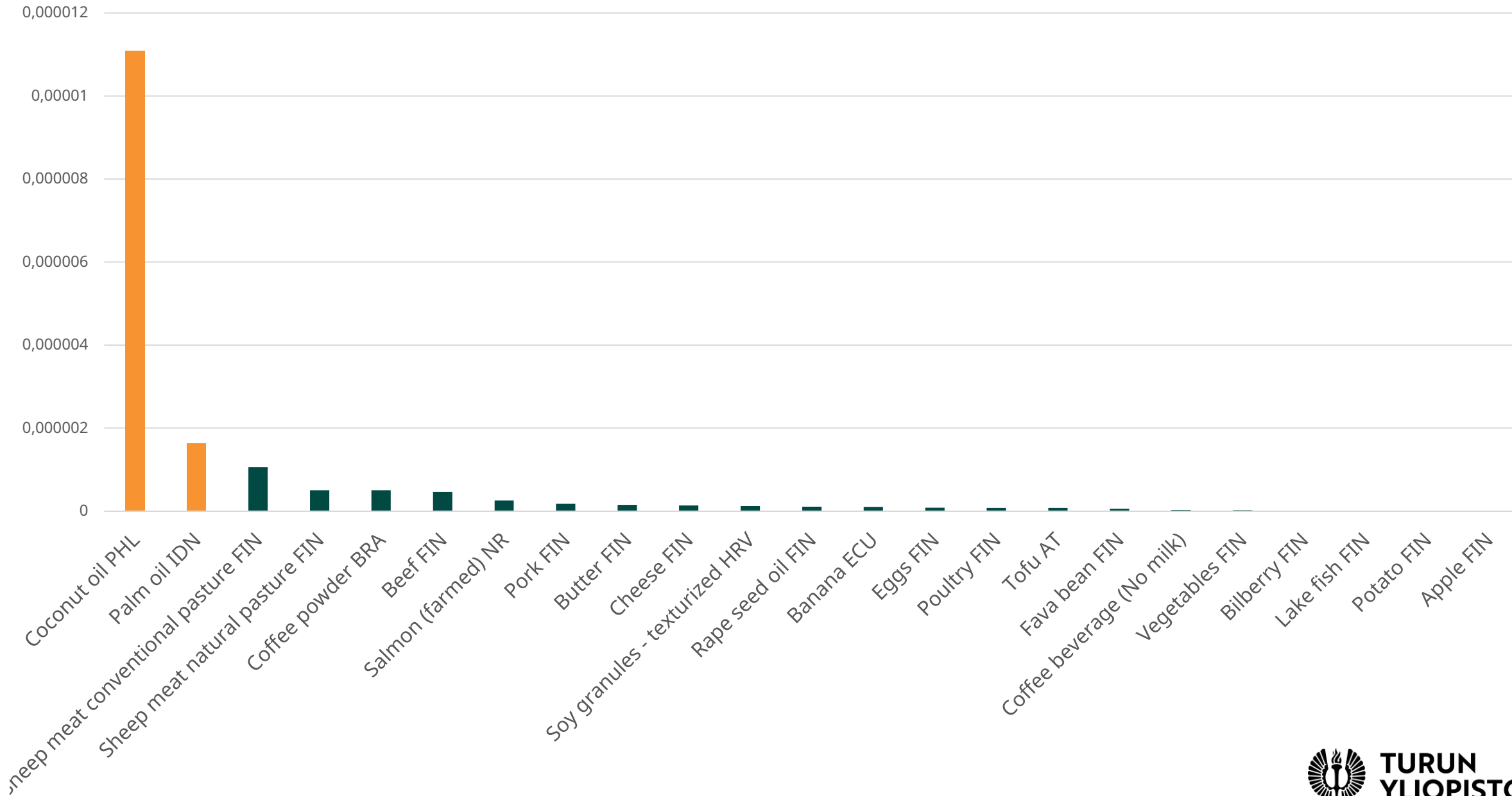
0,0000004

0,0000002

0



PDN·year (kg)



