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2017. Brazil.  
A marketplace in São Paulo.  
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## What we eat matters: Health and environmental impacts of diets worldwide

# KEY POINTS

- 1** The previous decade has seen little progress in improving diets, and a quarter of all deaths among adults are attributable to poor diets – those low in fruits, vegetables, nuts/seeds and whole grains, and high in red and processed meat and sugary drinks.
- 2** Food production currently generates more than a third of all greenhouse gas emissions globally, and uses substantial and rising amounts of environmental resources, including land, water and nitrogen- and phosphorus-containing fertilisers.
- 3** Current dietary patterns globally and in most regions are neither healthy nor sustainable. No region is on course to meet the Sustainable Development Goals aimed at limiting health and environmental burdens related to diets and the food system.

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## Introduction

Our diets affect both our own health and the health of the planet.<sup>1,2</sup> Imbalanced diets low in fruits, vegetables, legumes, nuts/seeds and whole grains, and high in red and processed meat are responsible for one of the greatest health burdens globally and in most regions.<sup>3,4</sup> At the same time, our diets and the food system underpinning them are major drivers of environmental pollution and resource demand, which is contributing to the crossing of key planetary boundaries that attempt to define a safe operating space for humanity on a stable Earth system.<sup>5</sup> Preserving the integrity of our environment and the health of populations will require substantial changes in the foods we produce and eat.

This chapter discusses the current state of diets worldwide and presents new estimates of the associated health and environmental impacts both globally and nationally. First, we survey how the demand for health and environmentally important foods has changed between 2010 and 2018 (the last year for which data is available) and compare the current dietary trends to food-group targets for healthy and sustainable diets. Second, based on epidemiological relationships that connect food intake with risks for diet-related diseases, we estimate the health implications of current diets. Third, based on the environmental footprints of foods, we estimate the environmental impacts of the food supply. The methodology for this chapter contains a detailed description of the analytical methods used. We start by identifying key foods important for both human health and the environment.

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## Foods of concern

A healthy diet consists of plenty of fruits, vegetables, legumes, nuts/seeds, whole grains and oils high in unsaturated fats, and little to no red and processed meat, sugar-sweetened beverages, refined grains and oils high in saturated fats.<sup>6,7,8</sup> Nutritional epidemiology has identified many of those aspects as key risk factors for or against leading causes of overall illness and death, including coronary heart disease, stroke, type-2 diabetes and several cancers. Between 20% and 25% of all deaths in adults have been associated with imbalanced diets.<sup>9,10</sup>

Advances in nutritional science in the last two decades now provide a substantial body of evidence to identify key dietary priorities for action. The evidence linking diets to intermediate risk factors (e.g. raised blood pressure) and final health (disease) outcomes (e.g. heart disease) comes from various lines of evidence. These include studies of biological processes, clinical trials of risk factors, long-term observational studies of health outcomes, and clinical trials of health outcomes. The different study designs have complementary strengths and weaknesses, and their similar conclusions from different approaches provide increasingly robust evidence.<sup>11,12,13,14,15,16</sup>

For our analysis, we followed several steps to ensure that our selection of diet factors reflects the current evidence on healthy eating. First, we focused on evidence from meta-analyses that have pooled all available studies linking diets to health outcomes, to minimise bias from any one study. Second, we only used diet–disease associations whose strength of evidence in meta-analyses was graded as moderate or high, or as probable and convincing. Third, we did not include diet–disease associations, e.g. for dairy products<sup>17,18</sup> and fish,<sup>19,20,21,22</sup> which became statistically non-significant when adjusted for potential confounding factors, such as co-consumption with other foods. Fourth, we focused on foods and not nutrients, to reduce the risk of double-counting as foods often include several nutrients. Further details are provided in the methodology (see the section called Data for comparative risk assessment). We focused on foods with impacts on coronary heart disease, stroke, diabetes, cancers and respiratory disease.

When it comes to the environmental impacts of foods, it is generally recognised that animal-based foods have greater environmental impacts than plant-based foods.<sup>23,24,25</sup> For example, for greenhouse gas emissions, beef and lamb have about ten times the emissions per serving as pork, poultry and dairy products, and those have about ten times the emissions of plant-based foods, including grains, fruits and vegetables, and legumes. Similarly for water, the average fresh-water footprint per tonne of animal-based product is greater than that of plant-based products, with the exception of milk, which has a relatively low water footprint, and nuts, which have a relatively high water footprint when measured on a per-tonne basis, but not on a per-calorie or per-protein basis.<sup>26</sup>

Much of the evidence linking environmental impacts to foods comes from life-cycle analyses that record the various impacts across all stages of the food chain, including production, transport, processing and consumption. The strength of life-cycle analysis is that both direct and indirect impacts are accounted for, something that explains the differentiated impacts of foods. Animal-based foods tend to have greater footprints of greenhouse gas emissions than plant-based foods because, in addition to direct emissions from manure and, for ruminant animals, their digestion, animals also generate indirect emissions from their feed whose production generates emissions and requires large amounts of environmental resources, including land, water and fertilisers.

For our analysis, we used the most recent and comprehensive set of life-cycle assessments to estimate the environmental impacts of diets (see the section called Environmental analysis in the methodology). We included in our assessment the impacts of foods on greenhouse gas emissions, cropland use, fresh-water use and nitrogen and phosphorus application related to fertilisers. Dietary changes towards more plant-based diets have been identified as the most efficient way of reducing the greenhouse gas emissions of the food system.<sup>27</sup> Several technological and management options exist for reducing other environmental impacts. However, when it comes to greenhouse gas emissions, those are relatively ineffective



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because most emissions are associated with the characteristics of animals, such as feed requirements and digestion-related gases, that cannot be altered substantially. This makes dietary changes towards less-impact foods one of the most important climate-change measures.<sup>28</sup> Therefore, we focus here on the greenhouse gas emissions associated with food demand, but also highlight other impacts.

