2021

Global Nutrition Report

The state of global nutrition

ENDORSEMENTS

Dr Naoko Yamamoto, Chair of UN Nutrition

We trust the *2021 Global Nutrition Report* will further inspire governments and partners in the joint endeavour to combat malnutrition in all its forms. As this year's report highlights, we need to accelerate progresses on targets, protect human health and that of the planet with sustainable diets, invest additional nutrition-sensitive financing, and use the N4G SMART commitments to track progress.

UN Nutrition is committed to fostering UN collaboration enabling all nutrition stakeholders to make the best use of this guide over the years.

Gerda Verburg, Coordinator of the Scaling Up Nutrition (SUN) Movement

Extraordinary events took place in 2021. The Covid-19 crisis is far from over and has increased the number of people suffering from malnutrition. Extreme weather events throughout the year have made the need for climate action clearer than ever. The UN Food Systems Summit has reminded us that food systems and diets urgently need to be transformed, so they deliver better and equitable access to nutrition. For the first time, food systems and nutrition have received attention at COP26 and the message is clear: we need food systems that serve people and planet alike. With the N4G Summit concluding the Year of Action on Nutrition, everyone needs to focus on coherent and accelerated country-driven nutrition impact. The *2021 Global Nutrition Report* points to the need for funding to be significantly scaled-up, ambitious political commitments and holistic approaches to diets and nutrition. All sectors, all actors and all countries must be involved. By doing so, the world can generate between US$5 and US$10 trillion annually. The objective of a well-nourished and thriving population and planet is in sight. Let us join forces and really collaborate to make this a reality, ensuring we leave no one behind.

Johanna Ralston, CEO, World Obesity Federation

Despite all we know, the *2021 Global Nutrition Report* affirms that diets are not getting healthier for people or the planet. During this Nutrition for Growth Year of Action – when rates of undernutrition as well as overweight and obesity are unacceptably high and success in achieving agreed-upon targets exceedingly low – it is vital that this changes. The food-related challenges in the lowest- and highest-income countries vary in specifics but conform in how they negatively impact health and wellbeing, as dysfunctional food systems drive a range of diet-related diseases and conditions. The economic impact of inaction on obesity alone already results in a global average diversion of almost two percent of GDP, attributable mainly to healthcare and lost productivity costs, while the report notes that total economic gains to society of investing more broadly in nutrition could reach US$5.7 trillion a year by 2030, and US$10.5 trillion a year by 2050. To pivot towards health-enabling and accessible diets for all, we must deliver on existing commitments and unlock new sources of financing, including from and with the private sector – recognising that corporate social responsibility is not enough and that the health of people must be paramount. We must change how we interact with and support our food systems and health systems, and call on all of us – governments, civil society, private sector, engaged individuals – to support the GNR agenda and Nutrition Accountability Framework.

Simon Bishop, CEO Power of Nutrition

The *2021 Global Nutrition Report* powerfully evidences the gravity of the nutrition crisis and the chasm in financing. Global funding is stretched now more than ever.

It also highlights solutions. With donor and domestic resources strained across the globe, as a sector we need to protect 'traditional' sources of nutrition financing and continue to push for allocated domestic and overseas resources for nutrition.

Catalytic financing models like The Power of Nutrition's have also been effective by combining funding, aligning efforts behind proven interventions, and partnering with national governments for maximum scale.

But we can't continue with business as usual. With all global goals off-track, we need to rethink approaches and embrace new funding sources. Innovative financing presents a huge opportunity to mobilise new capital, and we have seen success in other sectors, such as green bonds. We urge the nutrition sector to become pioneers in this space, otherwise we risk replicating our 'orphan' status in traditional aid.

Mamta Murthi, Vice President for Human Development, World Bank

The trends in nutrition highlighted in the *2021 Global Nutrition Report* are of grave concern. The projected increases in child stunting and wasting, and increases in obesity and diet-related chronic diseases are not acceptable and will severely impact human capital. More and better financing is needed – from governments and donors, including the private sector, to step up innovative financing solutions. The World Bank is committed to further scaling up evidence-based nutrition interventions in developing countries, including through IDA, our fund for the poorest countries, IBRD and the Global Financing Facility. The Nutrition for Growth Summit hosted by the Government of Japan will be a key moment for tangible commitments to make concrete progress on this critical agenda.

AUTHORSHIP AND ACKNOWLEDGEMENTS

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This report represents the considered input of the Independent Expert Group (IEG) members, who are collectively accountable for the quality and independence of the report. Members participated in a personal capacity, not as representatives of their affiliated organisations. The report does not necessarily represent the position of any of the individuals involved in its development, as listed below, or any of the partnered organisations involved in the development of the Global Nutrition Report.

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The expert authors accept full responsibility for the published content and have been involved in all aspects of the creation of the content, including research, design, analysis and final presentation of the content.

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2018. US.
A food demonstration at the Cumberland Community Cares Food Pantry, Virginia
© USDA Photo by Preston Keres

Foreword

FOREWORD

The *2021 Global Nutrition Report* (GNR) offers the world's most comprehensive picture of the state of global nutrition and assesses the scale of the challenges faced in the fight to tackle poor diets and malnutrition in all its forms. This year's report provides a concise data-focused update on the state of diets and nutrition around the world, which will be released annually thereafter. Independent analysis of the best data on nutrition is critical for evidence-based, timely and effective actions to ensure we deliver on our global commitment to end poor diets and malnutrition. This is an intentional shift from the GNR's tradition of exploring specific themes in depth, which will also continue as needed to assess timely global issues of importance to nutrition.

The report's findings lay bare the unsustainability of the status quo and how we continue to face a global nutrition crisis. Poor diets and resulting malnutrition in all its forms are unacceptably high across the world, creating one of the world's greatest current societal challenges. The need for bolder, sustained and better coordinated action on nutrition that goes far beyond the nutrition community has never been greater. When accounting for the vast and interconnected health, economic and environmental burdens, this global nutrition crisis is a reality we can no longer afford to ignore.

Ending poor diets and malnutrition in all its forms is a goal that is intrinsically linked with some of the world's most pressing challenges

The Covid-19 pandemic is fuelling the global nutrition crisis and highlighting the importance of good nutrition for our health. Achieving healthy diets and ending malnutrition has become an even greater challenge than before, particularly for the most vulnerable groups such as people in poverty, women and children, and populations living in fragile states. At the same time, the strong links between poor metabolic health, including obesity and diabetes, and worse Covid-19 outcomes have highlighted the importance of improving nutrition for good health worldwide. Tackling poor diets and malnutrition, and the underlying inequities, policies and systems that drive them, is therefore a critical part of recovering from the impacts of the pandemic and ensuring populations are resilient to such shocks in future.

