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Mini Review

The Planetary Health Diet: A Review of the Highlights of the EAT-Lancet Commission 2019 and 2025 Reports

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Abstract: The Planetary Health Diet (PHD) as defined by the EAT-Lancet Commission in 2019, has garnered the interest of health professionals, and especially dietitians. The purpose of this review was to compare the PHD as assessed in the 2025 compared to the 2019 report of the EAT-Lancet Commission. Contrary to the common misinterpretation that the PHD is solely an "environment-first" diet, the PHD was defined as the result of modeling a nutritionally adequate pattern that was constrained to stay within predefined planetary boundaries. This is particularly important in our current era, due to the food system being a major driver of environmental damage, while also being highly vulnerable to the climate effects it creates. Moreover, the PHD is associated with decreased all-cause mortality, cardiovascular disease risk and type two diabetes risk. However, this diet has received criticism for being nutritionally inadequate, not affordable and not culturally inclusive. Based on the 2025 report, the PHD was (re)defined as a flexitarian diet that does not eliminate, but drastically reduces animal source foods to 2 servings/day (1 dairy and 1 non-dairy food product). Furthermore, emphasis was given to implementation and justice, highlighting that this pattern should be culturally adaptable, accessible, and affordable. However, some implementation barriers and policy gaps still exist. In conclusion, the PHD is a prime tool that can be used as a starting point to advocate for more sustainable choices for the general population, while for individualized guidance more research is warranted.

Keywords: eat-lancet diet; planetary health diet; cardiovascular disease risk factors; sustainability; dietetics; health professionals

1. Introduction

The first definition of a "Sustainable diet" dates back to Joan Gussow and Katherine Clancy who first proposed "Dietary Guidelines for Sustainability" in 1986 [1]. Multiple organizations (e.g., Barilla Foundation, European Federation of the Associations of Dietitians, World Health Organization, Food and Agriculture Organization) have focused on sustainable practices concerning dietary habits [2–4]. The Education and Agriculture Together (EAT) Lancet Commission Report in 2019 marked the first extensive work to bridge the gap between planetary and human health [5]. The report quickly captured the attention of researchers and dietitians, prompting professional debate. Due to the complexity of the subject and the scarcity of available resources, a significant gap exists in the understanding of sustainable diets among health professionals, including dietitians, especially in clinical practice, with many wondering how this diet is different from other established healthy diets. In fact, the original 2019 EAT-Lancet report has received criticism [6–8]. Now marking 6 years after this report, the EAT-Lancet 2025 report was published and addressed some of the arguments against the Planetary Health Diet (PHD) [9].

The purpose of this review was to compare the PHD as assessed in the 2025 compared to the 2019 report of the EAT-Lancet Commission, focusing on important sustainability facts that should not be neglected by dietitians, researchers, and health professionals.

2. Search Strategy and Selection Criteria

A literature search was performed in the PubMed and Scopus databases, from inception up to 23 January 2026, using the keywords: "EAT-Lancet Commission", "sustainable", "sustainable diets", "planetary health", "planetary health diet", "cardiometabolic health", "cardiovascular disease", "type 2 diabetes", "hypertension", "dyslipidemia", "metabolic syndrome", "Planetary Health Index", "EAT-Lancet index", "Multidimensional Sustainable Diet Index", "sustainability index". References of the 2019 and 2025 EAT-Lancet reports (which were the main focus of this review) were manually searched. No specific exclusion criteria were used, but systematic reviews and meta-analyses were preferred if available.

3. Why the Focus on a Planetary Health Diet?

Defining a single sustainable diet is a rather challenging task, due to the complexity of such diets. According to the framework by Johnston et al. (2014) [10], characteristics under the umbrella of 6 core components should be taken into account, namely: (1) wellbeing and health, (2) biodiversity, environment and climate, (3) equity and fair trade, (4) ecofriendly, local, and seasonal foods, (5) cultural heritage and skills, and (6) food and nutrient needs, food security, and accessibility. In the original 2019 report, the definition of the PHD was quite complex, as it tried to integrate human and planetary health in one single diet [5]. Due to its name, many researchers, dietitians included, thought that this diet was based on foods that are good for the environment; that is foods that have lower environmental impacts, such as lower production of greenhouse gas emissions (GHGE), foods that need lower land use or lower water consumption to be produced. However, this was not the case. As the 2025 report highlights, the PHD was the result of modeling a nutritionally adequate pattern that was constrained to stay within predefined planetary boundaries, thereby ensuring its benefits for both human health and the planet [9].