## The global and regional state of dietary intakes

The last decade, based on data for 2010 and 2018, has seen little progress in improving diets (Figure 2.1). Based on analyses of the latest data on average per-person dietary intakes from the Global Dietary Database,<sup>29</sup> intakes of whole grains, and of fruit and vegetables, both critical components of healthy diets, have increased by a mere 2% globally, fish intake remained unchanged, while legume consumption has decreased on average (-4%) and the consumption of sugary drinks has increased (+4%). Among the health-promoting foods, only nut/seed intake showed more substantial increases (+17%), albeit from a very low baseline. Global dairy intake (measured in milk equivalent in grams per day, g/d) has decreased (-7%), but the intake of other foods associated with high environmental and health impacts, in particular red meat and processed meat, has increased (+2-3%). In addition, overeating and, associated with that, the proportion of overweight and obesity, have increased almost five times more (+0.70%) than levels of underweight have decreased (-0.15%).<sup>30</sup>

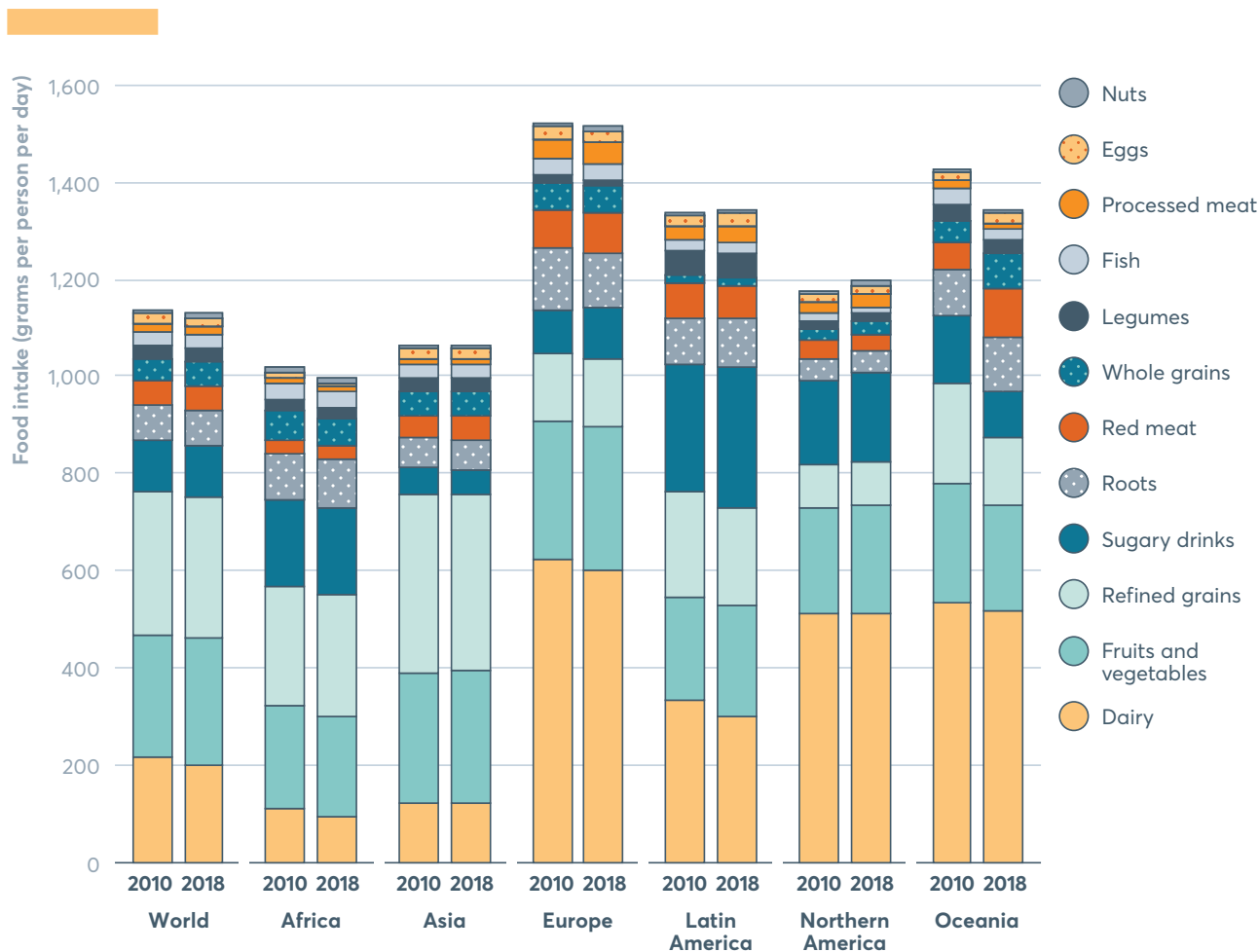
Both positive and negative dietary changes were often confined to high- and upper-

middle-income countries, with least progress in low-income countries (Figure 2.1). For example, the average fruit and vegetable intake per person increased in Latin America and the Caribbean (+8%), Europe (+5%), Asia (+4%); it stayed unchanged in Northern America; and it decreased in Africa (-4%) and Oceania (-13%). Likewise, red and processed meat intake increased in Oceania (+59%), Latin America and the Caribbean (+7%), Asia (+6%) and Europe (+4%); it changed little in Northern America (+1%); and it decreased in Africa (-10%). Overweight and obesity increased in every region, with up to 3% in Asia, while underweight decreased least in Africa (-0.2%).