We are witnessing constrained public resources and shifting spending priorities due to Covid-19; yet investments in nutrition are vital for sustainable economic development. While the nutrition crisis pre-dates the pandemic, it is made only more urgent by the potential damage that the loss of resources can inflict on global food security and people's health. Both international and national public resources have been impeded due to an economic downturn, while significant volumes of financing are being directed towards fighting the pandemic. This risks populations, particularly in the poorest and most fragile countries, experiencing a reduction in vital support towards preventing or alleviating malnutrition. Financing for pandemic recovery must have nutrition as a key component if the world is to 'build back better', with significant economic returns to be gained from nutrition investments. Innovative approaches and greater action from the private sector will be necessary to boost financing available to levels required to meet nutrition goals and end malnutrition in all its forms.

The nutrition crisis is both a cause and a symptom of the climate emergency. On one hand, our current diets are acting as major drivers of environmental pollution and resource demand. On the other hand, we are seeing global warming and pollution affecting access to food. Growing urgency to address the climate emergency and key milestones such as the UN Climate Change Conference (COP26) are mobilising leaders to take action. Just as consideration of climate change must be a key component of efforts to improve diets and nutrition, so must nutrition and healthy, sustainable diets be a significant part of the climate conversation. We will succeed in meeting these global challenges only if we work together.

The need for greater accountability and a new role for the GNR

In recognition of the urgency of the nutrition crisis that presents one of our biggest global challenges today, 2021 has been declared the Nutrition for Growth Year of Action, with the *Tokyo Nutrition for Growth (N4G) Summit* in December representing a landmark opportunity for stakeholders to accelerate efforts towards stronger nutrition action spanning food, health and social protection systems. This follows the *UN Food Systems Summit* in September, which highlighted the need to accelerate the transformation of food systems to enable better diets and improve nutrition. These two key events and their shared goal of ending malnutrition in all its forms should be a turning point in taking tangible, collective action. *The critical need to increase accountability* was a core theme of a *joint statement* released ahead of both summits, which called for a *"comprehensive framework for accountability, in order to monitor nutrition commitments and how they translate into impact"*.

Of course, multiple players – including governments, donors and the private sector – have made commitments on nutrition in the past. Since 2014, the GNR has been given the role of monitoring these commitments, which are not bringing the level of change we need to see now.

Where resources are stretched, better tools for commitment-making, and strengthened accountability for nutrition, are critical to address gaps in action and ensure that commitments translate to impact. The GNR has therefore developed the *Nutrition Accountability Framework (NAF)*, the world's first independent and comprehensive global accountability framework for nutrition.

In this new role, the GNR has been endorsed by world leaders, including the government of Japan as organiser of the 2021 N4G Summit and the *World Health Organization (WHO)*, to lead and drive forward global accountability for nutrition. This is the first time accountability for nutrition commitments has been prioritised, with an emphasis on the quality, as well as quantity, of the commitments. The NAF, launched in September 2021, will help to shape, and publicly track and monitor, these commitments to ensure that the world is equipped with the tools necessary to assess the collective impact of our action and course-correct as needed.

The scale of the challenges we face in the fight to improve poor diets and end global malnutrition may seem daunting, but this fight is winnable

Over the past two years, we have seen global leaders step up and take strong action to respond to the unprecedented global challenge of Covid-19. The pandemic has also shown us that the only way forward is to work together and not in isolation. We need the same recognition of the nutrition crisis that faces everyone, in every country. We must come together and go bigger, broader and bolder than ever before.

The need to prioritise and invest in nutrition has never been greater. Data is fuel for action. We call on leaders to use the findings of the *2021 Global Nutrition Report* to make the commitments that will deliver healthy populations, prosperous economies and a sustainable planet.

Dr Renata Micha
Chair of the GNR Independent Expert Group

UK.
A child tries watermelon at a HENRY Healthy Families group programme, London.
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Executive summary

EXECUTIVE SUMMARY

The Global Nutrition Report is the world's leading independent assessment of the state of global nutrition. It is data-led and produced each year to cast a light on progress and challenges. The report aims to inspire governments, donors, civil society organisations, businesses and others to act to end malnutrition in all its forms. It also plays the important role of holding stakeholders to account on their commitments towards tackling poor diets and malnutrition in all its forms.

This year's report sets out progress towards the global nutrition targets, evaluates the impact of poor diets on our health and our planet, assesses the nutrition financing landscape, and provides a comprehensive overview of reporting on past Nutrition for Growth (N4G) commitments.

It finds that, despite some progress, diets are not getting healthier and make increasing demands on the environment, while unacceptable levels of malnutrition persist. The high human, environmental and economic costs of continuing our current trajectory are so significant that we will pay a far higher price if we fail to act. While Covid-19 is exacerbating the problem, this report shows that it is just one part of a much bigger picture.

We can, however, remain hopeful. Healthy, sustainable diets that put an end to malnutrition, while preserving planetary health, are achievable. We have never been better equipped with the evidence and tools we need to improve accountability and drive better nutrition outcomes, and to mobilise far more financing than is currently invested in nutrition. We must immediately accelerate progress across all areas of nutrition, and reform the systems and structures that hold us back. This year is the N4G Year of Action – and the perfect time for stakeholders from global to local levels, across every sector and country, to commit to doing what is necessary for a well-nourished and thriving population and planet.

Key findings

1. To meet global nutrition targets in most countries, we need greatly accelerated progress.

Globally, we are off course to meet five out of six global maternal, infant and young children nutrition (MIYCN) targets, on stunting, wasting, low birth weight, anaemia and childhood overweight. We are also off course for meeting all diet-related non-communicable disease (NCD) targets, on salt intake, raised blood pressure, adult obesity and diabetes.

Lack of progress means unacceptable levels of malnutrition persist. Worldwide, 149.2 million children under 5 years of age are stunted, 45.4 million are wasted and 38.9 million are overweight. Over 40% of all men and women (2.2 billion people) are now overweight or obese. **There are countries showing some promising progress**. For example, of the 194 countries assessed, 105 are on course to meet the target for tackling childhood overweight and over a quarter are on course to meet stunting and wasting targets. However, anaemia levels are showing no progress or worsening in 161 countries.

No country is on course to achieve the target on reducing salt intake or to halt the rise in adult obesity. In the Africa region, no country is on course to meet any of the diet-related NCD targets, and the only countries on course to meet both raised blood pressure and diabetes targets are a few high-income Western countries. There is a clear need for all stakeholders to step up efforts and take strong action to counter poor diets and malnutrition in all its forms.

All around the world, too few countries are on course to meet nutrition targets

There needs to be a step-change in action to end poor diets and malnutrition

Key global targets and systematic monitoring exclude diet, despite its health and environmental impacts. Current targets do not explicitly address poor diets and their quality (with the exception of salt levels) as the underlying cause of malnutrition in all its forms. Additionally, no global targets are set to address micronutrient deficiencies (with the exception of anaemia), despite their importance for health and development. There is also no specific target that captures malnutrition among

children and adolescents. There is a clear gap to fill – for international bodies, countries and all key stakeholders – to improve recognition, targeting and tracking of poor diets.