In the geological time scale, the last 10.000–11.700 years are defined as the Holocene. This epoch is characterized by a relatively stable Earth system, natural variability, and stable temperatures; environmental conditions that helped to sustain human activity and development [11]. However, Paul Crutzen & Eugene Stoermer in 2000 first coined the term "Anthropocene", and some years later Steffen and colleagues supported and further developed this concept to recognize human activities as a geophysical driving force [11,12]. After the mid-20th century, human activities such as industrialization, agriculture, and (over)consumption, have influenced the stability of the ecosystem, potentially leading to irreversible environmental shifts [11].

Rockström and colleagues have stressed the importance of following the framework of "Planetary Boundaries", which can be described as safe operating practices for both human livelihood and the Earth system (including biophysical subsystems or processes) [9,13]. In specific, 9 pillars must be taken into account; (1) climate change, (2) biodiversity loss, (3) nitrogen and phosphorus cycles, (4) stratospheric ozone depletion, (5) ocean acidification, (6) freshwater use, (7) land use, (8) chemical pollution, (9) atmospheric aerosol loading [14].

So why the focus on a PHD? The focus on a PHD is justified due to the food system being a major driver of environmental damage, while also being highly vulnerable to the climate effects it creates. For example, cultivating water-intensive crops can deplete local reserves, ultimately threatening the long-term viability of the very yields they are intended to produce [15]. An example of such a resource-depletion cycle is almonds; almost 4 L of water are needed to produce one single almond in California (where 80% of the world's almonds are produced) [16]. Ultimately, this cycle threatens food security by driving up prices and reducing crop yields which can indirectly impact public health by limiting access to nutritious, healthy foods in under-resourced communities [17,18].

4. Components and Cardiometabolic Health Aspects of the Planetary Health Diet

The PHD is not a vegan diet; it is a flexitarian diet that does not eliminate, but drastically reduces animal source foods, to even lower levels than the WHO guidelines, or traditional patterns like the Mediterranean diet [5,14,19,20]. The initial 2019 report was more of a "one-size-fits-all" as many critiqued, based on g/day of food consumption for a 2500 kcal/day diet [5]. The new 2025 report is more flexible setting upper and lower ranges for 14 foods/food groups in g/day and servings per week for a 2400 kcal/day diet, clarifying that the diet should consist of a maximum of two servings of total animal-source foods per day, comprised of a dairy and a non-dairy animal product [9]. In terms of animal foods, it is suggested that the preference should be fish/seafood/poultry, followed by dairy and eggs, and then by red meat (least preferred). The specific composition of the PHD and a comparison between the 2019 and 2025 reports are summarized in Table 1.

Table 1. Food group quantities in the 2019 and 2025 EAT-Lancet reports.

Food Groups	2019 Reference Intake (g/day)	2025 Reference Intake (g/day)	Main Differences	Recommended Servings *
Whole Grains	232	210	Slightly reduced reference intake, but the emphasis on non-refined (vs refined grains) remains.	Not provided.
Tubers, Starchy Vegetables	50	50	None.	Not provided.
Vegetables	300	300	None.	5 servings of fruit and vegetables/day.
Fruits	200	200	None.	
Nuts and Peanuts	50	50	None.	Not provided.
Legumes **	75	75	For calculation purposes, the 2025 report defines this as 50% soy and 50% other legumes.	Not provided.
Dairy Foods	250	250	None.	1 serving/day.
Red Meat (Beef, Lamb, Pork)	14 (Range: 0–28)	15 (Range: 0–30)	A slight increase, to round the numbers.	1 serving/week.
Chicken & Poultry	29 (Range: 0–58)	30 (Range: 0–60)	A slight increase, to round the numbers.	2 servings/week.
Eggs	13 (Range: 0–25)	15 (Range: 0–25)	A slight increase, to round the numbers.	1.5–2 eggs/week.
Fish & Shellfish	28 (Range: 0–100)	30 (Range: 0–100)	A slight increase, to round the numbers.	2 servings/week.
Unsaturated Plant Oils	40 (Range: 20–80)	40 (Range: 20–80)	None.	Not provided.
Saturated Oils	11.8 (Range: 0–11.8)	5 g (Lard, Tallow, Butter; Range: 0–10)	The 2025 report disaggregates saturated fats and oils, limiting lard, tallow, and butter to 5 g/day and separately limiting palm and coconut oil to 6 g/day (range 0–8 g/day).	Not provided.
Added Sugars	31 (Range: 0–31)	30 (Range: 0–30)	A slight decrease, to round the numbers.	Not provided.