**FIGURE 2.1**

**The last decade has seen little progress in improving diets**

Food intake by food group, year and region (grams per person per day), 2010 and 2018



**Source:** Authors, based on new analysis based on the Global Dietary Database.

**Notes:** Dairy is reported in milk equivalents. The selection of food groups is based on their health and environmental impacts. Our analysis includes diet–disease association for low intake of fruits, vegetables, legumes, nuts/seeds and whole grains; and for high intake of red meat, processed meat and sugary drinks. All food groups have environmental impacts, with particularly high impacts for animal source foods.

Current dietary patterns are neither healthy, nor sustainable. Compared to recommendations for healthy and sustainable diets developed by the EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems (Box 2.1), the intake of health-promoting foods in 2018 remains too low and that of foods with high health and environmental impacts remains too high (Figure 2.2). Global vegetable intake is 40% below the recommended three servings per day, fruit intake 60% below the recommended two

servings per day and legume and nuts intake 68–74% below the one to two recommended servings. Red and processed meat intake is almost five times above recommendations. Only milk and fish intakes are within recommended ranges. In addition, about half of the global population (48%) eats too many or too few calories and exhibits imbalanced weight levels, including overweight (26%), obesity (13%) and underweight (9%).

### BOX 2.1:

#### Recommendations for healthy diets from sustainable food systems

Marco Springmann

The EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems was a scientific commission on how to achieve a sustainable food system that can deliver healthy diets for a growing population. Convened between 2017 and 2019, it consisted of 19 commissioners and 18 co-authors from 16 countries and various fields, including human health, agriculture, political science and environmental sustainability. Its report was published in the medical science journal *The Lancet* in 2019.<sup>31</sup>

The Commission's work included the development of: new recommendations for healthy diets based on a comprehensive review of the literature on healthy eating; science-based targets for sustainable food production that included the definition of planetary boundaries of the food system; analyses of the health, nutritional and environmental impacts of dietary and food-system changes that would be needed to stay within planetary boundaries; and strategies for a 'great food transformation' towards healthy diets from sustainable food systems by 2050.

In this chapter, we use the EAT-Lancet Commission's dietary recommendations and the science-based targets for sustainable food production to compare current dietary patterns with the current scientific understanding of healthy eating and sustainable diets. The EAT-Lancet recommendations provide ranges of intake for all major food groups that allow for the adoption of various dietary patterns and culinary traditions, and their impacts on health and the environment have been widely assessed, both within the Commission and independently.

Dietary patterns in line with the recommendations have been found to be associated with improvements in diet-related disease mortality, nutritional adequacy and environmental sustainability, exceeding existing national food-based dietary guidelines and those of the World Health Organization on each dimension.<sup>32</sup> Although many healthy and dietary patterns are currently more affordable than typical Western diets in high- and middle-income countries, their adoption can be challenging in low-income contexts where diets are dominated by low-cost roots and grains and lack the diverse set of more expensive healthy foods.<sup>33,34</sup> This stresses the need for food-system strategies that would make healthy and sustainable diets affordable for all, including full costing approaches, income support and socioeconomic development.













Despite variation, no region met the recommendations for healthy and sustainable diets. Lower-income countries continue to have the lowest intake levels of health-promoting foods and the highest levels of underweight, while higher-income countries have the highest intake levels of foods with high environmental and health impacts, and the highest levels of overweight and obesity (Figure 2.2). For

example, fruit and vegetable consumption in 2018 was 59% below recommended intake in Africa, but also 41% and 56% below recommendations in Europe and Northern America, respectively. Red and processed meat intake was eight to nine times too high in Europe, Oceania and Latin America, but it was also double the recommended value in Africa and four times above the target in Asia.

**FIGURE 2.2**

**Dietary patterns do not meet recommendations for healthy and sustainable diets**

Percentage deviation by year and region from recommendations of the EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems

Risk factor	Year	World	Africa	Asia	Europe	Latin America	Northern America	Oceania
<b>Deviation from minimum recommendations (the darker the orange, the higher the deviation)</b>								
 Fruits & vegetables	2010	-49%	-57%	-46%	-43%	-57%	-56%	-51%
	2018	-48%	-59%	-45%	-41%	-54%	-56%	-57%
 Fruits	2010	-58%	-64%	-62%	-41%	-46%	-55%	-33%
	2018	-60%	-66%	-65%	-35%	-45%	-54%	-49%
 Vegetables	2010	-43%	-53%	-36%	-45%	-64%	-57%	-62%
	2018	-40%	-54%	-31%	-44%	-60%	-57%	-62%
 Nuts	2010	-73%	-52%	-77%	-72%	-88%	-64%	-78%
	2018	-68%	-59%	-71%	-69%	-76%	-52%	-80%
 Legumes	2010	-73%	-73%	-73%	-86%	-50%	-82%	-71%
	2018	-74%	-75%	-74%	-86%	-52%	-81%	-75%
 Whole grains	2010	-61%	-54%	-59%	-55%	-87%	-81%	-62%
	2018	-61%	-55%	-58%	-58%	-87%	-81%	-41%
<b>Deviation from maximum recommendations (the darker the orange, the higher the deviation; the darker the blue, the more within the recommendations)</b>								
 Fish	2010	1%	8%	4%	23%	-20%	-58%	25%
	2018	1%	6%	4%	19%	-22%	-58%	-20%
 Dairy	2010	-14%	-56%	-50%	150%	34%	105%	113%
	2018	-20%	-62%	-51%	141%	20%	106%	107%
 Red meat	2010	246%	105%	227%	461%	395%	167%	300%
	2018	257%	81%	252%	486%	395%	163%	626%
 Red & processed meat	2010	363%	196%	302%	759%	604%	331%	428%
	2018	377%	165%	327%	790%	656%	334%	740%
<b>Deviation from weight recommendations (the darker the orange, the higher the deviation)</b>								
 Underweight	2010	9%	10%	12%	1%	2%	1%	1%
	2018	9%	10%	12%	1%	2%	1%	1%
 Overweight	2010	26%	21%	23%	38%	36%	33%	35%
	2018	26%	21%	23%	38%	36%	34%	36%
 Obese	2010	13%	12%	7%	25%	24%	38%	29%
	2018	13%	12%	8%	26%	25%	38%	29%