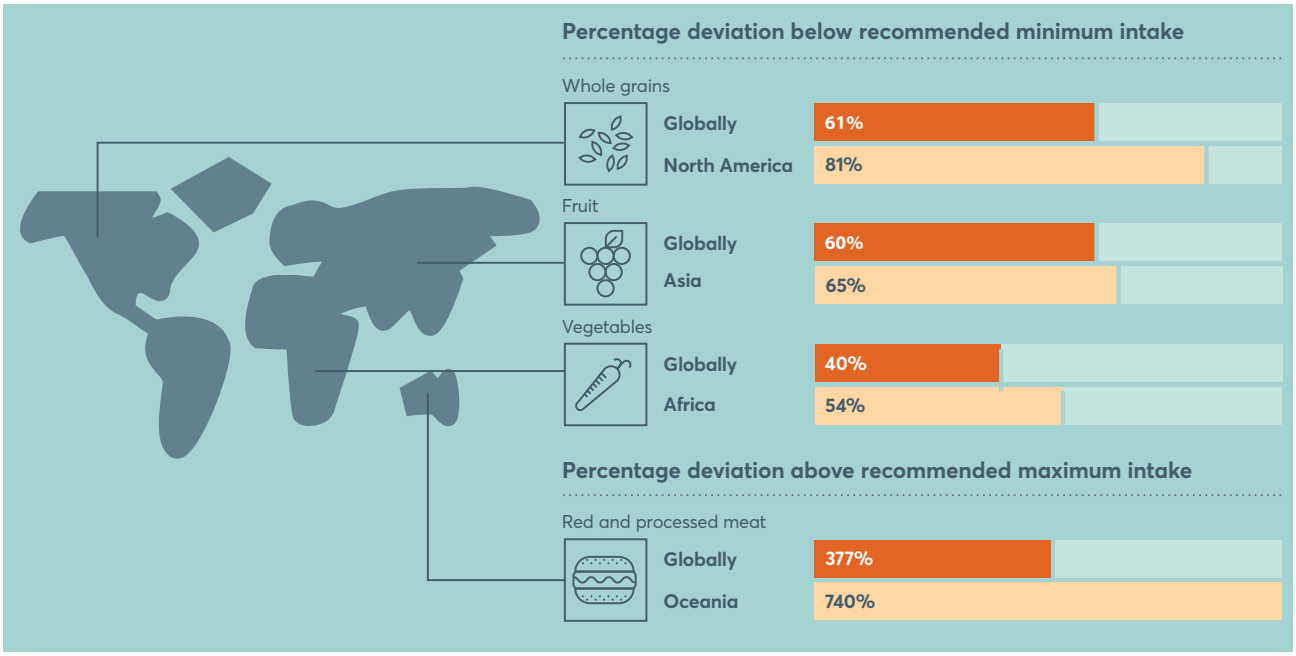
The effects of the Covid-19 pandemic are knocking us further off course. An estimated additional 155 million people are being pushed into extreme poverty globally, as a result of the pandemic, and people who are obese or have other diet-related chronic diseases are more vulnerable to Covid-19. This certainly adds to the challenge of meeting global nutrition targets.

2. Our diets are increasingly harming our health and the planet.

Diets worldwide are far from being healthy and have not improved over the last decade.[1] Fruit and vegetable intake is still about 50% below the recommended level of five servings per day that is considered healthy (60% and 40% respectively), and legume and nuts intakes are each more than two thirds below the recommended two servings per day.[2] In contrast, red and processed meat intake is on the rise and almost five times the maximum level of one serving per week, while the consumption of sugary drinks, which are not recommended in any amount, is going up as well.

Despite some variation between regions, no region meets recommendations for healthy diets. Lower-income countries continue to have the lowest intakes of key health-promoting foods such as fruits and vegetables and the highest levels of underweight, while higher-income countries have the highest intakes of foods with high health and environmental impacts, including red meat, processed meat and dairy, and the highest levels of overweight and obesity.

No region meets recommendations for healthy diets



Poor diets and malnutrition need to be addressed sustainably to ensure a healthy future for people and planet

Diet-related disease and mortality rates are large and increasing in most regions. Deaths attributable to poor diets have grown by 15% since 2010 – more rapidly than population growth – and are now responsible for more than 12 million NCD deaths in adults. This is a quarter (26%) of all adult deaths each year. The proportion of premature deaths attributed to dietary risks is highest in Northern America and Europe (31% each), and lowest but also at notable levels in Africa (17%). No region is on course to meet the Sustainable Development Goal of reducing premature mortality from NCDs by 2030. Every region faces the immediate challenge of addressing dietary risk factors and reducing mortality from diet-related NCDs.

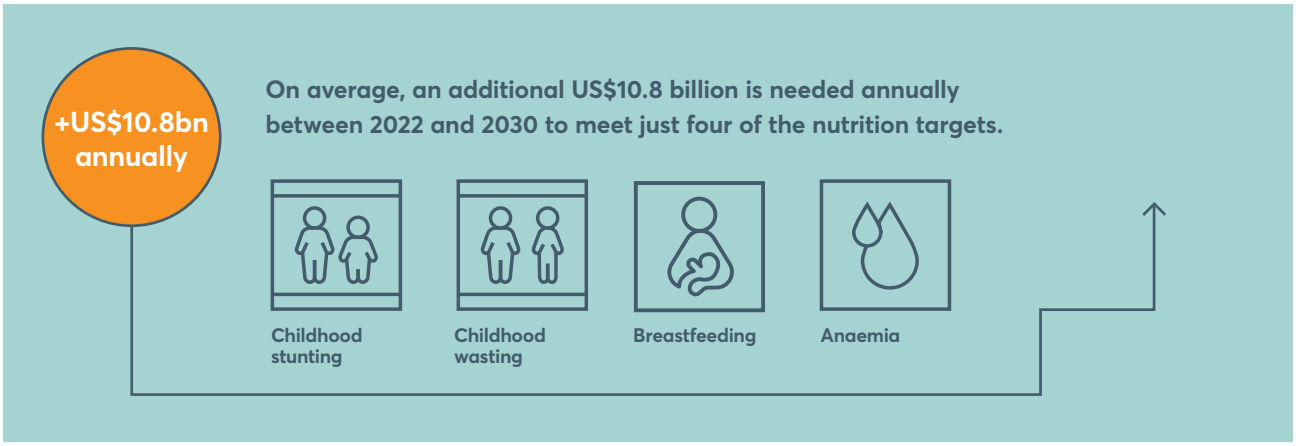
The harmful impacts of our diets on the planet are alarming and increasing. According to our new estimates, global food demand is now creating more than a third (35%) of all greenhouse emissions and using substantial and rising amounts of environmental resources. Compared to 2010, the environmental impacts of food demand increased by as much as 14%, with animal-source foods responsible for the majority of greenhouse gas emissions and land use. Northern American diets have the greatest environmental impact while African and Asian diets have the least. However, no region is on course to meet the set of Sustainable Development Goals aimed at limiting the health and environmental burdens related to diets and the food system. For example, all regions have diets that, if globally adopted, create impacts that are above sustainable levels if we want to limit global warming to less than 2°C. Every region needs large-scale dietary changes to achieve healthy and sustainable diets that tackle malnutrition in all its forms while preserving planetary health.