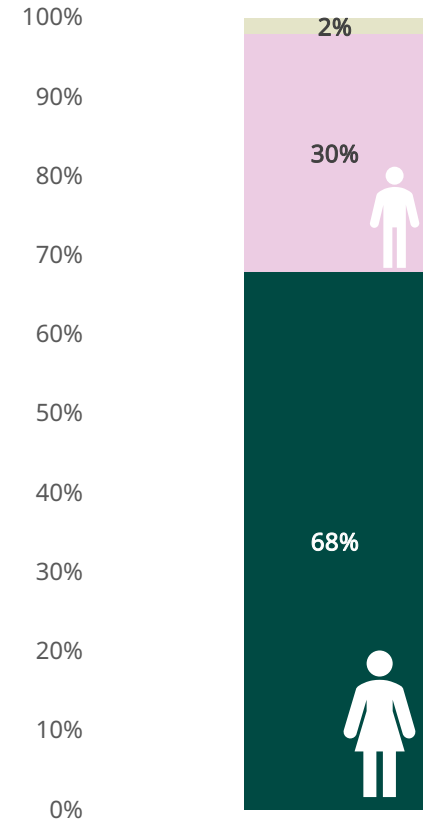
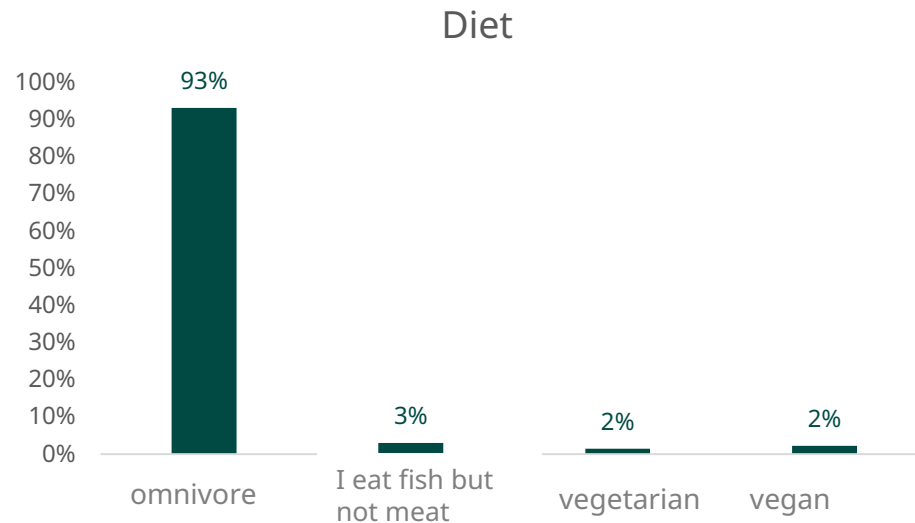
Hotel breakfast survey

