



The Horizon 2020 PROMISS project “PRevention Of Malnutrition In Senior Subjects in the EU”

Recommendations on sustainable protein intake

The Horizon2020 PROMISS project (<http://www.promiss-vu.eu/>) tackles malnutrition with a specific focus on **protein-energy malnutrition**.

PROMISS makes use of large-scale databases to understand the relationships between food intake, food characteristics, physical activity, the oral and gut microbiota, and poor appetite, malnutrition and poor health among older adults. Preferences and attitudes of older persons about food intake and physical activity are also taken into account.



Based on the outcomes of this research, **PROMISS has developed optimized, sustainable and evidence-based dietary and physical activity recommendations**

This newsletter focuses on the recommendations on sustainable protein intake for older people living at home.

In this newsletter:

PROMISS recommendations on sustainable protein intake

- Our food choices can make a difference in coping with climate change.
- Acceptability of protein sources among older persons in Europe
- Readiness for older adults to consume alternative, more sustainable protein sources
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Sustainable protein intake

Our food choices can make a difference in coping with climate change.

The food we eat and how we grow it places a heavy burden on the environment. The current food production is a dominant driver of climate change, deforestation, biodiversity loss, and water and air pollution, and is a considerable drain on resources such as land, water, and energy. From farm to fork, our food is responsible for over a quarter of all greenhouse gas emissions, contributing to a warming planet.

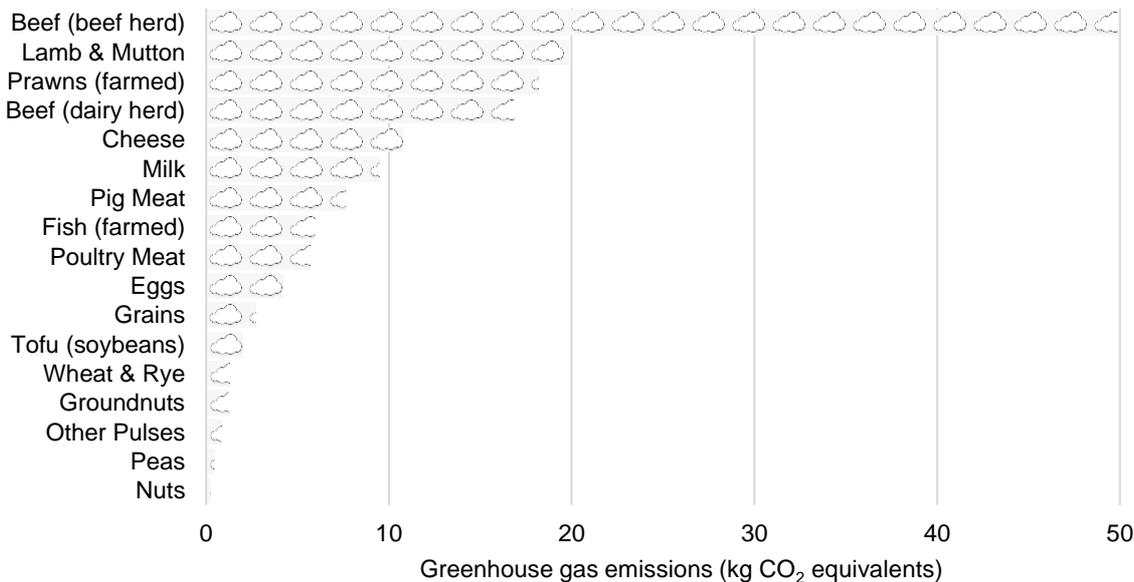
Research shows that the environmental impact of different foods varies immensely.

Depending on its source (animal versus plant), on how and where food is produced, the environmental footprint changes. Animal-based protein sources such as meat, fish, eggs or dairy products have on average a substantially larger environmental impact than plant-based protein sources such as legumes and pulses, whole grains, nuts and seeds.

Although animal-protein sources deliver high quality protein and on average makes up 60% of total protein intake in Europe, plant-protein sources can fulfill the same requirement with less environmental impact. Therefore, our food choices can be part of the solution to reducing our footprint on the environment.