**Source:** New analysis using the Global Dietary Database and recommendations of the EAT-Lancet Commission.

**Notes:** Includes minimum recommended intake of health-promoting foods (fruits, vegetables, legumes, nuts, whole grains), maximum recommended intake of foods with detrimental health and/or environmental impacts (red meat, processed meat, dairy, fish), and from normal weight levels (underweight, overweight, obesity). Colours indicate that intake is either in line with recommendations (ranging from green to yellow with decreasing compliance) or deviate from recommendations (ranging from yellow to red with increasing deviation).



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## The health burden of diets

The current level of dietary imbalance can have serious implications for human and planetary health. For this report, we produced new estimates of the health burden of poor diets by using a global comparative assessment of dietary risks with country-level detail (see the sections called Comparative risk assessment and Data for comparative risk assessment in the methodology). The assessment combines estimates of food intake with cause-specific mortality rates via a comprehensive set of diet-disease relationships, each accounting for physiological (age, sex) and geographic (country-level) variation.<sup>35</sup> In this framework, we accounted for risks for diet-related, non-communicable diseases (NCDs) associated with imbalanced diets, such as those low in fruits and vegetables, as well as for risk associated with imbalanced energy intake related to underweight, overweight and obesity. Because risks for NCDs primarily affect adults, we focused on risks to those aged 20 and above. In this chapter, we report the mean values of our estimates for ease of presentation. The low and high values of 95% confidence intervals are provided in the forthcoming dataset that will be online.

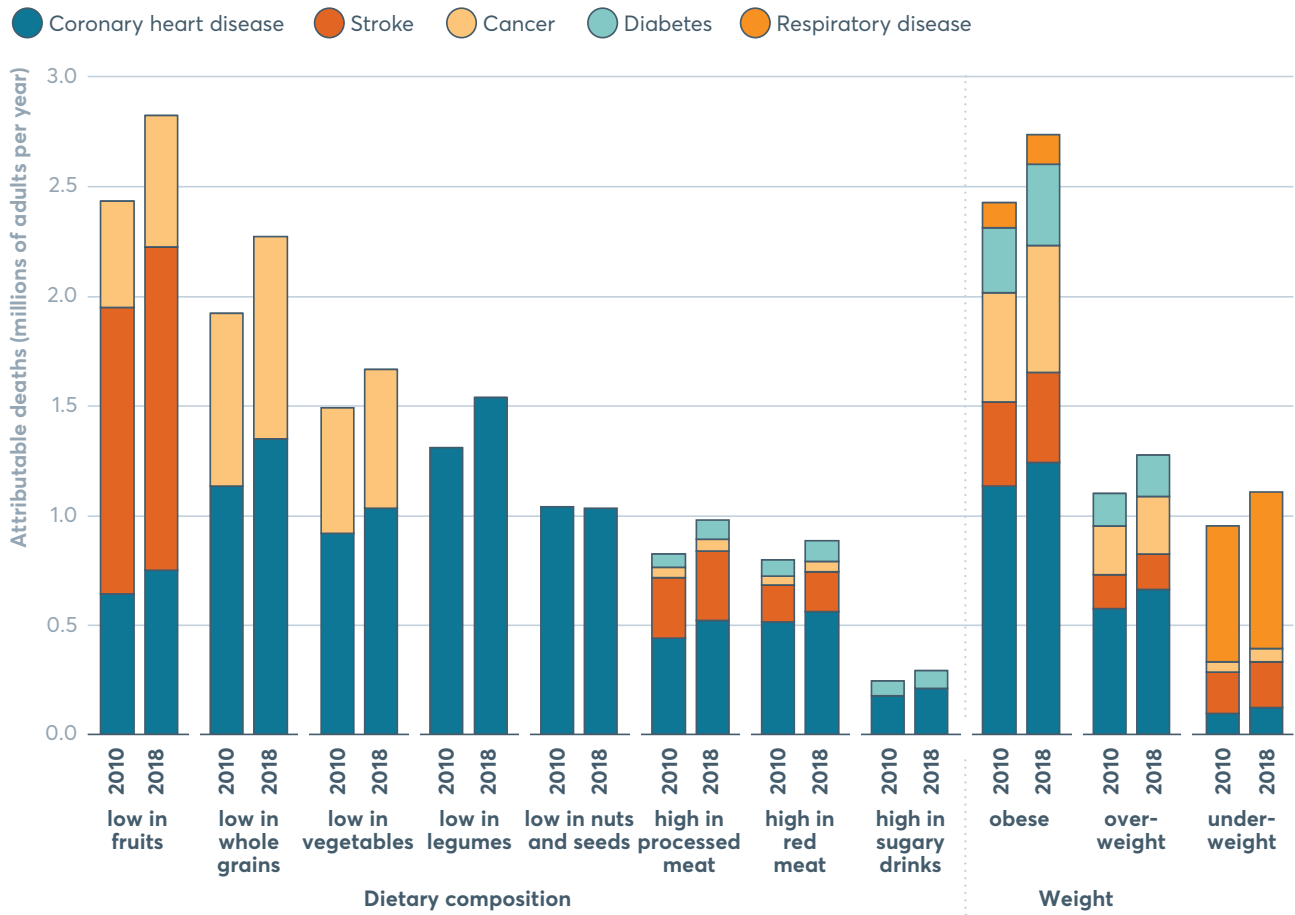
According to our estimates, today's diets are associated with a large and increasing health burden (Figure 2.3). Overall, poor diets were responsible for more than 12 million avoidable deaths in 2018, which represents 26% of all deaths among adults. Compared to 2010, the number of avoidable deaths due to diet grew by 15%, more rapidly than the population (10%). Almost half of the avoidable deaths were from coronary heart disease (5.9 million, 47%), about a fifth each from cancers (2.8 million, 22%) and stroke (2.4 million, 19%) and around 5% each from type-2 diabetes (690,000) and respiratory diseases (760,000). Our estimate of attributable deaths is comparable to the combination of diet- and weight-related risk estimates of the Global Burden of Disease project (7.8 and 4.8 million attributable deaths, respectively).