Questionnaire n=132

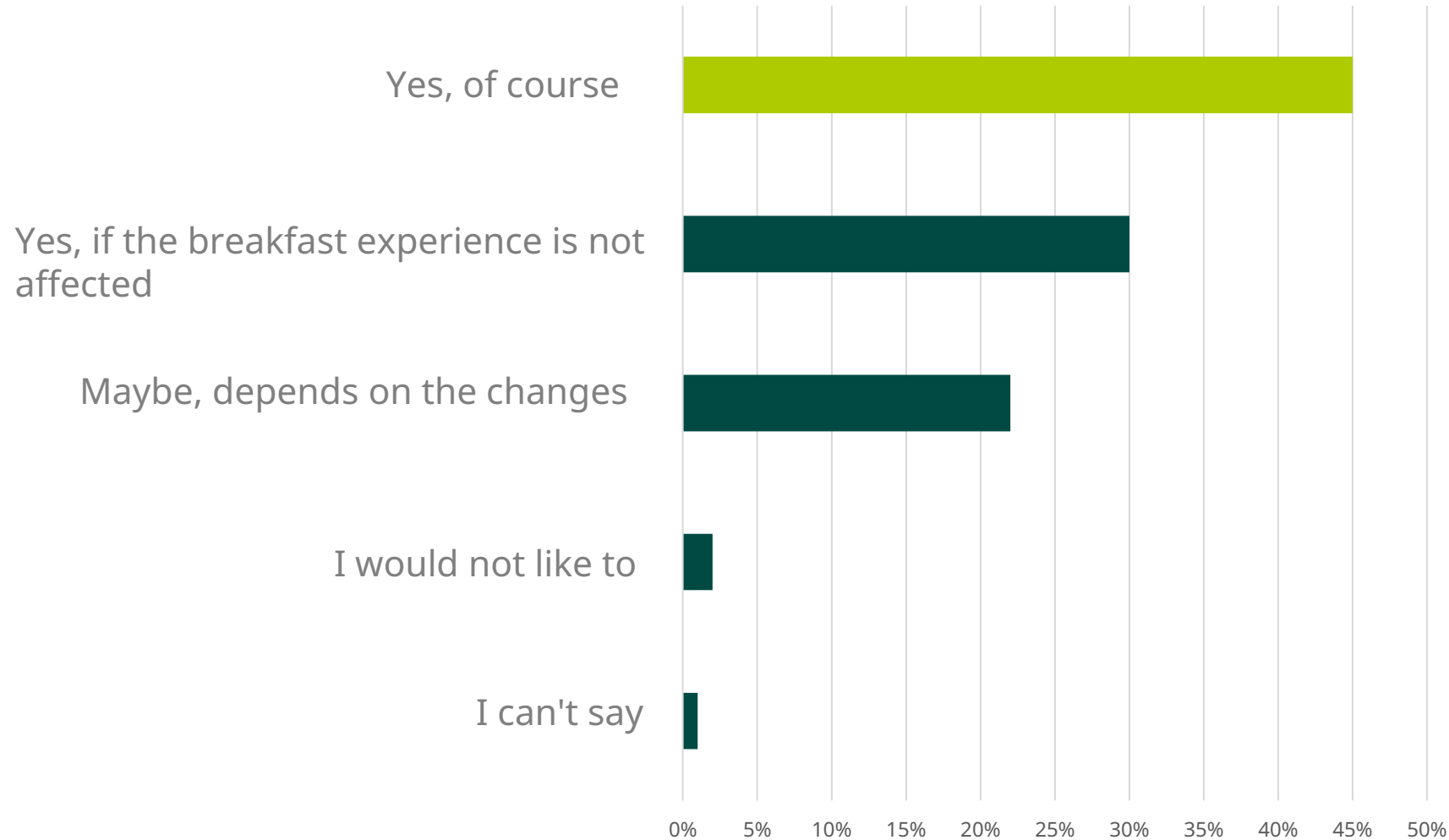
- 90 % of the respondents were Finnish
- Age, avg. 47 (min. 20 max. 83)
- High Biospheric values

Purpose of trips in general

Holiday	67 %
Work	18 %
Both equally	15 %



Would you be willing to make changes to your hotel breakfast if they would promote biodiversity?

