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## Can a Regional Diet Be Nutritionally Healthy and Environmentally Friendly? – a Test Case for Bavaria

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### Abstract

Agriculture accounts for 50 % of the land use (LU) of the habitable land surface and food production is a major driver of greenhouse gas emissions (GHGE). Diets are therefore strongly linked to environmental impacts. At the same time, diets have a strong effect on our health, and can pose an important risk factor for non-communicable diseases. Recent studies show that shifts in dietary patterns can potentially provide benefits for both health and environment. To exemplify what this means in terms of LU and GHGE on a local level, we chose Bavaria as a test case, assuming that only regional products are consumed. Five different diets were compared with regional diets. Regional diets were based on the same dietary patterns as global diets but include only food items that can be produced in Bavaria. Environmental impacts of diets were calculated based on GHGE and LU Data from available literature. A health score based on the Healthy Eating Index 2015 was used. This health score includes both nutritional and food based indicators. The system boundary was cradle to regional distribution centre. Therefore, the focus was rather on agricultural production than on transport. The environmental impacts varied strongly between different diets. The current Bavarian diet had the highest environmental impact and the lowest health score. In contrast, a semi-vegetarian diet based on Bavarian food patterns showed the lowest environmental impact, followed by the vegetarian diet. Both the vegetarian and semi-vegetarian diet achieved a high health score. The results showed, if Bavarian people change their current diet to a semi-vegetarian diet, environmental indicators and health score would improve greatly. By shifting diets to regionally dietary patterns, environmental impacts were not always better. While the LU was lower for regional diets, this was not always true for GHGE. Two diets had higher impacts by shifting to regional food patterns. Based on the health score, regional diets were as healthy as global diets. The results from this study suggest that a change to a regional diet does not necessarily improve the environmental impact but confirmed that major synergies between healthy and ecologically sustainable diets are present.

**Keywords:** Dietary guidelines, Greenhouse gas emission, Land use, Local diet, sustainable diet