

## Voices

# An optimal diet for planet and people

In 2019, the *EAT-Lancet* Commission proposed a planetary health diet (PHD)—optimal for the planet and its people. Yet concerns have arisen regarding its universality and potential tradeoffs and conflicts. This *Voices* asks: is a PHD realistic, where are the remaining knowledge gaps and opportunities, and where do we go from here?



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### Making planetary health diet realistic for Africa

With a view to encourage a food systems transformation in order to achieve the sustainable development goals and the Paris Agreement, the 2019 *EAT-Lancet* Commission proposed a planetary health diet (PHD). The proposal was to increase consumption of plant-based foods such as vegetables, fruits, nuts, and legumes by over 50% and to reduce the consumption of less healthy foods such as red meat and sugar by over 50%. The commission stated that this is necessary to ensure sustainable food systems that can take care of people and the environment on a global level. However, implementation of this proposal presents a challenge for many contexts for Africa. For example, in Kenya, close to a third of the population lives in arid and semi-arid lands and are largely pastoralists who depend largely on animal food sources, with very limited access to fruits, vegetables, nuts, and legumes. Additionally, in many African countries, there are high levels of micronutrient deficiencies (e.g., iron deficiency) causing various health issues, which necessitates increased consumption of animal source proteins. Innovative, policy-driven options of ensuring food-systems transformation to promote universal access to healthy diets are needed to ensure that the proposal can adequately be implemented. Such may include adoption of a “Universal Food Access” framework—a key component of Action Area 5.2 in the UN Food Systems Summit 2021—to promote access to healthy diets for all by way of local production at community or household levels or by way of purchase and via social protection mechanisms such as state-instituted food banks and school feeding programs for the most vulnerable. Implementation of PHD must also secure equity when applied to different contexts.



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### An economic lens on food systems transformation

Our current global food system has significant negative impacts on the environment, people’s health and many livelihoods. The PHD, proposed by the *EAT-Lancet* Commission in 2019, provided evidence-based targets for healthy diets and the environmental limits of food production for the first time. The commission estimated that transitions to healthy diets would eliminate more than 11 million premature adult deaths per year and avoid the transgression of key planetary boundaries including freshwater, land use, and nitrogen. This was an important first step to show that biophysically, it is possible to feed a healthy diet to a growing population within a finite world. However, it did not consider aspects such as affordability. Studies have estimated that healthy diets, including the PHD, are unaffordable to at least 1.58 billion people and are more expensive than a nutritionally adequate diet, the lowest-cost diet that meets all essential nutrient requirements. The Food System Economics Commission (FSEC) follows the *EAT-Lancet* report with an analysis of the economics and political economy of achieving a just transition to a nature-positive, healthy, and equitable food system. The FSEC combines global food and land-modeling exercises that identify sustainable food system pathways with an economic and policy analysis to propose concrete food system interventions such as taxes, subsidies, or regulations. Successful adoption of an inclusive PHD will require policy bundles that actively address synergies and trade-offs between different health, environmental, and economic objectives. Additionally, behavioral aspects such as acceptability of policies or desirability of diets need to be discussed.



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### Soil health for planetary health

Over the past 70 years, to keep pace with a growing population, agricultural productivity has soared (e.g., a 32% increase in grain production per capita). Agriculture for crops and livestock now dominate Earth's land use and freshwater withdrawals, and global food systems generate almost one third of all greenhouse gas emissions. The application of fertilizers during this Green Revolution has been particularly excessive (a 9.2-, 5-, and 5-fold increase in nitrogen, phosphorus, and potassium, respectively), with a net-negative impact on soil health: soil acidification has accelerated, and soil fertility and carbon storage have declined. Degrading soils threatens our ability to feed a continually growing population.

The One Health concept states that “the health of soil, plants, animals, people, ecosystems and planetary processes is one and indivisible.” The need to restore and sustain our currently degraded, depleted, and polluted soils is now greater than ever. A new Green Revolution for the 21st century is needed, where a transition to a less wasteful, less resource-intensive, plant-based PHD enhances human and environmental well-being. This transition must be soil centric with enhanced eco-efficiency of inputs and the objective of producing “more from less.”