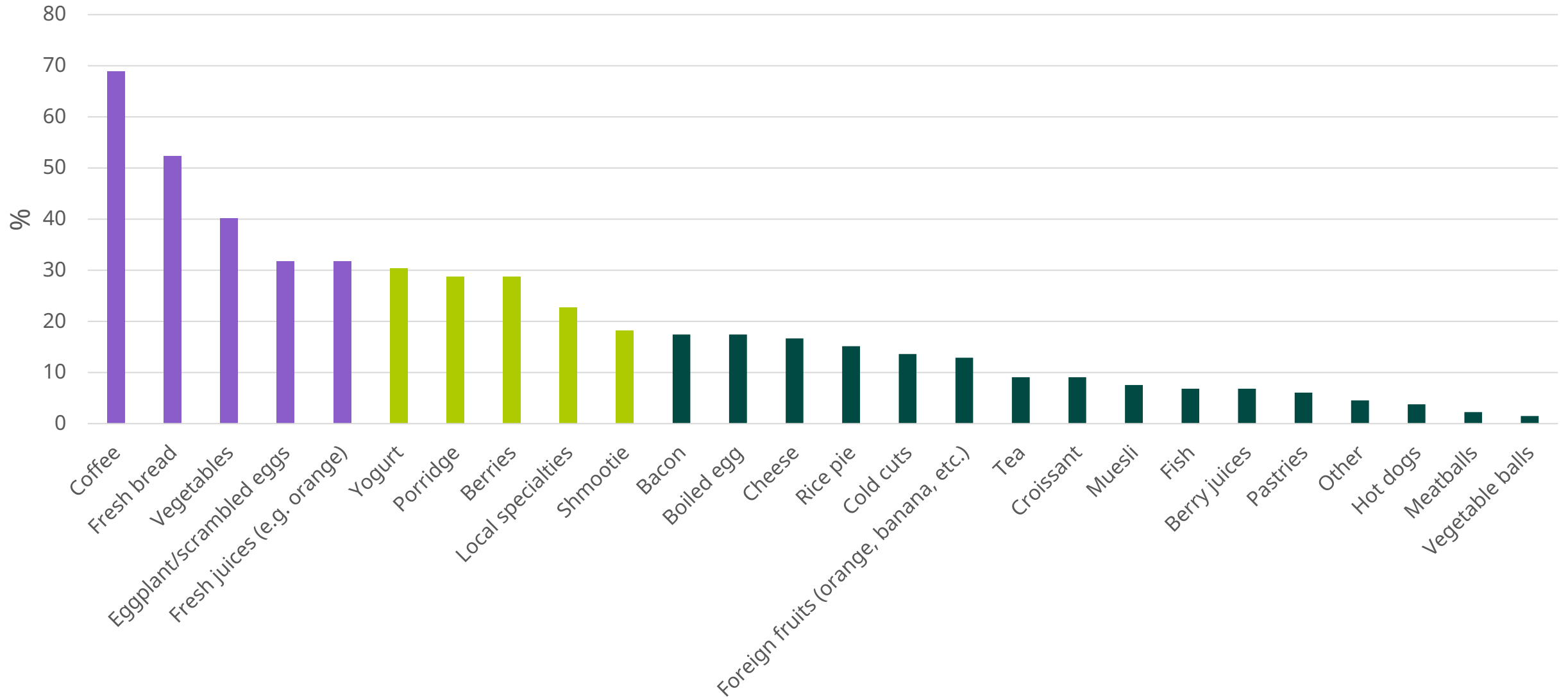


What is important about hotel breakfast?