3. The financial costs of addressing poor diets and malnutrition have risen while resources are falling, but the costs of inaction are far greater.

The additional financing needed to meet nutrition targets has grown significantly, partly due to the impacts of Covid-19. Available data allows us to estimate nutrition-specific financing needs for global nutrition targets on only stunting, wasting, maternal anaemia and breastfeeding. We would need on average US$10.8 billion additional financing annually between 2022 and 2030 to meet these four targets by 2030, allowing for the impacts of Covid-19. Previous estimates (for 2016–2025) were an additional US$7 billion annually.

These additional costs would be much larger still if they also included nutrition-sensitive needs and meeting all global nutrition targets, including for obesity and diet-related NCDs. The cost of meeting the SDG 2 targets by 2030 would also be substantial: approximately US$39–50 billion annually to meet both nutrition-specific and nutrition-sensitive needs. **At the same time, the total economic gains to society of investing in nutrition could reach US$5.7 trillion a year by 2030 and US$10.5 trillion a year by 2050**.

The financial costs of addressing malnutrition are rising



But the total economic gains to society of investing in nutrition could reach US$5.7 trillion a year by 2030

Traditional sources of nutrition financing need to be protected, and innovative and private financing expanded. Projections for both official development assistance and domestic financing suggest a downward trend exacerbated by Covid-19, with recovery to pre-pandemic levels expected only towards the end of the decade.

There is a significant opportunity to leverage innovative forms of financing for nutrition. We can and should learn from other sectors like education, health and climate change, where there is notable progress on this. **And the private sector is the most untapped financing source in nutrition**. It can and must expand, and there are several ways in which this can happen that are climate-smart, sustainable and go beyond corporate social responsibility and actions from food companies.

Improving efficiency and effectiveness of existing nutrition investments can increase the impact of available resources on malnutrition. There are tools countries can use to optimise allocation of available financing to reduce more cases of malnutrition and save more lives with the same money.

4. Nutrition for Growth (N4G) tracking highlights challenges in delivering commitments and measuring progress.

While there is positive progress towards realising N4G[3] commitments made in 2013 and 2017, countries are struggling to meet financial and impact goals. We find from the 2020 reporting that over two thirds of donors and civil society organisations reported having reached or being on course to reach their financial commitments. The majority of donor (63%) and civil society (76%) non-financial commitment goals were also on course or had been reached. Only 42% of country financial commitment goals had been reached or were on course, while 41% of country impact commitment goals were on course, with none reported to have been met. Covid-19 has exacerbated challenges, with reporting that progress on 43% of country commitment goals has been severely or highly affected by the pandemic, primarily due to diversion of resources. It is clear that efforts to meet commitments must be intensified, particularly those relating to financing and impact by country stakeholders.

In 2020, countries struggled to meet their financial nutrition commitments

In this Nutrition Year of Action, decision-makers must leverage Nutrition for Growth as a reset moment

Diets and diet-related NCDs have lacked attention in past N4G commitments. Of the 383 commitment goals made by stakeholders, 136 aligned with the global MIYCN nutrition targets. Only 17 commitment goals focused on improving food production or food quality, while diets and diet-related NCD targets were absent, largely due to their low priority at past summits. It is promising however that food and healthy diets are high on the agenda and a core commitment area of the Tokyo N4G Summit in December 2021.

There have been significant challenges in measuring progress, but the new Nutrition Accountability Framework provides the way forward. Only 29% of the past N4G commitments met the SMART criteria,[4] making it challenging to assess delivery against them. Progress is self-reported by stakeholders, raising the potential for incomplete or biased reporting. Until now, we have been unable to gain a clear overall picture of progress or make comparisons over time. In September 2021 however, the Global Nutrition Report set up the Nutrition Accountability Framework to address these challenges and support the registration of new commitments made in the N4G Year of Action and beyond. This is the world's first independent and comprehensive platform for making SMART nutrition commitments and monitoring nutrition action to help accelerate progress.

We can achieve healthy and sustainable diets to end malnutrition and preserve our planet

Based on this report's findings, there are clear areas for action. The change needed is significant but not impossible, and the stakes are so high that we must now do whatever it takes.
We recommend three key areas for action.

1. There needs to be a step-change in efforts and financial investments to end poor diets and malnutrition, and gain the high social and economic returns we know are possible.

- There is an urgent need for all stakeholders to commit to strong, SMART actions in the N4G Year of Action, and to ensure that diet-related goals form part of their commitments.
- Far more financing is needed, or we will not achieve the change we need. Traditional forms of financing for nutrition – external and domestic – must be sustained and increased, while other sources of financing – particularly innovative and private – need to step up.
- Countries must be better supported to leverage new tools that drive efficiency and effectiveness of investments to maximise the impact of available financing.

2. Poor diets and malnutrition can and should be addressed holistically and sustainably to create a healthy future for all.

- Policy initiatives are urgently needed to transform food systems, increase intake of health-promoting foods, and reduce animal-based foods, to ensure diets are healthy and sustainable for people and the planet.
- Global nutrition monitoring must expand to key targets for improving diets and health that go beyond micronutrient deficiencies, hunger and excess weight.
- Stakeholders and commitment-makers must give special attention to nutrition action that supports equitable, healthy and sustainable diets for all.

3. Better data, greater accountability and systematic monitoring are key to identifying the progress needed and ensuring we stay on track.

- Better and more granular data is needed, including on financing, to fully understand the current state of nutrition, inform effective action, and ensure that impact can be measured and monitored.
- All stakeholders who can play a role in driving healthy, sustainable diets and good nutrition should ensure they benefit from support available and sign up to the Nutrition Accountability Framework to make SMART nutrition commitments and ensure their impact can be measured.
- Healthy diets that are also sustainable must be better integrated into global nutrition targets, and monitored, in recognition of their vital importance in tackling malnutrition and protecting our environment.

2017. Ethiopia.
Health extension workers in the Simada Woreda district of the Amhara region of Ethiopia.
© Karen Kasmauski/MCSP

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A world free from malnutrition: An assessment of progress towards the global nutrition targets

KEY POINTS

1. At the current rate of progress, the global nutrition targets will not be achieved by 2025 globally and in most countries worldwide.

2. There is substantial variation in data availability and progress towards the global nutrition targets across 194 countries. Only seven countries are on course to meet four of the six maternal, infant and young child nutrition targets by 2025, while no country is 'on course' to halt the rise in adult obesity or achieve a 30% relative reduction in salt/sodium intake.

3. The Covid-19 pandemic is impeding progress towards achieving the global nutrition targets. An estimated additional 155 million people have been pushed into extreme poverty globally, while people with diet-related chronic diseases experience worse Covid-19 outcomes.

Introduction

A crucial function of the Global Nutrition Report is to provide an overview of how malnutrition in all its forms is evolving, what progress is being made at the global, regional, and national levels, and which challenges require urgent action, using the most up-to-date data.

