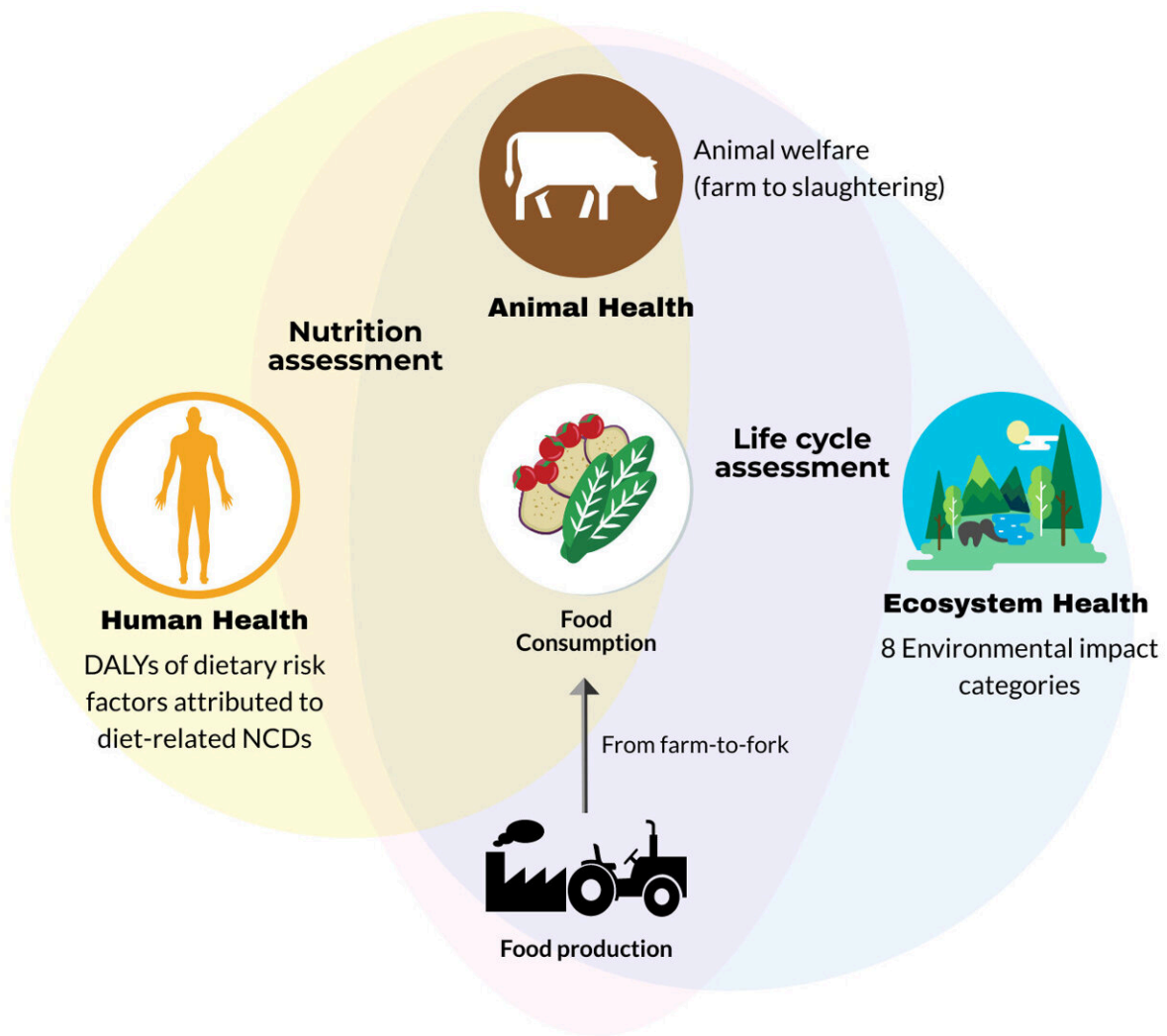


# Reduced meat diet has many advantages

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The study compared four diets in terms of their impact on health, the environment and animal welfare. Credit: Juliana Paris/ Uni Bonn

Which diet is better: to moderately reduce meat consumption and eat more fruit, vegetables and wholegrain products, as recommended by the German Nutrition Society? Follow our southern neighbors' example and eat more fish and seafood? Or even switch completely to a vegan diet? A new study by the University of Bonn shows that the answer to these questions is not as clear-cut as one might think—depending on which impacts one closely looks. The results are published in the journal *Science of The Total Environment*.