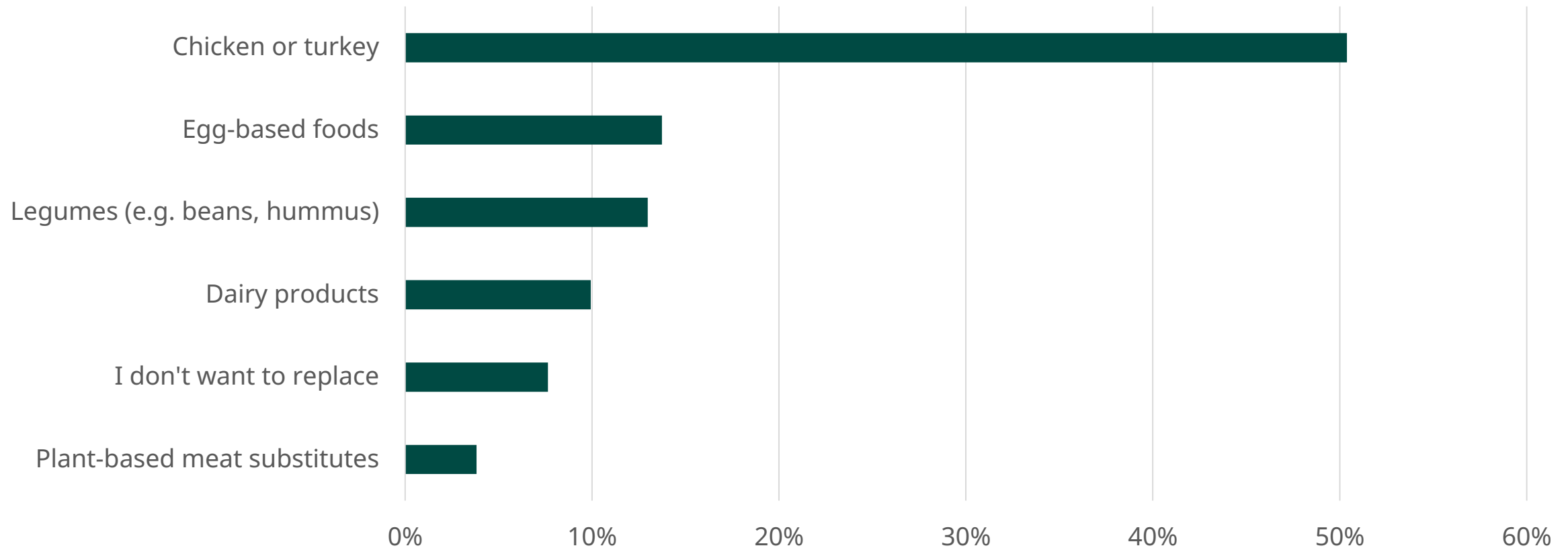
- Quality over quantity
- Freshness: berries, fruits, bacon
- Local products
- Coffee



Choose the five most important parts of breakfast.



If products containing red meat were reduced, what replacement protein source would interest you most?



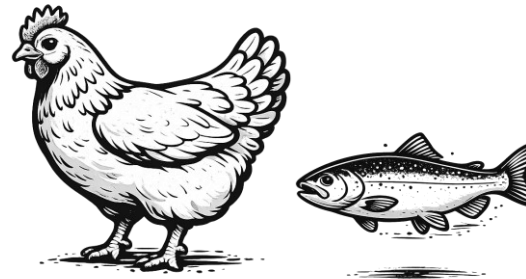
What kind of change was considered acceptable?



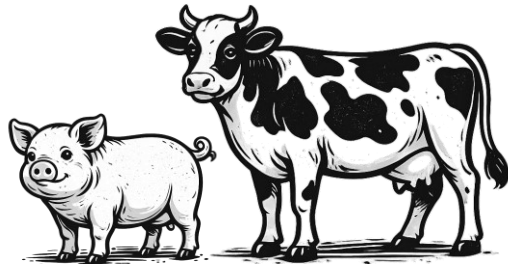
70% found it acceptable to add plant-based products to breakfast



90% of the population agrees that tropical fruits should be replaced with foreign berries and fruits



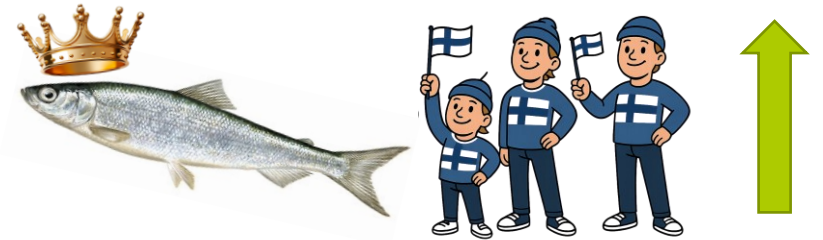
60% found it acceptable to replace red meat with white meat



20% found it acceptable to replace red meat with plant-based proteins

How to reduce the environmental footprint of breakfast?