Malnutrition in all its forms is the leading cause of poor health globally.[1] Just four years remain for achieving the six maternal, infant and young child nutrition (MIYCN) targets[2] – stunting, wasting, anaemia, low birth weight (LBW), childhood overweight, exclusive breastfeeding – and the three diet-related non-communicable disease (NCD) voluntary targets[3] – adult obesity and diabetes,[4] raised blood pressure, and salt/sodium intake. It is essential to evaluate past and current progress to inform key stakeholders and support decision-making on additional steps needed to close any existing gaps and ensure progress towards a world free of malnutrition in all its forms. This year, more than ever, and given that 2021 has been endorsed as the Nutrition Year of Action,[5] it is critical to take strong nutrition action and monitor how that has translated into impact through the Nutrition Accountability Framework.[6]
The ongoing Covid-19 pandemic is impeding the achievement of the global nutrition targets as well as Sustainable Development Goal Targets 2.1 and 2.2.[7,8,9] Short- and long-term responses are urgently needed to avoid losing the progress made so far and to bring the world back on track (Box 1.1 and Box 2.2).

This chapter reports on progress made towards the global nutrition targets and evaluates their achievability by 2025 (Figure 1.1).

FIGURE 1.1
2025 Global nutrition targets and definitions

Maternal, infant and young child nutrition targets for 2025

TARGET 1 — Under-5 stunting

TARGET: 40% reduction in the number of children under 5 who are stunted

DEFINITION: Children aged 0–59 months who are more than 2 standard deviations (SD) below the median height-for-age of the WHO Child Growth Standards

TARGET 2 — Anaemia

TARGET: 50% reduction of anaemia in women of reproductive age

DEFINITION: Prevalence of anaemia is (1) percentage of pregnant women whose haemoglobin level is less than 110 g/L at sea level or (2) percentage of non-pregnant women whose haemoglobin level is less than 120 g/L at sea level

TARGET 3 — Low birth weight

TARGET: 30% reduction in low birth weight

DEFINITION: Infants born in each population and over a given period who weigh less than 2.5kg

TARGET 4 — Under-5 overweight

TARGET: No increase in childhood overweight

DEFINITION: Children aged 0–59 months who are more than 2 SD above the median weight-for-height of the WHO Child Growth Standards

TARGET 5 — Exclusive breastfeeding

TARGET: Increase the rate of exclusive breastfeeding in the first 6 months to at least 50%

DEFINITION: Infants 0–5 months of age who are fed exclusively with breast milk

TARGET 6 — Under-5 wasting

TARGET: Reduce and maintain childhood wasting to less than 5%

DEFINITION: Children aged 0–59 months who are more than 2 SD below the median weight-for-height of the WHO Child Growth Standards

Global non-communicable disease targets for 2025 (diet-related)

TARGET 4 — Salt intake

TARGET: 30% relative reduction in the mean population intake of salt/sodium by 2025

DEFINITION: Mean population recommended intake of salt is 5g/day

Mean population recommended intake of sodium is 2g/day

TARGET 6 — Adult raised blood pressure

TARGET: 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances

DEFINITION: Raised blood pressure is defined as blood pressure, systolic and/or diastolic blood pressure ≥140/90mmHg

TARGET 7 — Adult obesity; Adult diabetes

TARGET: Halt the rise in obesity and diabetes

DEFINITION:
Adult obesity: BMI ≥30kg/m^2
Adult diabetes: Diabetes is defined as fasting glucose ≥7.0mmol/L, on medication for raised blood glucose or with a history of diagnosis of diabetes

Source: For more information see https://apps.who.int/nutrition/global-target-2025/en/[10] and www.who.int/publications/i/item/9789241506236.[11]
Note: Additional and disaggregated country-level information is available on the Global Nutrition Report website under the Country Nutrition Profiles.[12]
BMI = body mass index.

A world free from malnutrition

The *2020 Global Nutrition Report* highlighted that progress made to tackle malnutrition in all its forms was too slow.[13] New data confirms that, despite some achievements and partial success, the current pace of change is too slow to achieve the targets by 2025 in the great majority of countries.

The global view

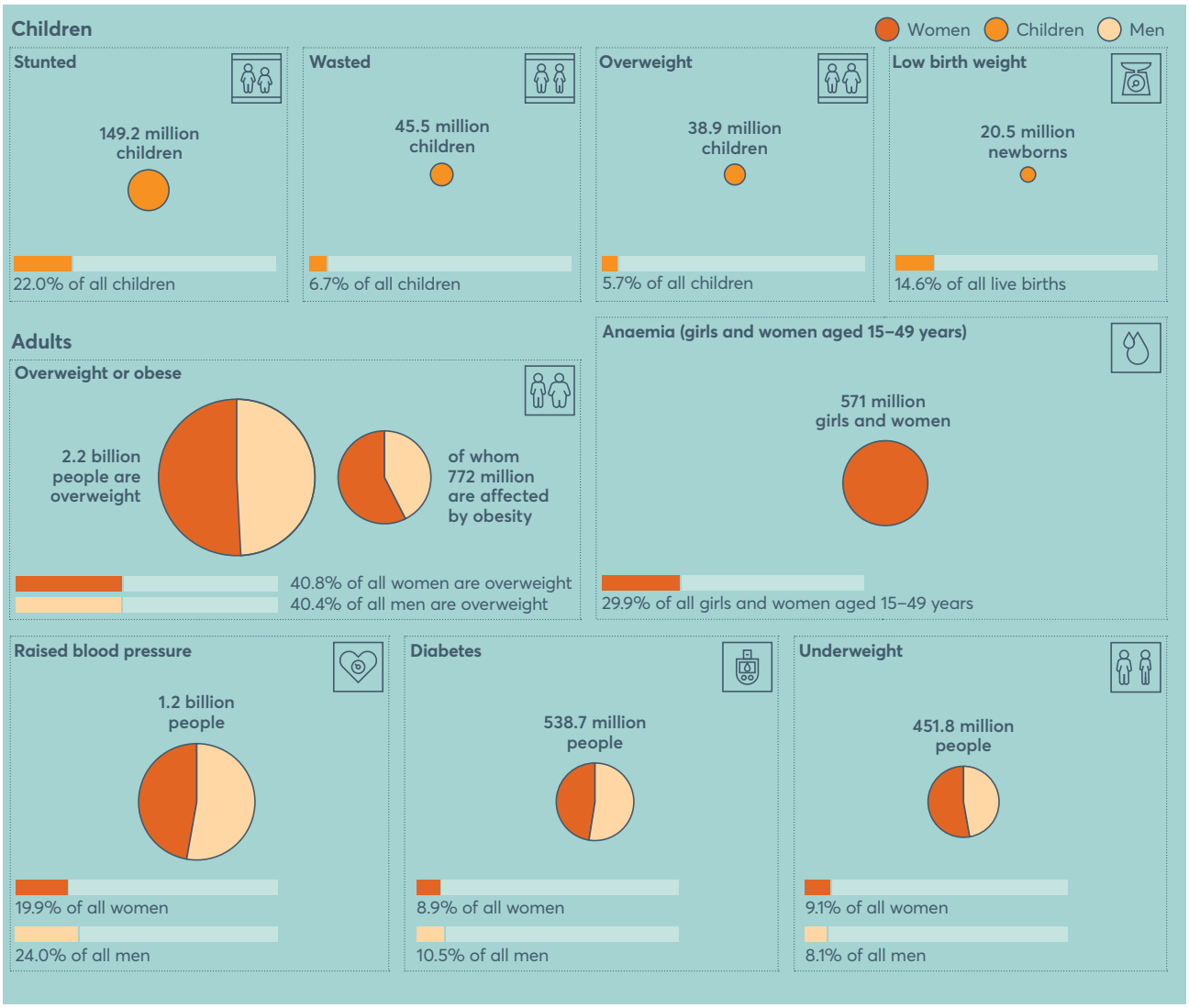
The most recent data continues to show that an unacceptably large number of people are still affected by malnutrition. Globally, 20.5 million newborns (14.6% of all live births) have a low weight at birth. Of all children under 5 years of age, one in five are stunted (149.2 million), 45.4 million (6.7%) are wasted, and 38.9 million (5.7%) are overweight. Meanwhile, 2.2 billion adults are overweight or obese (40.8% of women and 40.4% of men), 570.8 million (29.9%) girls and women of reproductive age (15–49 years) are anaemic, 538.7 million (8.9% of women and 10.5% of men) people have diabetes, and 1.2 billion (19.9% of women and 24% of men) experience raised blood pressure (Figure 1.2).