About two-thirds of the avoidable deaths in our analysis (9.3 million, 65%) were due to risks related to dietary composition, including low intake of fruits (2.8 million, 25% of the avoidable composition-related risks), whole grains (2.3 million, 20%), vegetables (1.7 million, 14%), legumes (1.5 million, 13%), nuts and seeds (1.0 million, 9%), and high intake of red meat (980,000, 9%), processed meat (880,000, 8%) and sugar-sweetened beverages (290,000, 3%). The remaining third (5.0 million, 35%) of the avoidable deaths were due to risks related to total energy intake and body weight, including obesity (2.7 million, 54% of the avoidable weight-related deaths), overweight (1.2 million, 24%) and underweight (1.1 million, 22%).

**FIGURE 2.3**

**The dietary health burden is increasing**

Deaths attributable to dietary risk factors by cause of death for risks related to dietary composition and weight levels, 2010 and 2018



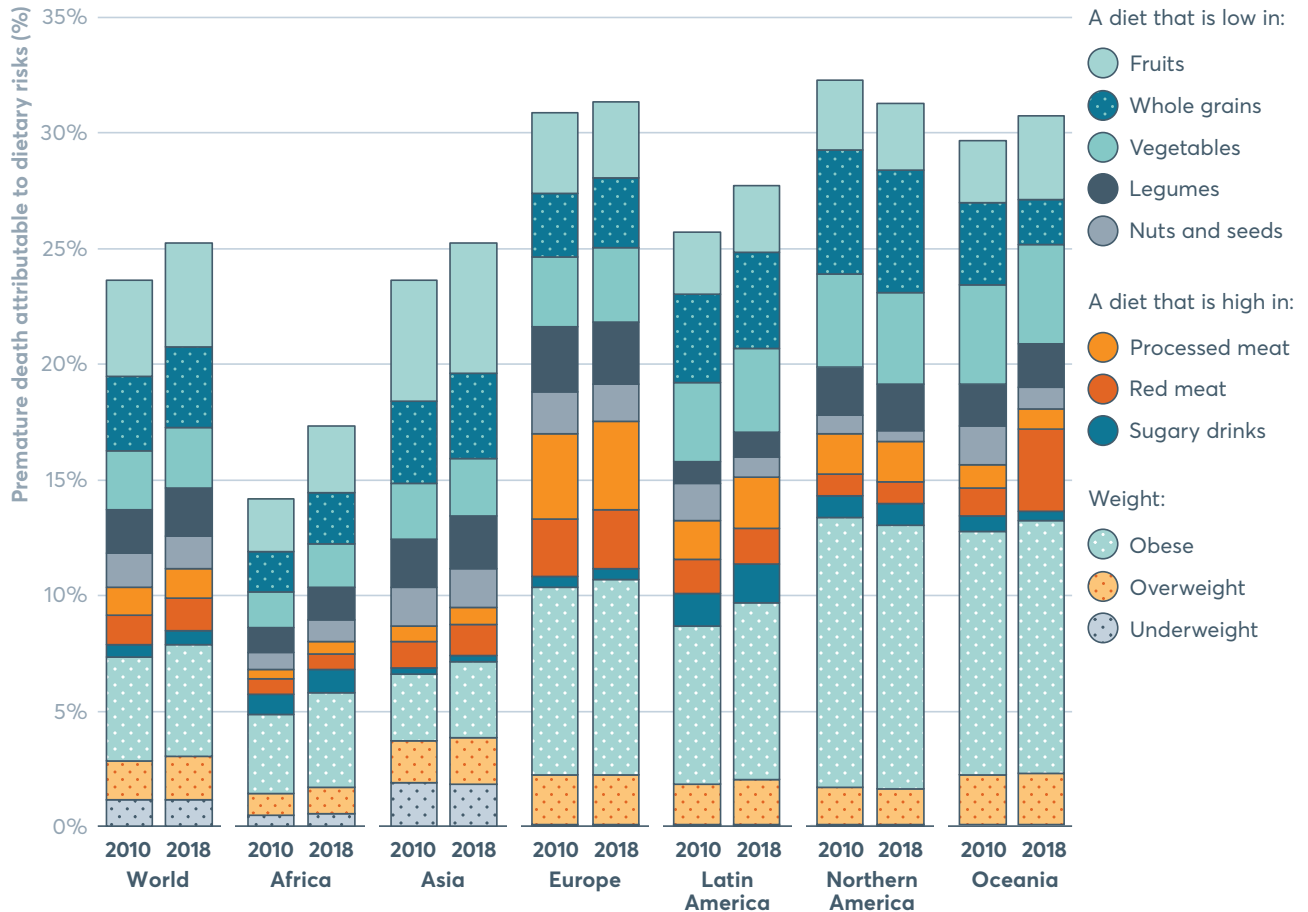
**Source:** New analysis based on estimates of food intake from the Global Dietary Database, weight measurements from the NCD Risk Factor Collaboration, diet-disease relationships from the epidemiological literature<sup>36,37,38,39,40,41</sup> and mortality and population estimates from the Global Burden of Disease project.  
**Note:** The combined risk is less than the sum of individual risks because individuals can be exposed to multiple risks, but mortality is ascribed to one risk and cause.

