

# How your diet can influence your environmental impact

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The impact of our dietary choices on the global phosphorus footprint shouldn't be neglected, recent research in *Frontiers in Nutrition* shows. A shift towards a plant-based diet may be an undervalued solution toward decreasing our environmental impact and attaining phosphorus sustainability.

Phosphorus is an element essential for all living beings and is thus critical in food production. Mined phosphate rock is a non-renewable global resource that is nowadays becoming increasingly scarce which poses a severe problem to the farming industry: it needs phosphorus in the form of fertilizers to sustain crop productivity.

Crops have two entries into the human food chain: direct consumption or indirect consumption by rearing animals which can be converted to human food. Different food types therefore require different amounts of phosphorus in their production. One kg of phosphorus can for example be used to either produce 3333 kg of starch roots (e.g. potatoes) or 16 kg of beef.

The loss of phosphorus to waterways, whether from agricultural fields through runoff or urban sewage through human excreta, can cause severe water quality degradation. This leads to eutrophication, [harmful algal blooms](#), and impairment of our drinking water, recreational areas, and fisheries.

As the human population increases, our long-term food security and

water quality are therefore threatened by the increased demand for phosphorus fertilizers. Dr. Geneviève Metson and her colleagues consequently investigated whether a change in human diet could be a potential important intervention method. What would the effect be of Australian city residents shifting their diet towards a [plant-based diet](#)?

Their modelling efforts focused around calculating the phosphorus footprint, which is the amount of phosphorus mined to support one's diet. Using food intake data from the 2011 National Nutrition Survey, they calculated the citizens' total consumption of different food groups and their associated average phosphorus fertilizer required to produce these foods. To estimate the effect of a switch to a plant-based diet, they converted the meat, dairy, eggs, and seafood food groups to pulses (i.e. beans or legumes).

Their calculations showed that a shift towards a plant-based diet would lead to a small increase of 8% in phosphorus excreted by the city residents. A big effect, on the other hand, was found when looking at the change in the residents' phosphorus footprint: a decrease of 72%.

The scientists therefore concluded that changing towards a plant-based diet is of significant effect for reducing mined phosphorus, and of relative insignificance for changing the phosphorus content of excreta. Diet choices are thus important in how much impact humans have on their environment.

Dr. Metson explains: "The most unexpected result was just how big of an impact diet changes can have on phosphorus fertilizer requirements, and that if you are only considering [phosphorus](#) reuse as a management strategy, you could miss diet as being an important part of planning for a sustainable food system."

**More information:** Geneviève S. Metson et al, Potential Impact of

Dietary Choices on Phosphorus Recycling and Global Phosphorus Footprints: The Case of the Average Australian City, *Frontiers in Nutrition* (2016). [DOI: 10.3389/fnut.2016.00035](https://doi.org/10.3389/fnut.2016.00035)

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