950 kilograms of food and drink are consumed by every citizen in the EU annually—a sizeable quantity, the weight of a small car. Globally, food is responsible for a quarter of human greenhouse gas emissions. A large part of this is due to livestock farming: Animals convert only a small portion of the fed calories into meat. Ruminants also produce methane, which further accelerates global warming.

Furthermore, what we eat also has consequences for our health and [animal welfare](#). When comparing diets, these aspects should also be taken into account. Experts also refer to the optimal health of humans, animals and the environment as the "One Health" perspective. "Studies that apply this perspective to nutrition issues are still rare, however," explains Juliana Paris of the Center for Development Research (ZEF) at the University of Bonn.

## **Actual food basket compared with three alternatives**

Paris, together with colleagues, conducted an analysis that aims to fill this research gap to some extent. "To do this, we took a look at examples of which products are on the food basket of people in North Rhine-Westphalia," she explains. "We then compared this reference [diet](#) with three different scenarios: a shift according to the recommendations of the German Nutrition Society (DGE), a shift to a Mediterranean diet with more fish and seafood, and a shift to a vegan diet."

In each of these three scenarios, the foods were chosen to differ from the reference diet as less as possible. "That means, for example, that in the Mediterranean version, we increased the proportion of fish and seafood, vegetables and grain products," Paris says. In addition, the overall product selection should contain the same nutrients in similar amounts as before. This gave the researchers a food basket for each scenario, which they then analyzed further.

"To do this, we relied on various databases," says Dr. Neus Escobar of the Institute for Applied Systems Analysis in Austria, who supervised the work. "They enabled us, for example, to estimate the impact of each diet on certain environmental aspects—such as the amount of greenhouse gases produced during their production or the water consumption. We took a similar approach to assess the impact of each diet on health." Red meat, for example, is known to increase the risk of certain cancers and cardiovascular disease.

The researchers estimated the consequences for animal welfare using several indicators. These included how many animals lose their lives as a result of food consumption and under what conditions they are kept. "But we also used the number of neurons or the size of the brain in relation to the body to estimate the extent to which the respective animals actually suffer when they are used," explains Juliana Paris.

## **Fish instead of steak: Good for the environment, bad for animal welfare**

Any of the three diets would be sustainably beneficial from a One Health perspective. However, this is also at the expense of other aspects. The [vegan diet](#) scored best in many areas. However, the production of vegan food involves increased water consumption. "In addition, vegans need to take certain nutrients separately, such as vitamin B12, vitamin D

and even calcium," Paris says.

The Mediterranean diet (although healthy) also results in increased water requirements due to the high amount of nuts and vegetables. Moreover, if—as assumed in the study—the meat consumed is completely replaced by fish, its effects on animal welfare are surprisingly negative: As fish and seafood are much smaller than, for instance, cows or pigs, considerably more animals suffer as a result of this diet. The increased consumption of honey, which requires intensive management of bee colonies, also has a negative impact. "It'd therefore be beneficial to meet less of your overall protein needs from animal sources," Neus Escobar emphasizes. "In addition, many people today have diets that are significantly too rich. If they reduced the amount of [food](#) they ate, to what they really need, it might have additional positive effects."

According to the study, the DGE recommendations are going in the right direction. However, in terms of human health, the other two options are better. Nevertheless, the data here also show: If you do without meat more often and instead put whole grains, vegetables and fruit on your plate, you are not only doing something good for yourself, but also for the [animals](#) and the environment.

**More information:** Juliana Minetto Gellert Paris et al, Changing dietary patterns is necessary to improve the sustainability of Western diets from a One Health perspective, *Science of The Total Environment* (2021). [DOI: 10.1016/j.scitotenv.2021.151437](https://doi.org/10.1016/j.scitotenv.2021.151437)

Provided by University of Bonn

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