* Approximate servings per week, based on the EAT 2025 report (where available). A serving is equivalent to approximately 100g. Of note, in the 2019 report the servings correspond to a 2500 kcal diet, while for the 2025 report the servings correspond to a 2400 kcal diet. These are model-based estimates under specific assumptions, with practical implications for vulnerable groups. ** Legumes weight represents dry weight. Abbreviations: EAT: Education and Agriculture Together.

Of note, the 2025 report refers to a 2400 kcal diet; a slight energy reduction compared to the 2019 report, based on updated demographic and energy requirement data at the population level. This 100 kcal mismatch (equivalent to approximately 1 portion of 2% yoghurt, a fruit serving or a slice of bread) is minor on an individual level, but could provide significant benefits for planetary health on the population level.

Recently, a joint statement was released by the European Society of Cardiology (ESC), American Heart Association (AHA), American College of Cardiology (ACC), and World Heart Federation (WHF) that identified environmental stressors, such as air, noise, light and chemical pollution, climate change, and water and soil contamination, as major modifiable cardiovascular disease risk factors [21]. This statement could act as a starting point for modifying environmental factors including food systems and dietary habits.

As mentioned in the sections above, the definition of the PHD insinuates the cardiovascular health benefits which are supported by recent epidemiological evidence. A recent mini review by Stubbendorff et al. (2025) has found an inverse association between the PHD and all-cause mortality, cardiovascular disease, and type 2 diabetes [22]. Based on another review, it seems that the inverse associations between the PHD and cardiometabolic conditions are explained by improvements in abdominal obesity, glycemic control, and low-density lipoprotein (LDL) cholesterol levels [23]. The cardiovascular benefits are supported by other studies [24–31], and can be attributed to the plant-based nature of the PHD [5,9]. Specifically, the PHD includes nutrients which are important for cardiovascular health such as fiber, polyphenols, antioxidants, phytochemicals, and anti-inflammatory substances abundant in fruits, vegetables, legumes, whole grains and nuts [32–34].

Notably, in a report from the 20-year follow-up of the ATTICA study, it was found that the PHD offered similar protection against cardiovascular disease risk to the cardioprotective Mediterranean diet, with associations being stronger in younger individuals [26]. In specific, the PHD showed better discriminatory power for predicting cardiovascular disease events compared to the Mediterranean diet (Likelihood ratio: PHD = 540.32, MedDiet = 530.22 ($p < 0.001$), Harrell's C-statistic: PHD = 0.8901 > MedDiet = 0.7862) [26]. Furthermore, it has been shown that the PHD had cross-sectional associations with cardiometabolic risk comparable to healthy dietary patterns as defined by the Healthy Eating Index (HEI-2015) or the Dietary Approaches to Stop Hypertension (DASH) diet [35].

5. Dietitians' Critique on Nutritional Adequacy and the 2025 EAT-Lancet Response

Despite the cardiometabolic benefits of the PHD, it has been estimated that the 2019 PHD falls short on vitamin B12, iron—for which bioavailability (lower in plant-based sources due to phytates) was not taken into account—calcium, and zinc, which are especially important for vulnerable groups (e.g., pregnant women, women of reproductive age, malnourished populations) (Table 2) [6]. Another study has found that higher adherence to a general healthy diet (based on the alternative Healthy Eating Index) was linked to better mood and cognitive function, but the 2019 PHD was not; this was attributed to lower protein, zinc, iron and selenium consumption [36]. However, other studies have shown that the PHD is similar to other healthy dietary patterns in terms of nutrient adequacy or protection against disease [26,28,37,38]. Furthermore, the affordability of this pattern has also been questioned [39]. A global analysis estimated that approximately 1.6 billion people could not afford the cost of following a PHD [39]. Finally, this planetary pattern that seemed close to vegan diets, received backlash because the various food groups were treated rather dichotomously ("good" vs. "bad"), a framing not supported by the literature especially for unprocessed meat, fermented dairy and saturated fat [40–47]. Relatedly, many also argued that a "white hat bias" took place, suggesting that scientific objectivity was compromised due to some of the authors' ideology (notably, it seems that not all authors agreed with the 2019 report) [5,6].