The world is off course to meet five of the six MIYCN targets and all three diet-related NCD voluntary targets (Figure 1.3).[14] While achieving a prevalence of 50% or more for infants being exclusively breastfed through the first 6 months of life is achievable by 2025, progress observed so far remains limited. Great acceleration in progress is needed for all the nutrition targets. Current progress in prevalence of LBW and wasting and in the number of children under 5 years of age who are stunted is insufficient to meet the 2025 target. By 2025, the number of stunted children is estimated to be 131 million (27 million above the expected 40% reduction in the target number of stunted children), while the prevalence of wasting will remain well above the 5% target. Prevalence of anaemia among girls and women of reproductive age remains worrying: not only has there been no progress toward lowering prevalence but, on the contrary, by 2025 the increased prevalence observed over recent years will lead to a prevalence of more than double the agreed target level (31.2% instead of 14.3%). Child overweight is also on the rise, as is the prevalence of adult obesity (12.3% among men and 16.2% among women, compared with 9.2% and 13.2% in 2010). Similarly, diabetes and raised blood pressure are both off course. The mean daily population intake of sodium increased from 2.87 grams in 2010 to 2.89 grams in 2018.

FIGURE 1.2

Too many people worldwide are malnourished

Numbers of people with different forms of malnutrition worldwide, last available year



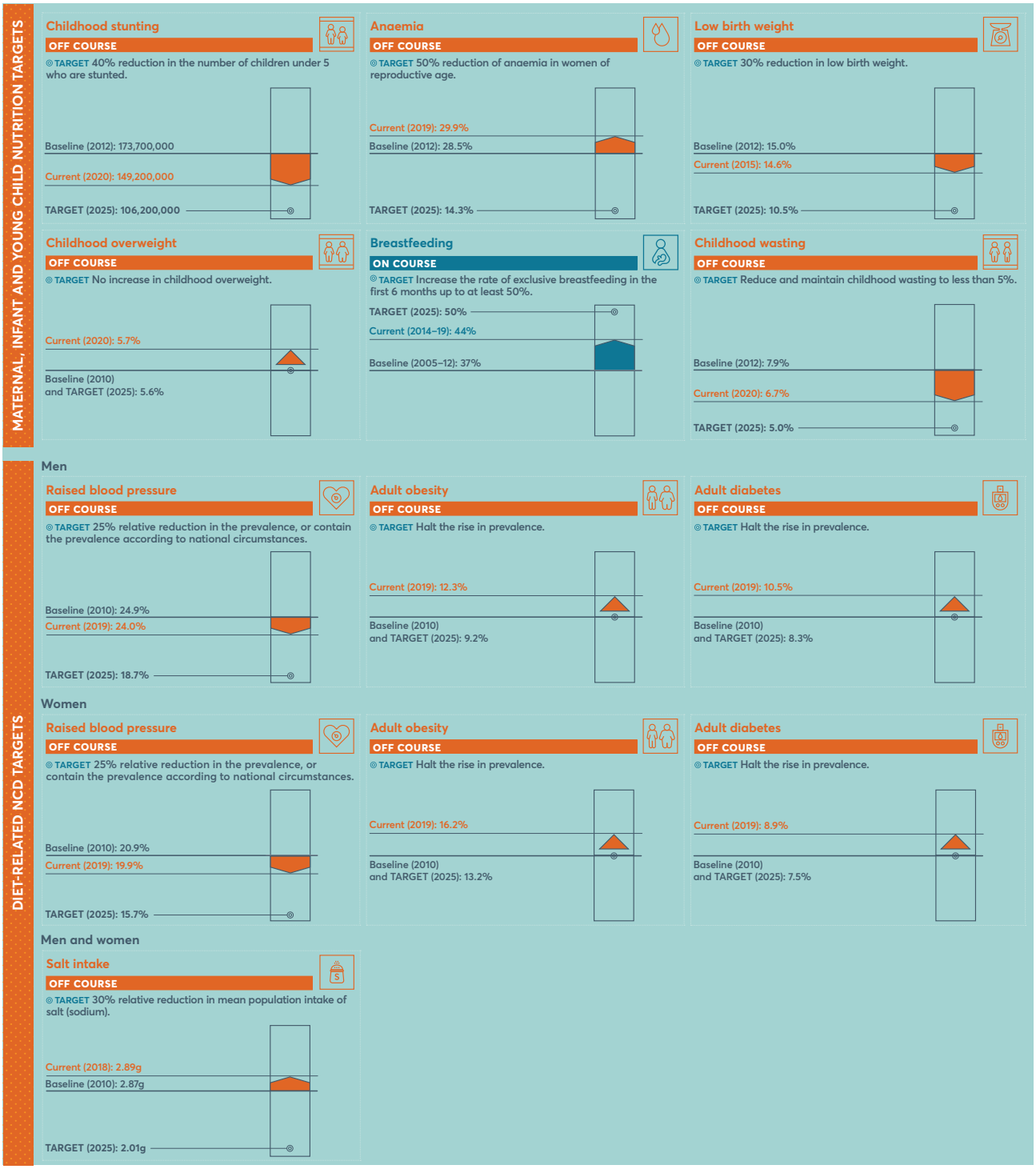
Source: UNICEF global databases Infant and Young Child Feeding (last available year at time of writing was 2019), UNICEF/WHO/World Bank Group: Joint child malnutrition estimates (last available year 2020), NCD Risk Factor Collaboration (last available year 2019 projections), WHO Global Health Observatory (last available year 2015).