With the global population projected to reach ~10 billion by 2050, it is important to revisit the world's food systems and their most vital resource: soil. The strategy is to live in harmony with nature through a healthy diet. Healthy soils are needed to support a healthy planet.



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### Two missing parts of the PHD puzzle

The mainstream food systems trespass the planetary boundaries and have huge negative impacts on climate change as well as adverse effects on biodiversity, and many diets derived from them are unhealthy. The PHD presents a promising vision of a more sustainable way of eating. Adopting plant-based diets in line with the PHD could be one vital way of enabling a transition toward more sustainable food systems. I would like to highlight two areas where more knowledge is needed to enable such a sustainable transition of the food systems. First, how do we think about the provision of biodiversity from animal production? The animal food products we do eat under the PHD guidance should come from livestock production systems that positively affect biodiversity while at the same time minimize their adverse effects on climate stability. As a society, we need targets that reflect how many and what type of animals are needed to maintain and enhance biodiversity. Those are also the animals we should primarily use in food production. This can even mean thinking about animal food products as by-products of agriculture's provision of biodiversity. Second, how do we re-organize farms and food value chains to become more sustainable, and how can consumers be empowered to choose more sustainable food products? This is a formidable challenge. Research about how food system transformation can take place is now emerging, but much work remains. Because many components of food systems are regional, the how question needs to be considered at local levels. Much effort will be needed across different regions around the globe. In the research program [Mistra Food Futures](#) I'm directing, we focus on discovering the how question for the Swedish food system.



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### Human-centered design for sustainable eating

The PHD imagines how we might shift current global dietary patterns toward high-quality, plant-based diets to help alleviate health and environmental burdens. Technological solutions in the production system may help to alleviate environmental impacts, but their long-term benefits to people and the planet depend on changing food-consumption patterns as social practices. However, food is a part of our daily lives, and diet choices are embedded in the fabric of our society. How do we create food systems that address the role of food in culture and the collective character of eating patterns among social groups? Informed by deep insights into people's attitudes and behaviors, designers are recognized as having the ability to influence people's eating habits and nudge them towards more sustainable patterns of consumption. For example, packaging features (e.g., smaller package size, partitioning) can be used to downsize portions of unhealthy foods and increase the

consumption of healthy foods. Packaging design can also incorporate concepts such as “narratives,” “metaphors,” and “scripts” to convey the benefits/dangers of certain foods and/or to encourage/entice consumption of one product over another. However, although design has a role to play, it will be people’s motivations (i.e., price/health concerns) that drive the transformation. Co-design that includes consumers as participants could help promote a shift towards sustainable food systems. Evidence suggests that there is value in applying design skills to development human-centered food systems to a PHD that is more holistic rather than piecemeal.



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### From global to local and a personal sustainable diet

The PHD promises adequate nutrition and improved human health and environmental outcomes at the global level. Rather than strict numbers, the PHD recommends an optimal range (in g capita-1 day-1) of intake amounts of around 15 different food groups (e.g., whole grains, fruits, vegetables, dairy, legumes, meat, etc.). The idea of a PHD is to not prohibit the intake of any particular food group such as meat but rather to encourage people to have a balanced diet that they can enjoy while keeping in mind the impacts their diet is having on the environment.

However, the concept of a PHD needs a more local and personal touch for its widespread adoption. To make it more realistic, several knowledge and data gaps need to be filled through future research. First, huge efforts are still needed to reach out to the masses to inform them of the urgent need to transform their diets for best sustainability outcomes. Second, economic costs of switching to a PHD hasn’t been considered; hence, more research is needed on region-specific food prices and affordability aspects. Third, the PHD considers global average planetary-boundary thresholds such as for freshwater, nitrogen, or phosphorus use, but research is needed to come up with region-specific environmental constraints in producing food. Fourth, the PHD should be derived separately for different sub-national regions considering their local dietary cultures, agricultural practices, and food availability constraints, as well as demographics (age, gender, income etc.). Deriving sustainable diets using smart optimization algorithms that consider all such local and personal aspects simultaneously is the way to go in the future.