Table 2. Nutrient shortfalls of the Planetary Health Diet as estimated by Beal, Ortenzi and Fanzo (2023) [6].

Micronutrient Intake	Deficiency in Adults (25 Years and Older)	Deficiency in Women of Reproductive Age (15–49 Years)
Iron	90% of the RNI.	55% of the RNI.
Zinc	78% of the RNI.	93% of the RNI.
Calcium	86% of the RNI.	84% of the RNI.
Vitamin B12	93% of the RNI.	93% of the RNI.

Abbreviation: RNI: Recommended Nutrient Intake.

The 2025 report shifted focus to implementation and justice, highlighting that this pattern should be culturally adaptable, accessible, and affordable as suggested by previous literature [9,10]. However, given that the components and the quantities of the PHD remained similar, it seems that the cultural adaptability, accessibility, and affordability of the diet have not been addressed adequately. Moreover, the new report remodeled the effects on health, and found an even greater benefit; the PHD could help in preventing approximately 15 million premature deaths annually (vs. 11.6 million in the 2019 report) [5,9]. For dietitians, the most important difference is the clearer framing for diets. In the 2019 report the recommendations included the 14 food quantities (please see Table 1), while in the 2025 report, there is the recommendation of "two servings of animal-source foods per day" chosen from a flexible list (milk, yogurt, fish, eggs, small amounts of meat) [5,9]. The 2025 report does not fundamentally change the plant-to-animal ratio, assigning the same cut-off for both high- and low- income countries, therefore, the nutrient adequacy of the 2025 report, in terms of vitamin B12, iron, calcium, and zinc, remains a critical concern. Finally, for the PHD to be individualized in different populations, a concrete roadmap taking into account socio-economic factors, food environments and individual choices, is still missing.

6. Implementation and Policy

6.1. Implementation Barriers and Policy Gaps

Despite the PHD evidence base and the reaffirmation of it being a flexible framework in the 2025 report, some restrictions are highly improbable to be followed by most people in industrialized nations, due to cultural or psychological barriers [48,49]. For instance, red meat is limited to only one serving per week, which is very small (a serving of 100g is approximately the palm of one's hand), compared to the quantity and frequency it is consumed in most industrialized countries where red meat signifies affluence or even masculinity [50].

If one looks into it more profoundly, the PHD could be tailored to specific regions. Given the focus on GHGE (the major driving force of climate change) a "sustainability paradox" might occur. For example, growing water-intensive crops, such as nuts, might not be ideal in drought-prone areas. This would need blue water (irrigation/groundwater, which leads to scarcity) instead of relying on green water (rainwater, which is less critical). In such regions, and when protein is a concern (e.g., weight-loss, athletes, chronic diseases with protein/energy wasting, older populations with depleted muscle mass) or when plant protein, from nuts or legumes, cannot be preferred or easily tolerated (e.g., irritable bowel syndrome, chronic kidney disease, diverticulosis), animal protein from poultry (which, compared to ruminant meats, produces less GHGE and has been associated with beneficial effects for cardiovascular health) might be a more sustainable choice [51–53].

Although the new 2025 EAT-Lancet report focuses on providing a just food system, in practice, characterizing foods as sustainable is not an easy task, and cannot be strictly generalized. A sustainability factor that gets confused is the area of food production. Although the WHO and FAO reports describe sustainable food systems as "local" [4,18], recent research shows that local foods can be more sustainable when they are in-season and minimally processed, as the environmental impact is largely determined by production methods rather than transport distance alone [51]. In specific, despite the commonly used term "food miles" (e.g., importing healthy extra virgin olive oil from the Mediterranean to the US leads to GHGE from transportation), transport usually only accounts for about 5–10% of total GHGE, while land-use change and farm-stage processes account for more than 80% [51]. Another factor of sustainability that is often neglected includes the price of foods (affordability). Affordability can directly lead to preferring cheaper options; these options could be preferring the cheaper option among equally nutritious foods (e.g., preferring cheaper nuts) or preferring less nutritious foods (e.g., preferring white instead of whole-grain pasta).