The proportion of premature death attributed to dietary risks differs markedly by region, reflecting regional differences in diets as well as the contribution of NCDs (Figure 2.4). It is highest in higher-income regions, including Northern America (31%) and Europe (31%), and lowest in lower-income regions such as Africa (17%). Among the dietary risks evaluated, the leading causes of dietary ill health were similar in each region and included low intake of fruits and vegetables (5–8% of premature mortality across regions), whole grains (2–5%), and high intake of red and processed meat (1–6%), as well as high levels of overweight and obesity (5–13%).

No region was in line with the health-related sustainable development goal (SDG) of reducing premature mortality from NCDs by a third between 2015 and 2030 (SDG 3.4). Among the regions, there was either very little progress, with a 3% reduction in Northern America in premature mortality from dietary risks, or trends towards higher premature mortality from dietary risks in the remaining regions, with particularly large increases in Africa (+22%), Latin America and the Caribbean (+8%) and Asia (+7%), followed by Oceania (+4%) and Europe (+2%).

**FIGURE 2.4**

**The rise in premature death from dietary risks is not in line with global health goals**  
 Percentage of premature death attributable to dietary risks by region, 2010 and 2018



**Source:** New analysis based on estimates of food intake from the Global Dietary Database, weight measurements from the NCD Risk Factor Collaboration, diet-disease relationships from the epidemiological literature, and mortality and population estimates from the Global Burden of Disease project.

## The environmental burden of diets

Our dietary habits and the current level and mix of foods we demand are also associated with substantial and increasing levels of environmental pollution and resource use (Figure 2.5). For this new analysis, we paired data on food demand for each country from the Food and Agriculture Organization of the United Nations with a comprehensive database of environmental footprints, differentiated by country, food group and environmental impact (see the section called Environmental analysis

in the methodology).<sup>42</sup> The footprints take into account all food production, including inputs such as fertilisers and feed, transport and processing e.g. of oil seeds to oils and sugar crops to sugar.

According to our estimates, the global food demand, including food loss and waste, generated 17.2 billion tonnes of greenhouse gas emissions (measured in carbon dioxide equivalents, GtCO<sub>2</sub>eq) in 2018, which represents more than a third (35%) of global emissions. Methane and nitrous oxide, two greenhouse gases primarily associated with agriculture, contributed 7.5GtCO<sub>2</sub>eq. The food system also

required 15.8 million square kilometres (Mkm<sup>2</sup>) of cropland and 43.9Mkm<sup>2</sup> of pastureland, 2,500 cubic kilometres (km<sup>3</sup>) of fresh water, 108.7 million tonnes (Mt) of nitrogen and 18.6Mt phosphorus. Compared to 2010, the environmental impacts of food demand increased by up to 14%. Our estimates are in line with other available estimates.

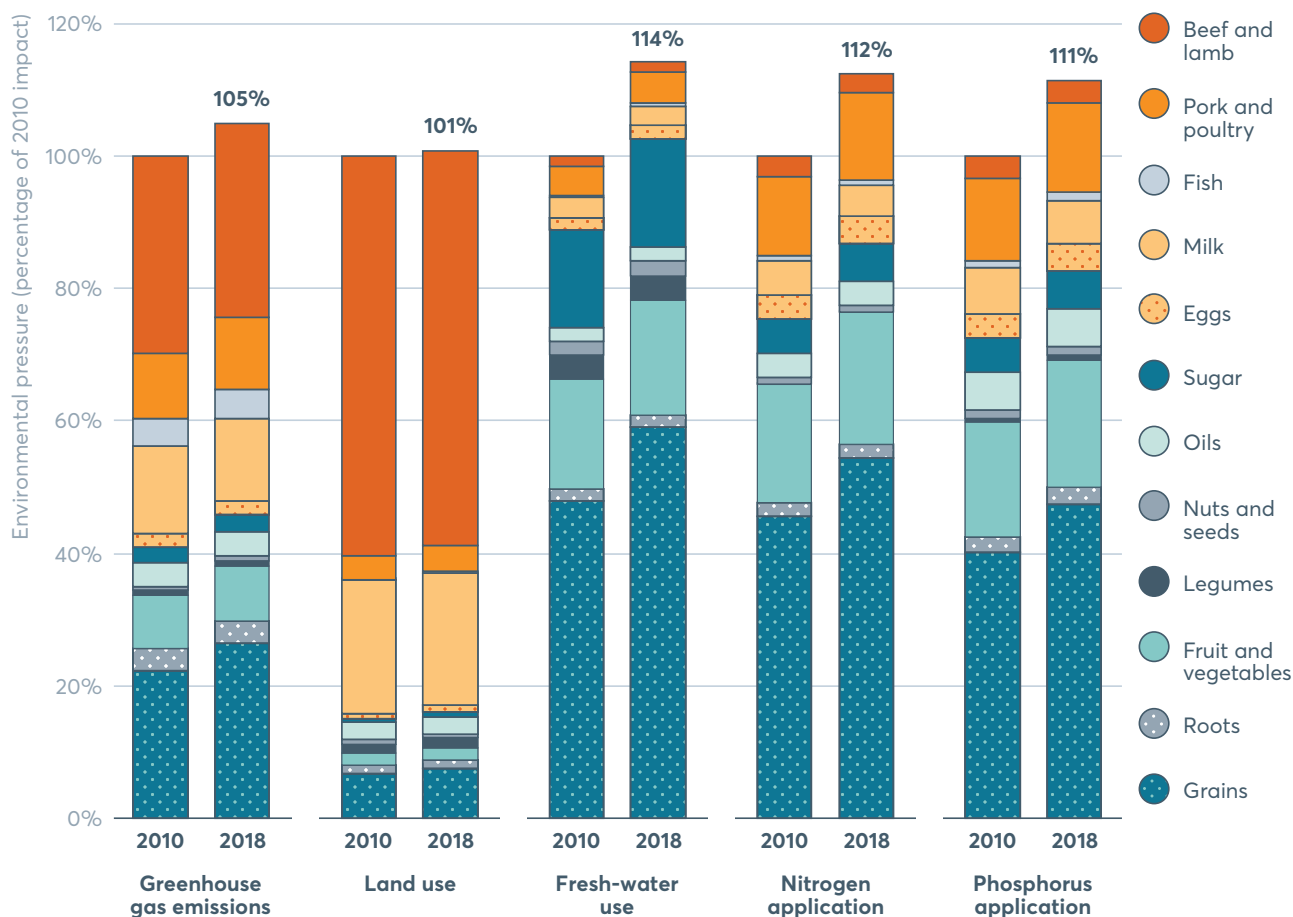
Animal-source foods have generally higher environmental footprints per product than plant-based foods. Consequently, they were responsible for the majority of food-related greenhouse gas emissions (80% of methane