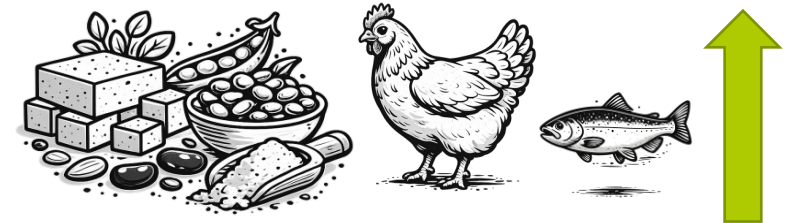
1. Increasing domestic content



2. Choose wisely tropically grown products
→ Organic / agroforestry



3. Reducing red meat
→ Replacing partially/completely





Pictures from workshops where sustainable breakfast concepts suitable for the archipelago theme were designed and cooked.

Biodiversity on the plate (LuLa)

Project coordinator:

Johanna Teräsjärvi - johter@utu.fi

Project researcher:

Aino Tarkkio - aaktar@utu.fi

More info about the LuLa project:

<https://sites.utu.fi/lula/en/>

More info about biodiversity footprints:

<https://sites.utu.fi/ruokajabiodiversiteetti/>

Project
Website



**Euroopan unionin
osarahoittama**



Elinkeino-, liikenne- ja
ympäristökeskus

VISIT TURKU ARCHIPELAGO



**LUT
University**



Naantali



**TURUN
YLIOPISTO**

Sources:

- Bar-On, Y.M., Phillips, R. and Milo, R. (2018) 'The biomass distribution on Earth', *Proceedings of the National Academy of Sciences*, 115(25), pp. 6506–6511. Available at: <https://doi.org/10.1073/pnas.1711842115>.
- Bending the Curve: The Restorative Power of Planet-Based Diets. World Wildlife Fund. 2020
- Benton, T.G. *et al.* (2021) 'Food system impacts on biodiversity loss', *Three levers for food system transformation in support of nature*. Chatham House, London, pp. 02–03.
- Geneidy, S. E.; Ollikainen, L.; Peura, M.; Järvinen, E.; Toivonen, L.; Kotiaho, J. S. Suomalaisten luontojalanjälki. 2025
- Lehtikoinen, A. *et al.* (2024) 'maatalousalueiden luonnon monimuotoisuuden edistämisen keinot ja hyödyt suomessa'.
- Ravitsemusneuvottelukunta, V. and Laitos, T.J.H. (2024) 'Kestävää terveyttä ruoasta'.
- Richardson, K. *et al.* (2023) 'Earth beyond six of nine planetary boundaries', *Science Advances*, 9(37), p. eadh2458. Available at: <https://doi.org/10.1126/sciadv.adh2458>.
- Rockström, J. *et al.* (2025) 'The EAT–Lancet Commission on Healthy, Sustainable, and Just Food Systems' *The Lancet* **2025**, 406 (10512), 1625–1700. [https://doi.org/10.1016/S0140-6736\(25\)01201-2](https://doi.org/10.1016/S0140-6736(25)01201-2).
- Sandström, V. *et al.* (2017) 'Linking country level food supply to global land and water use and biodiversity impacts: The case of Finland', *Science of the Total Environment*, 575, pp. 33–40.
- Willett, W. *et al.* (2019) 'Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems', *The Lancet*, 393(10170), pp. 447–492. Available at: [https://doi.org/10.1016/S0140-6736\(18\)31788-4](https://doi.org/10.1016/S0140-6736(18)31788-4)

Get inspired.



TURUN
YLIOPISTO