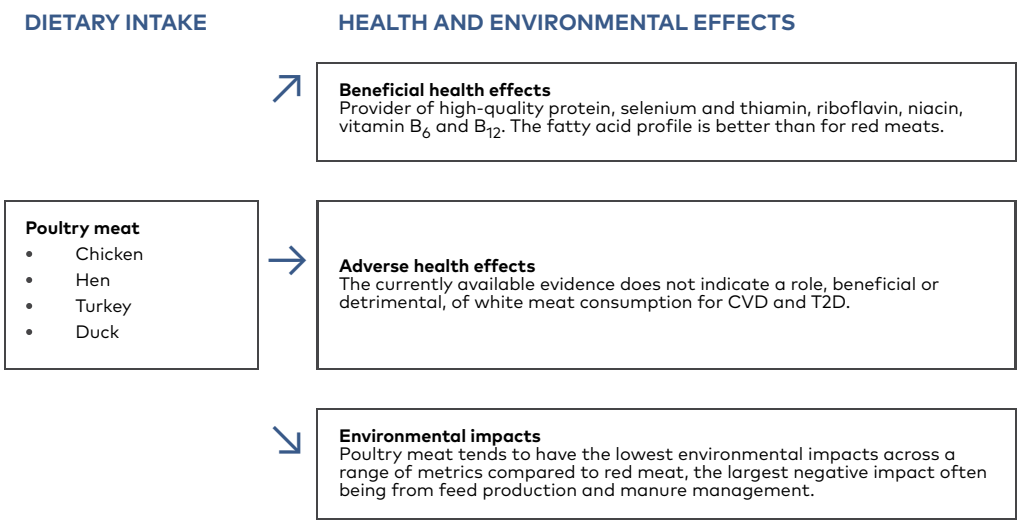
White meat



Science advice: **It is recommended that consumption of processed white meat should be as low as possible. To minimize environmental impact, consumption of white meat should not be increased from current levels and may be lower. Instead, total meat consumption should be replaced by increased consumption of plant foods, such as legumes, and fish from sustainably managed stocks.**

For more information about the health effects, please refer to the background paper by Jelena Meinilä and Jykri K. Virtanen (Meinilä & Virtanen, 2023). For more information about the environmental impacts, please refer to the following background papers (Benton et al., 2024; Harwatt et al., 2024; Meltzer et al., 2024; Trolle et al., 2024).

Dietary sources and intake. White meat provides high-quality protein, iron and many B vitamins in addition to having a more beneficial fatty acid profile than red meats. The dietary intake of white meat has increased the last decades and is the main driver of increased total meat intake. The average intake of white meat (poultry) ranges from approximately 20 to 50 g/d (Lemming & Pitsi, 2022).

Health effects. A *de novo* qSR developed within the NNR2023 project concluded that there is no currently available evidence for beneficial or detrimental effects of white meat consumption for cardiovascular diseases and type 2 diabetes (Ramel et al., 2023). The WCRF/AICR (2018e) also concluded that intake of processed meat is a convincing cause of colorectal cancer. Processed white meat includes white meat preserved by smoking, curing, or salting, or by the addition of preservatives (WCRF/AICR, 2018). The International Agency for Research on Cancer (2018) classifies processed meat as carcinogenic for humans, based on observational, animal and mechanistic data.

For more detailed background information on health effects of white meat consumption, please refer to the background paper by Meinliä and Virtanen (2023).

Environmental impacts. Across a range of metrics, including GHG, poultry tend to have the lowest climate impact within the meat food group, however, in general, the environmental impact is higher than plant-foods. Feed production (mostly cereals and soy) and manure management, has an environmental impact which cannot be neglected (Harwatt et al., 2024; Vinnari & M., 2022). Food-feed competition is an issue as feed crops are generally produced on land that is also suitable for production of food for human consumption. However, poultry may make use of cereals not meeting food grade quality, thereby keeping those cereals in the food system. If we are to consume eggs, a certain amount of poultry meat from laying hens needs to be consumed in order for the food system to be efficient. To efficiently use poultry without unnecessary waste, the inclusion of some processed poultry products in the diet is justified from an environmental perspective. The amount of animal waste in the poultry industry should be minimized to reduce the environmental impact.

For environmental reasons, reduction in red meat consumption, as suggested above, should not be countered with an increase in white meat consumption, but rather increased intake of plant-based foods and fish from sustainably managed stocks (Harwatt et al., 2024; Meltzer et al., 2024; Trolle et al., 2024).

Main data gaps. Few long-term intervention studies on risk factors and disease endpoints. Little data on potentially differential effects of processed vs. unprocessed white meat, different subgroups of white meat, and preparation methods. It is also difficult to determine effects of white meat per se, rather than as substitutes for red meat or fish. There are few studies covering environmental aspects other than climate impact, such as biodiversity aspects.

Risk groups. Low- or no-consumers have an increased risk of vitamin B_{12} inadequacy.

Science advice:

- **Based on health outcomes:** White meat is nutrient-dense and a provider of protein and other nutrients in the diet, with a relatively low content of saturated fatty acids. Intake of processed white meat should be limited due to increased risk of colorectal cancer and to comply with the recommended intake of sodium. Otherwise, based on meta-analyses of RCTs and observational studies, white meat is considered relatively neutral when it comes to health outcomes, and it is therefore not possible to set a recommended intake range for unprocessed white meat.
- **Based on environmental impacts**: In general, lower environmental impact across many environmental metrics compared to red meat. Negative environmental impact is related to feed production and manure management. Due to negative environmental impacts, it is not desirable to increase white meat consumption from current levels.
- **Overall science advice**: It is recommended that consumption of processed white meat should be as low as possible. To minimize environmental impact, consumption of white meat should not be increased from current levels and may be lower. Instead, meat consumption should be replaced by increased consumption of plant foods, such as legumes and fish from sustainably managed stocks.