and nitrous oxide emissions and 56% of all food-related greenhouse emissions) and land use (85%), with particularly large impacts from beef, lamb and dairy. Through feed demand, animal-source foods were also responsible for about a quarter each of nitrogen and phosphorus application and a tenth of fresh-water use. Among plant-based foods, grain production (including rice) required almost half (43–52%) of the food-related fresh water, nitrogen and phosphorus, not because of its high footprint, but because of the large absolute quantity of production.

**FIGURE 2.5**

**Environmental impacts of the food system are increasing**

Food-related environmental impacts by environmental domain and food group, 2010 and 2018



**Source:** New analysis based on estimates of food demand from the Food and Agriculture Organization of the United Nations and a database of country and food-group-specific environmental footprints.

**Note:** Values for environmental impact for 2018 are expressed as a ratio to the impacts for 2010.

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The environmental impacts of the global food system are not in line with global environmental targets (Figure 2.6) as specified by the EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems (Box 2.1). In 2018, food-related greenhouse gas emissions exceeded by three-quarters (74%) the limit required by the Paris Climate Agreement (target 13 of the sustainable development goals, SDGs) to limit global warming to below 2°C. Cropland use was 60% above the value that would be in line with limiting the loss of natural habitat (Aichi Biodiversity Targets and SDG 15). Freshwater use exceeded rates of sustainable withdrawals by more than 52% (SDG 6.4). Nitrogen application was more than double (113%) and phosphorus application two-thirds (67%) above values that would limit marine pollution to acceptable levels (SDG 14.1).

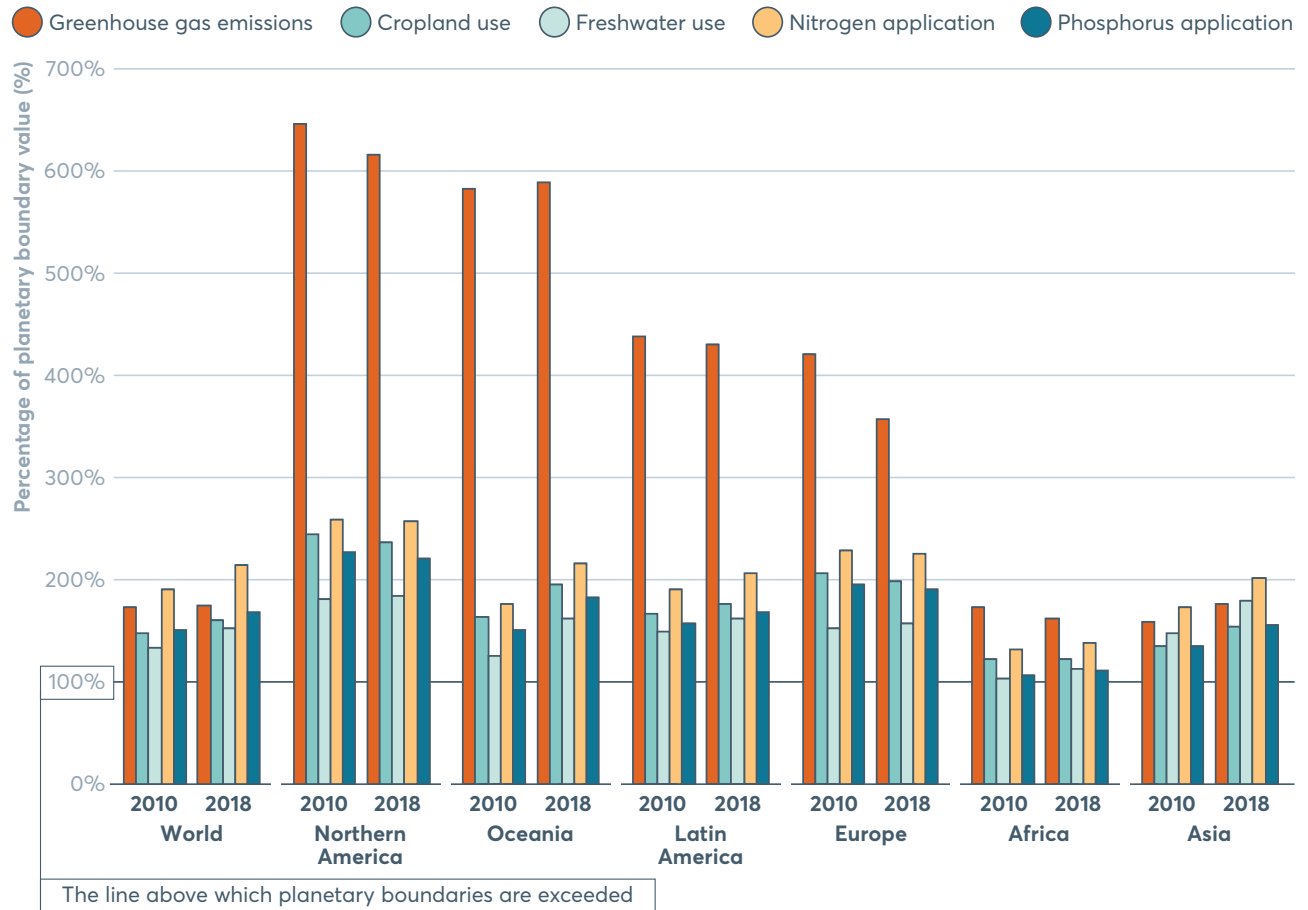
No region is on course to fulfil the set of sustainable development goals related to the environmental impacts of the food system (Figure 2.6). This can best be illustrated by a