What is the impact of our protein sources?

Greenhouse gas emissions per 100g protein



Source: Poore & Nemecek (2018), *Science*, with additional calculations by Our World in Data.



To see how your food choices impact the environment, you can also check out the BBC climate change food calculator:

<https://www.bbc.com/news/science-environment-46459714>.

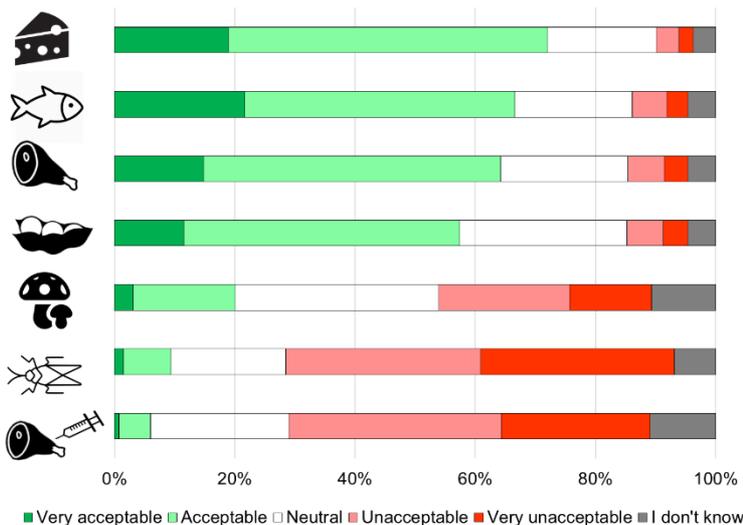


Acceptability of protein sources among older persons in Europe

A large-consumer survey conducted in PROMISS¹ shows that the majority of older people in Europe are meat-eaters, with only a very small proportion reporting to follow a vegetarian or vegan diet (<2%). When asked to indicate acceptance to consume various protein sources, on average older adults favored traditional protein sources such as dairy, seafood, and meat compared to alternative, more sustainable protein sources. The majority did not accept alternative protein sources including single-cell-based protein (protein derived from microorganisms such as microalgae, QuornTM), insects, and in vitro meat (i.e. meat grown in labs). However, the acceptability towards eating plant-based protein was comparable to that of meat, providing an opportunity for older adults to increase protein intake in an environmentally sustainable way. Older adults who value health and sustainability when making food choices were more likely to accept more sustainable protein sources. Those that found sensory appeal (looks, smell, taste) important or were fussy eaters were less likely to be interested in alternative, more sustainable protein sources.²

Readiness for older adults to consume alternative, more sustainable protein sources

Level of acceptance to eat food products containing the following protein sources among older adults in five EU countries



Source: [Grasso et al., *Nutrients*](#). Icons represent in order: dairy-based protein, seafood-based protein, meat-based protein, plant-based protein, single-cell-based protein, insect-based protein, and in vitro-meat-based protein.

Dietary changes needed to achieve a high-protein, environmentally sustainable diet

To see what would happen to the environmental impact of the diet if older adults were to increase their protein intake based on current consumption patterns, we modelled a high-protein diet starting from a common diet of Dutch older adults living at home. We found that an increase in protein intake led to a 5-14% increase in greenhouse gas emissions. To see what changes would be needed to increase protein intake in an environmentally sustainable

¹ [Grasso AC, Hung Y, Olthof MR, Verbeke W, Brouwer IA. \(2019\) Older consumers' readiness to accept alternative, more sustainable protein sources in the European Union. *Nutrients*, 11: 1904.](#)



way, we modelled several diets that have a reduction in greenhouse gas emissions, and found that meat intake needed to be reduced to the amount recommended by the national food-based dietary guidelines for men but no change in total meat intake was needed for women. Further, a replacement of beef/lamb and processed meat with poultry and pork was needed, as well as increases in whole grains, nuts, and meat/dairy alternatives and decreases in food products like sweets for both men and women.³

Recommendations for environmentally sustainable protein consumption

Based on these findings and the scientific literature available, PROMISS devised the following recommendations to consume more protein in an environmentally sustainable way for older persons living at home:

1. Eat more plant-based protein sources, such as legumes and pulses (e.g. beans, lentils, peas, peanuts), whole grains (e.g. rye bread, whole wheat pasta, brown rice, bulgur), nuts and seeds (walnuts, Brazil nuts, pumpkin seeds, ground linseed)
2. If you eat meat, reduce your meat's environmental impact by choosing chicken and pork instead of beef, lamb, goat, and processed meat.
3. If you eat fish, choose a wide variety of species that requires less intensive means of capture and comes from certified sustainable sources. Overfishing is a key concern, as 34.2% of worldwide fish stocks were estimated to be overfished in 2017. Examples of fish types with that You can find more sustainable fish options in the [Good Fish Guide](#). Look out for ecolabels on certified fish products, such as the blue Marine Stewardship Council (MSC) logo, and Aquaculture Stewardship Council (ASC). Do not eat more than recommended by national dietary guidelines.
4. Reduce consumption of beef, lamb, goat, and processed meats. These not only have a higher environmental impact compared to other meats and animal-based protein sources but eating too much of these products has also been associated with negative health outcomes.
5. It is not necessary to go completely vegan or vegetarian if you want to eat more sustainable.
6. Other recommendations from the literature to eat more sustainably:
 - Eat a varied and balanced diet to maintain a healthy body weight
 - Reduce food waste
 - Choose seasonal foods when possible
 - Eat according to national dietary recommendations, and eat fewer foods high in fat, sugar and salt



Choosing locally produced food does not necessarily have a lower environmental impact than choosing food that has been imported. While transportation-related impacts contribute to overall impact, the impacts from the farm-level contribute most to the total impact of the food. Therefore, it is not entirely straightforward to determine whether one food is more 'sustainable' than another based on where it is produced.

³ <https://www.promiss-vu.eu/protein-for-a-healthy-future-how-to-increase-protein-intake-in-an-environmentally-sustainable-way-in-older-adults-in-the-netherlands/>



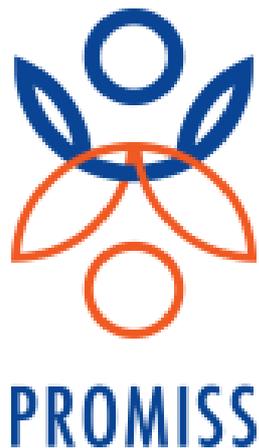
Eat more plant-based protein such as legumes and pulses (e.g. beans, lentils, peas, peanuts), **whole grains** (e.g. rye bread, whole wheat pasta, brown rice, bulgur), **nuts and seeds** (walnuts, Brazil nuts, pumpkin seeds, ground linseed)

Reduce your intake of beef, lamb, and processed meats

Choose chicken and pork - if you eat meat

Do not eat fish more than once a week

Choose certified sustainable fish - if you eat fish



What comes next?

Recommendations for key target stakeholders

PROMISS research brings findings relevant for the battle against malnutrition and that highlight the importance of increasing protein intake when growing older. Based on its own research findings and a review of the scientific literature, the PROMISS project has gathered scientific insights and developed scientific recommendations.



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To ensure that PROMISS research findings have an impact outside of academia, scientific research findings are being translated into recommendations that can be applied by health care professionals, dietitians, older persons and policy makers.

The focus of the recommendations for health care professionals, nutritionists and dietitians is on how they can best advise older people to tackle protein malnutrition. The recommendations provide insights on prevalence, particular at-risk groups and tips to give older persons on their protein consumption. Health care professionals, dietitians and nutritionists are also provided with the evidence-based research findings that are relevant to their work.

For older persons, the recommendations explain how much protein they need and provide tips on how to eat enough protein for example providing an overview of which foods contain how much protein.

Policy makers are most interested in how the findings relate to their work: on the EU level PROMISS research findings may feed into the European Commission's upcoming Green Paper on Ageing, as well as the European Green Deal, in particular its Farm to Fork strategy.

In this context, we're also working on further translating findings for industry in the form of webinars. Videos are being produced right now and will be published in the coming months.

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