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### Linking nexus planning and sustainable food systems

Today’s grand challenges, including climate change, resource depletion and degradation, migration, the emergence of novel pests and diseases, and unsustainable food systems, are systemic issues that transverse all sectors. Although the *EAT-Lancet* PHD provides useful guidelines for human and planetary health, there is a lack of consideration of the agriculture-environment-health nexus and interlinked issues such as biodiversity, poverty and inequality, social cohesion, and culture, which not only determine food sources and reasons for food choices but give a sense of place and dignity. This lack of context places limitations on the PHD’s relevance of context and applicability for the Global South. The focus should be on developing interventions that promote transformational change in food systems and diets toward greater sustainability, resilience, and equity while operating within the planetary boundaries and delivering on human health, well-being, and environmental outcomes. For example, the use of underutilized indigenous crops and wild fruits, being promoted in South Africa, not only addresses nutrition, human and environmental health, and diversified diets but also considers nexus planning related to poverty, inequality and unemployment, and gender and social inclusion through the creation of new and inclusive value chains for supporting these crops. Such transformative and nexus-smart interventions, which consider broader systemic issues, promote a transition toward sustainable, healthy, inclusive, and resilient food systems.





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### Healthy and affordable for who?

Convergence to the PHD requires much less consumption of animal-sourced foods (ASFs) and unhealthy processed foods in higher income countries and much more consumption of nutrient-dense vegetal foods in virtually all countries. Unsurprisingly, the report attracted widespread criticism from the meat lobby. Our view as economists working on nutritional and agricultural issues is that the next version of the PHD would benefit from a more careful consideration of the nutritional, demographic, and economic conditions of poorer countries.

Richer populations undoubtedly over-consume red meat on health and environmental grounds, but dairy is much less environmentally harmful per unit of output than beef, and highly nutritious, especially for young children (as are other ASFs). A future PHD should distinguish the vast demographic differences between rich countries dominated by older consumers facing high risks of diet-related diseases, and poor countries dominated by young children, adolescents, and women of child-bearing age, many of whom suffer from multiple nutritional deficiencies. For the poor, ASFs constitute not only a high-quality “protein”, but also a food dense in multiple, *highly* bioavailable micronutrients. Our work has shown that children who consume multiple ASFs per day are 6% points less likely to be stunted—indicative of a significant potential for ASFs to redress the terrible burden of child undernutrition in poor countries. Yet, we’ve shown the PHD is unaffordable for at least 1.5 billion people because of low incomes and the high costs of ASFs and nutrient-rich fruits/vegetables. Thus, while adding more nuances to the PHD, we need to overcome major economic challenges to positive dietary change.



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### Global dietary shift to protect people and planet

Our health may be better than ever, as noted by rates of life expectancy and child mortality. But dietary choice and agricultural expansion are threatening health through the rise in non-communicable diseases and the emergence and reemergence of pathogens. Today, the world is paying a heavy toll as the effects of the coronavirus disease 2019 pandemic continue to unfold, exposing cracks in health systems and revealing the truths of inequity and injustice. For decades, in our efforts to produce food to feed rising populations and boost nutrition, we have mistreated our environment and abused our planet, and we are beginning to pay the price. Our food systems, and our access to nutrient-dense diets, are now faced with the twin challenges of climate change and biodiversity loss. To protect the planet from further damage, and ensure a sustainable food future, a PHD is an urgent necessity. However, such a transition must consider the local contexts and geographic realities of food-consumption patterns, food affordability, and dietary requirements. Three billion people are currently unable to access healthy diets, and food systems are entangled with the livelihoods of billions. In the epoch of the Anthropocene, it is clear that a radical transformation of current food systems is urgently required, but it must optimize human health, environmental well-being, and social welfare. We must work together with bold actions and targets as well as multi-sectoral and trans-disciplinary teams and approaches to protect our planet and people.