global sustainability test in which the dietary pattern and food demand of a particular region or country is adopted globally (see the section called Global health and environmental targets in the methodology). If the globalised impacts exceed the targets for sustainable food production that would be in line with the SDGs, then the dietary pattern of that particular region or country can be considered unsustainable in light of global environmental targets and disproportionate in the context of an equitable distribution of environmental resources and mitigation efforts. For example, if globally adopted, the dietary patterns of Northern America would result in a level of greenhouse gas emissions more than six times above a value in line with limiting global warming to below 2°C. The corresponding emission levels are more than five times above the target value in Oceania, four times the target value in Latin America and Europe, and 60–75% above sustainable levels in Africa and Asia.

**FIGURE 2.6**

**No region is on course to meet global environmental targets related to the food system**

Global sustainability test comparing global impacts with global environmental targets



**Source:** New analysis based on estimates of food demand from the Food and Agriculture Organization of the United Nations and a database of country and food group-specific environmental footprints. The target values for sustainable food production that would be in line with Sustainable Development Goals were specified by and adapted from the EAT-Lancet Commission.

**Note:** In this test, regional diets in 2010 and 2018 are universally adopted and compared to global environmental targets.



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## Conclusion

The past decade has seen little progress in improving diets, especially in low-income countries. Diets everywhere continue to lack enough fruits, vegetables, legumes, nuts and whole grains, and include too much – and, in some regions, rising amounts – of red and processed meat and sugary drinks. As a result, premature mortality related to dietary risks is substantial and increasing. Our analysis based on 11 diet and weight-related risk factors suggests that a quarter of all deaths among adults are associated with poor diets. The diet-related contribution to mortality is largest in higher-income countries, but the leading causes of dietary ill health are similar and increasing in every region.

The environmental impacts related to dietary choices are similarly daunting. According to our analysis, the foods currently demanded generate more than a third of all greenhouse gas emissions and use substantial and rising amounts environmental resources, such as cropland, fresh water and nitrogen- and phosphorus-containing fertilisers. Neither the global food system nor the various regional dietary patterns are on course to meet targets for sustainable food production and the set of diet-related health and environmental targets agreed by the international community of nations as part of the Sustainable Development Goals.

Part of the reason for the poor health and environmental performance of the food system might be a mismatch between current policy initiatives and the dietary and food-system changes that would be most beneficial for increasing the food system's healthiness and sustainability. For example, recent years have seen many initiatives aimed at discouraging the consumption of sugary drinks by increasing their prices.<sup>43,44</sup> Our analysis suggests that the health burden attributable to red and processed meat is more than six times as large as that associated with sugary drinks. Extending policy initiatives to these foods therefore warrants serious consideration from a public health perspective.

There are similar mismatches when it comes to the environmental impacts of our diets. Our analysis and past assessments indicate that most impacts occur at the production stage, with largest differences between food types, especially between animal- and plant-based foods, irrespective of the type of production system. Initiatives to improve production methods, reduce food loss and waste, and improve supply chains can be important measures for reducing environmental resource use. However, for reducing greenhouse gas emissions enough to avoid dangerous levels of global warming, it will be necessary to increase and strengthen policy initiatives aimed at reducing the amounts of animal-based foods in our diets and in food production.

# KEY RECOMMENDATIONS

- ▶ **With little progress in improving diets throughout the last decade, there is an urgent need in every region to address dietary risk factors and reduce diet-related deaths from non-communicable diseases.**

To improve population health, policy measures are needed to support increased intake of health-promoting foods such as fruits and vegetables, whole grains, legumes and nuts/seeds, and reduce the intake of unhealthy foods such as red and processed meat and sugary beverages.

- ▶ **As the environmental impacts of current dietary patterns are increasing, there is an urgent need in every region for large-scale dietary changes towards healthy and sustainable diets to preserve planetary health.**

To improve planetary health, policy measures are required to transform the food system towards healthy and sustainable food production by prioritising adoption of healthy and sustainable diets and disincentivising the production and consumption of high-impact foods such as meat and dairy.

- ▶ **To transition towards healthy and sustainable diets and make meaningful progress, policy priorities need to align the dietary and food system changes most beneficial for health and the sustainability of the food system.**

To reduce greenhouse gas emissions enough to avoid dangerous levels of global warming, it will be necessary to prioritise policy initiatives aimed at reducing the amounts of animal-based foods in our diets, something also warranted on health grounds.

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# NOTES

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