Note: Adult overweight, obesity, diabetes and raised blood pressure data refers to people aged 18 years and older. Obese is a subcategory of overweight.

FIGURE 1.3

The world is off-course to meet five of the six MIYCN targets and all the diet-related NCD voluntary targets

Global progress towards the 2025 global nutrition targets



Source: UNICEF global databases Infant and Young Child Feeding (last available year 2019), UNICEF/WHO/World Bank Group: Joint child malnutrition estimates (last available year 2020), NCD Risk Factor Collaboration (last available year 2019 projections), WHO Global Health Observatory (last available year 2015), Global Dietary Database (last available year 2018).

Note: Adult overweight, obesity, diabetes and raised blood pressure data refers to people aged 18 years and older.

Missing actions to tackle malnutrition

While one of the priorities of the Global Nutrition Report is to monitor progress towards the global nutrition targets, these targets currently do not explicitly address poor diets (with the exception of salt/sodium) as the underlying cause of malnutrition in all its forms, including undernutrition and diet-related obesity and non-communicable diseases (NCDs) – the 'double burden'. New analyses presented in this report reveal that poor diets among adults account for over 281 million years of life lost (YLLs) and more than 12 million avoidable deaths in 2018 (Chapter 2). We now understand several key dietary priorities for improving diet and health, beyond micronutrient deficiencies and hunger or excess weight, that should be highlighted, targeted and tracked in order to tackle malnutrition to its full extent.

Similarly, current global targets do not explicitly capture important age groups, mainly children and adolescents (aged 5–19 years), despite representing key groups of the population that are particularly burdened by poor diets and resulting malnutrition. Prevalence of overweight[15] (including obesity) in children and adolescents has increased worldwide, from 17.0% among boys and 15.5% among girls aged 5–9 years, and 14.4% and 13.8% respectively among adolescents (aged 10–19 years) in 2010 to 24.5% (male) and 21.4% (female) among children and 20.2% (male) and 18.4% (female) among adolescents in 2019. The 2019 data shows that global prevalence of thinness[16] among both children and adolescents has declined modestly since 2010, from 12.8% to 10.9% among boys and 9.6% to 8.9% among girls (aged 5–9 years) and from 13.4% to 12.3% among male adolescents and from 8.1% to 7.9% among female adolescents (aged 10–19 years) (Figure 1.4).

The lack of population-based data on biomarkers of micronutrient status is also hindering monitoring of micronutrient deficiencies, despite their importance for health and development. A recent review concluded that information for most micronutrient status biomarkers is scarce and often outdated.[17] Despite this scarcity of data, limited data available indicates that micronutrient deficiencies remain common, reflecting poor dietary quality. The 2021 Lancet series on maternal and child undernutrition for example suggests high prevalence of vitamin A deficiency in Africa and south Asia, and that almost half of all children in the few countries with data are affected by zinc deficiency.[18] Similarly, about 60% of children under 5 years of age in low- and middle-income countries are anaemic (with higher rates among those aged 6–24 months), with little change over the past decade.[19]

FIGURE 1.4

Overweight and obesity prevalence in children and adolescents has increased worldwide with no appreciable changes in the prevalence of thinness

Trends in age-standardised prevalence in BMI categories in children and adolescents (2010–2019), boys and girls

Source: NCD Risk Factor Collaboration (2010–2016 estimates, 2017–2019 projections).

Notes: Prevalence (%) estimates are based on modelled age-standardised estimates for children and adolescents aged 5–19 years up to 2016 and projected between 2017 and 2019 using the WHO standard population. Thinness is defined as below minus two standard deviation. (<–2 SD) from the median BMI-for-age of the WHO growth reference, overweight (but not obese) as above one standard deviation (>+1 SD) and equal to or below two standard deviations (≤+2 SD), and obesity as above two standard deviations (>+2 SD). For additional information see www.who.int/tools/growth-reference-data-for-5to19-years/indicators/bmi-for-age.

Call for action to close the gap in countries' progress

Based on the assessment of individual countries, progress over past years is insufficient to achieve the global nutrition targets by 2025 in nearly all countries (Figure 1.5a). Data for 194 countries shows substantial variation in terms of data availability, quality and progress towards the global nutrition targets (Figure 1.5b).[20] Anaemia levels are showing no progress or worsening in 161 countries, with only Guatemala on course to meet the target. The latest data shows 15 countries (12 in Europe and 3 in Asia), on course for the LBW target, 35 for exclusive breastfeeding, 53 for stunting, 57 for wasting and 105 for childhood overweight. Insufficient data is available to assess progress in achieving targets for exclusive breastfeeding in 98 countries, wasting in 94 countries, LBW in 48 countries, and stunting and childhood overweight in 39 countries, which prevents these countries from assessing their progress. The only countries on course for four out of the six MIYCN targets are Kenya, Eswatini, Armenia, El Salvador (childhood overweight, stunting, wasting, and exclusive breastfeeding) Kazakhstan, Turkmenistan, and Albania (childhood overweight, stunting, wasting, and low birth weight).