6.2. Implementation Barriers in Practice: Planetary Health Diet vs. Sustainability Assessment

For dietitian practitioners, the ambiguity of these multi-factorial sustainability aspects creates a procedural barrier to the development of tailored interventions, ultimately limiting the clinical utility of current sustainability frameworks.

To assess, quantify and categorize the adherence to a sustainable diet, various indexes exist, including more diet-forward indexes such as the Planetary Health Diet Index (PHDI), the EAT-Lancet index and WISH (World Index for Sustainability and Health), used to measure the adherence to the reference diet suggested by the EAT-Lancet 2019 report [54–56], as well as more multidimensional indexes such as the Sustainable Diet Index (SDI) [57], which has been developed in France and adapted for different concepts such the US and Ghana [58,59] or the extensive multidimensional index developed in Canada based on the Canadian Food Life Cycle Inventory database [60].

However, these scores are rarely used in clinical practice. Although there is guidance to follow more plant-centered dietary patterns for planetary health, explicit and specific advice to help an individual adopt more planetary-friendly dietary habits is not so well-elucidated.

For example, the Mediterranean diet is a well-defined and well-studied dietary pattern with health benefits (which could also be sustainable for mainly Mediterranean populations). Various metrics exist to measure population or individual adherence to this pattern (e.g., Mediterranean diet Score-MDS, MedDietScore, KIDMED, Mediterranean diet adherence screener-MEDAS) [61]. Dietitians meeting clients scarcely use these Mediterranean diet scores in clinical practice; they prefer using the Mediterranean diet pyramid to propose practical food swaps.

Although this can also be performed for the PHD based on the Lancet Report, to truly individualize food swaps that would benefit both the individual and the planet, is objectively challenging. Ultimately, albeit this is an ideal scenario that would need global and country-level collaborations between different sectors, country-specific definitions of planetary healthy diets and sustainable practices should be defined to facilitate clinical action.

6.3. Proposed Actions for Policy Initiatives and Clinical Practice

First and foremost, combined efforts are needed for a clear, updated and evidence-based consensus framework of what a planetary health diet should include globally and in country-specific contexts.

As proposed by the Organisation for Economic Co-operation and Development (OECD) [62], policymakers can incentivize the transition toward sustainable food systems by implementing fiscal instruments, such as tax abatements for regenerative practices and corrective levies on resource-intensive production methods. To ensure these measures do not exacerbate socio-economic inequalities, they should be designed as equity-focused interventions, perhaps through revenue recycling to subsidize sustainable, nutrient-dense foods for vulnerable populations.

Last but not least, better education for practitioners and the general public should be encouraged and facilitated by policy makers [63]. Planetary health could be included in educative curriculums of health professionals. Such courses should be extensive and in-depth in universities for dietitians in-training in order for them to provide specific tailored advice to their future clients. The basic principles could also be offered, via courses, seminars or congresses, in working or in-training professionals who lack dietetic and/or sustainability knowledge such as doctors or nurses. This education should not be limited in a theoretical context; rather dietitians and other practitioners should be provided with specific tools to navigate the trade-offs between "nutritional adequacy" and "environmental footprint". After adequate research, an app could be made, to facilitate this. Easier-to-comprehend guidance could also be offered to school teachers who shape the overall -including nutritional-knowledge and skills of the future generation [64]. A relatively easy workshop that could be included even in school curriculums would be ways to reduce food waste in households [64].

7. Conclusions

In conclusion, the PHD is a prime tool that can be used as a starting point to advocate for more sustainable choices for the general population. However, dietitians and health professionals should take care to individualize these practices. To individualize such practices is relatively easy, when an individual's health is the main focus, however, to also take into account the sustainability of local food systems is easier said than done. More research is warranted on developing contextualized, regional Planetary Health Diets that reflect local ecology, agriculture, and culture. Ideally, this would need an interdisciplinary team in each area/region/country, to truly tailor sustainable practices of food production and consumption.

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