

Production of meat from ruminant animals remains a major source of greenhouse gas emissions

Diets link environmental and human health

Rising incomes and urbanisation are driving a global dietary transition, whereby traditional diets are replaced by diets higher in sugars, fats, oils and meats. If unchecked, these dietary trends will be a major contributor to the estimated 80 % increase in global greenhouse gas (GHG) emissions by 2050. Global agriculture and food production release more than 25 % of all GHG, pollute fresh and marine waters with agrochemicals and use about half of the ice-free land area of our planet as crop land or pasture land [Tilman & Clark 2014 and references herein].

Moreover, unhealthy and unsustainably produced food poses a global risk for both people and planet. The number of people on unhealthy diets that contribute to morbidity and premature death largely exceeds 1 billion [Willett et al. 2019]. Dietary shifts and resulting increases in body mass index are associated with the significantly increased global incidence of chronic non-communicable diseases, especially type 2 diabetes, coronary heart disease and some cancers, which together are predicted to become two thirds of the global disease burden.

Fortunately, health-promoting foods such as vegetables, fruits, legumes, and whole grains, also tend to be the ones that are climate-friendly [Tilman & Clark 2014; Pussemier & Goeyens 2020], unlike certain foods that carry known health risks, which are highly polluting. For example, the production and consumption of red and processed meat is associated with an increased risk of cardiovascular disease, type 2 diabetes, and certain cancers, while also being highly GHG emission intensive [GBD 2015 Risk Factors Collaborators 2016; Drew et al. 2020 and references herein].

Alternative diets that offer substantial health benefits could, if widely adopted, reduce global agricultural GHG emissions, curb land clearing and resultant species extinctions, and help prevent diet-related chronic non-communicable diseases. The implementation of dietary solutions to the tightly linked diet-environment-health tri-lemma is a global challenge; it is also an opportunity of great environmental and public health importance.

Limiting the rise in emissions from the livestock sector is a major challenge

Herrero et al. [2016] conclude that the technical mitigation potential of the livestock sector is very significant. However, most of this potential is still hypothetical because of the low adoption of technical practices and because of uncertainties and trade-offs associated with any attempt to reduce the consumption of livestock products.

Rather than witness serious efforts to reduce GHG emissions and manure production, we now face ever more compelling requests to build mega stables. Farmers are only too happy to fatten a few hundred thousand chickens or a few thousand pigs in the shortest possible time [Renson 2020]. They argue that their only aim is to respond to consumer demand by offering more meat for less money.

An understandable argument, but given the adverse effects of (ultra-processed) meat consumption, it is also a reprehensible one. Surely, transparent and clear communication is the very least we can expect!

Moreover, there is little evidence of government success in changing food preferences. Yet, the evidence is strong that increasing meat consumption runs counter to reducing greenhouse gas emissions from agriculture. Also, intensive livestock farming largely contributes to global agricultural trade. Obviously, limiting the rise in emissions from the livestock sector is particularly challenging. There are opportunities for synergies between increasing productivity and decreasing emission intensity, but there is always the risk that successful farmers will keep more animals, thereby limiting the benefits that may otherwise be expected.

Reducing global consumption of livestock products would bring considerable benefits in terms of agricultural emissions, but there is little evidence as to how this might be achieved without negative trade-offs.

Back to extensive grazing?

Does this make extensive livestock farming the better choice? Extensive livestock production is an animal farming system characterised by low productivity per animal and per surface. It requires small amounts of inputs, capital, and labour. Extensive livestock production systems usually have low stocking rates and are essentially based on grazing (permanent grasslands and natural pastures).

To be viable, extensive livestock production systems need to reduce their costs and offer higher value for their products. They generally use hardy breeds adapted to local specificities. However, in adverse situations, where crops cannot be grown, those livestock systems might need inputs in order to reach their milk and/or meat production goals. Such systems are referred to as “half extensive livestock production systems”.

Extensive livestock production provides ecosystem services while valorising grassland plant diversity. It is an agro-ecological solution that allows attractive landscapes to be maintained for tourism and social dynamics in isolated areas. It can supply humans as well as animals with quality products. Yet the question arises as to whether there is scientific evidence of the environmental friendliness of extensive livestock farming? You may think that GHG emissions are significantly lower, but is this really the case?

Using New Zealand, where cows and sheep are allowed to graze rather than being confined to feedlots, as a case study, Drew et al. [2020] investigated the extent to which potential contextual differences may affect the local applicability of international trends. Therefore, the authors adapted a 2013 life cycle assessment data base of foods eaten in the United Kingdom [Hoolohan et al. 2013] to develop a New Zealand-specific data base of estimated GHG emissions associated with seven life cycle stages: farming and processing, transportation, transit packaging, consumer packaging, warehousing and distribution, refrigeration, and supermarket overheads. And guess what? Beef and lamb still topped the list! This research characterises healthy and climate-friendly food choices and

eating patterns in the New Zealand context and, on the other hand, demonstrates that local trends are not dissimilar from those found globally.



Dairy farming in New Zealand (©iStockphoto.com/jvdwolf)

Are meat and dairy still so much worse for the climate? The answer, according to Drew et al. [2020], is clear. Even under these conditions, animal-based foods, particularly red and processed meats, are responsible for significantly more GHG emissions than vegetables, fruits, legumes, and whole grains.

Stop the growth of meat consumption!

We should not be surprised that the number of vegetarians is increasing. Eating patterns emphasising the consumption of whole, plant-based foods offer an opportunity to achieve substantial GHG emission reductions, while simultaneously realising considerable health gains and health system cost savings.

A well-designed public policy is needed worldwide to support the creation of a global food system that no longer exacerbates the climate crisis or the burden of non-communicable disease. Our health is very closely linked to the health of our environment. As human beings, we have failed to live in harmony with nature. Dr Peter Piot, director of the London School of Hygiene and Tropical Medicine, explains in an interview with Barbara Debusschere [2020] from the Flemish daily newspaper De Morgen that mass deforestation and the way we produce and consume food are leading to ever-increasing global warming.

Because of the Covid crisis, we have almost forgotten that we are also in the midst of a climate crisis and that the point of no return is getting ever closer. Albert Einstein said “... Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning...”. And he was absolutely right!

Let us waste no time in trying to improve matters now so we may look forward to 2021 and beyond with renewed hope.

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