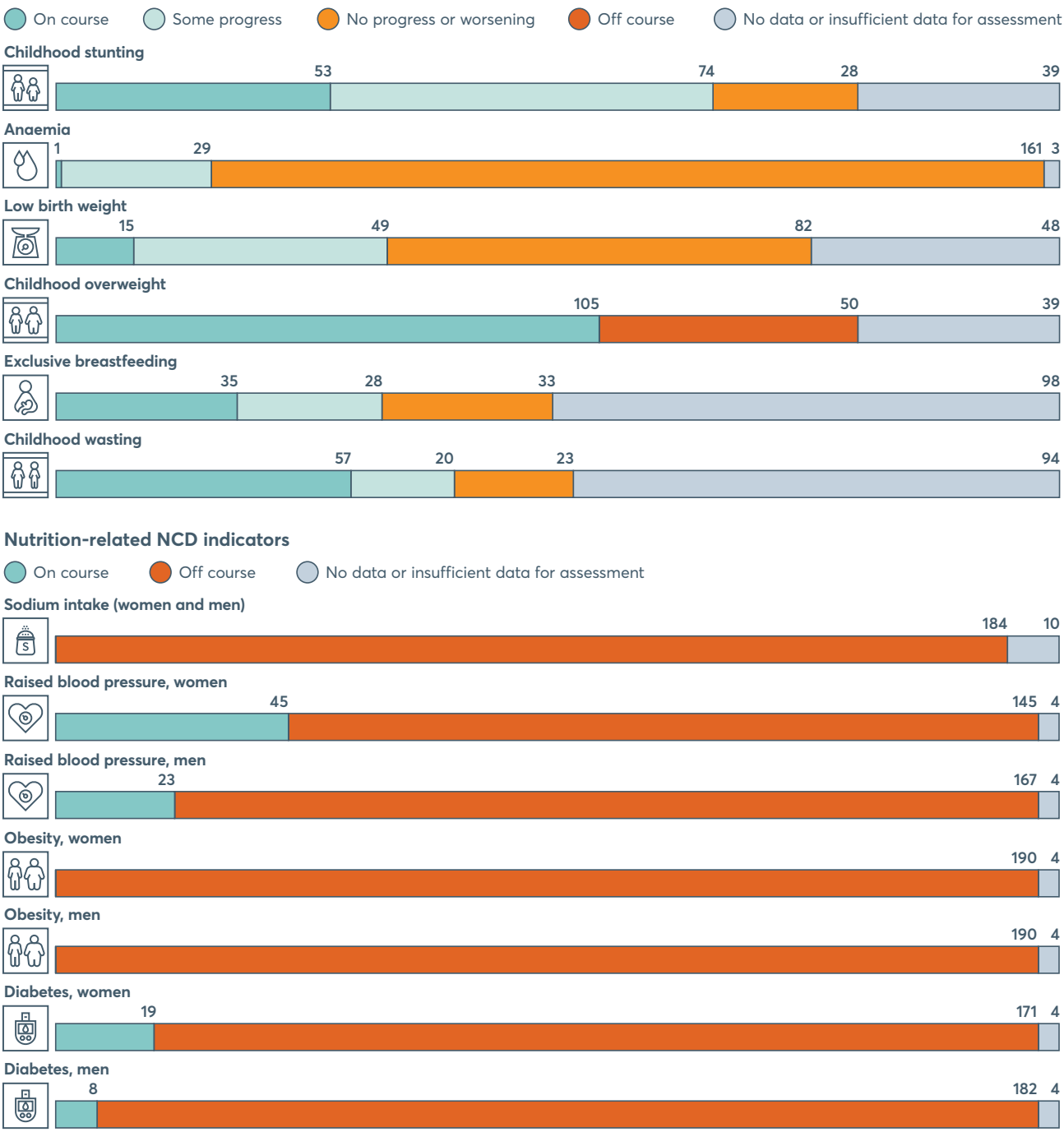
A second major concern emerging from this review is that no country is on course to halt the rise in adult obesity, or to achieve 30% relative reduction in mean population intake of salt/sodium. Seven countries (all in Europe with the exception of Australia) are on course to meet the diabetes target and 23 (15 in Europe, 4 in Asia, 2 in Oceania, 1 in North America and 1 in South America) to meet the target of 25% relative reduction of raised blood pressure for both men and women. Only six high-income Western nations (Australia, Denmark, Finland, the Netherlands, Norway and Sweden) are on course to meet both the diabetes and raised blood pressure targets (for both men and women). More countries, but still a small minority, are on course to meet the targets, for women only, on diabetes (19 countries – 16 in Europe and 3 in Asia) and raised blood pressure (45 countries, mostly in Asia and Europe). No country in the African region is on course for any of the diet-related NCD targets. Oman is among the countries lagging most in progress towards the global nutrition targets, with no progress or worsening for all targets (with the exception of raised blood pressure for women); followed by Ecuador (on course for wasting only and no assessment available for exclusive breastfeeding) and Trinidad and Tobago (with no assessment available for wasting and exclusive breastfeeding).

Yet, progress made at country level may be hiding opposing trends in specific subgroups of the population; for example, emerging data suggests that rates of breastfeeding are declining in urban settings.[21]

FIGURE 1.5A

Few countries worldwide are on course to meet the global nutrition targets by 2025

Country-level progress towards the 2025 global nutrition targets, by indicator



Source: UNICEF global databases Infant and Young Child Feeding (last available year 2019), UNICEF/WHO/World Bank Group: Joint child malnutrition estimates (last available year 2020), NCD Risk Factor Collaboration (last available year 2019 projections), WHO Global Health Observatory (last available year 2015), Global Dietary Database (last available year 2018).

Notes: Data availability and methodology differ between targets. Data for the MIYCN indicators, excluding anaemia and low birth weight, is based on surveys that mostly cover low-income and lower-middle-income countries, thus no data is available for the higher-middle- and high-income countries. Data for anaemia, low birth weight and all the NCD indicators is available for all countries, but based on modelled estimates and age-standardised using the WHO standard population, which may differ from national surveys.

BOX 1.1

The urgent need for actions to mitigate the impact of Covid-19 on maternal and child undernutrition

Saskia Osendarp

Without strong nutrition actions by nations, the Covid-19 pandemic is expected to have widespread short- and long-term implications for maternal and child undernutrition (stunting, wasting, anaemia). Covid-19 has pushed an estimated additional 155 million people into extreme poverty globally, and it is projected that around 118 million more people were facing hunger in 2020 than in 2019, because of Covid-19 in combination with persistent conflicts and climate change.[22] These challenges are compounded by generally fewer, rather than more, nutrition-specific interventions. UNICEF reported an overall reduction of 40% in the coverage of essential nutrition services over 2020.

With challenges of Covid-19 limiting the collection of data on the full impact of the pandemic on maternal and child undernutrition, we rely on research based on modelled scenarios for insights. The Standing Together for Nutrition (ST4N) consortium used a combination of modelling tools to estimate the joint effects of economic, food and health systems disruptions induced by the pandemic on various forms of maternal and child undernutrition in 118 low- and middle-income countries. Projections were made for three years – 2020, 2021 and 2022 – according to three different scenarios of how the pandemic, mitigation efforts and economic forecasts might unfold.[23]

Given the acceleration of the pandemic in many low- and middle-income countries in 2021, if no new actions are taken, the real impact may be closer to the most pessimistic scenario, with the possibility of a total 13.6 million more children affected by wasting (moderate, 9.3 million; optimistic, 6.4 million), 3.6 million more stunted children (moderate, 2.6 million; optimistic, 1.5 million), and 283,000 more related child deaths (moderate, 168,000; optimistic, 47,000) by 2022. An additional 4.8 million maternal anaemia cases (moderate, 2.1 million; optimistic, 1.0 million) and 3.0 million more babies born to women with low BMI (moderate, 2.1 million; optimistic, 1.4 million) are projected by 2022.

The results of the ST4N model for 118 countries were extrapolated to estimate the potential impact if all 135 low- and middle-income countries experienced similar relative increases in undernutrition. For child wasting, under the pessimistic scenario, this extrapolation predicts that an additional 16.3 million children (11.2 million children in the moderate scenario) would be affected by wasting from 2020 to 2022. For child stunting, under the pessimistic scenario, the 2021 *State of food security and nutrition in the world* SOFI) report estimates predicted 4.5 million more stunted children (3.4 million in the moderate scenario) in 2022.[24]

BOX 1.2

Interlinked effects of the Covid-19 and obesity pandemics highlights once again the need to improve nutrition worldwide

Dariush Mozaffarian

Across diverse nations, diet-related chronic cardiometabolic diseases are the top risk factors, outside age, for increased Covid-19 severity, including risk of hospitalisation and death.[25,26,27,28,29,30,31,32,33,34] In China, for example, high blood pressure, cardiovascular diseases and diabetes were each two to three times more common among severe than non-severe cases of Covid-19.[35] In the US, a 35-year old with one or more diet-related cardiometabolic diseases had a risk of Covid-19 hospitalisation similar to that of a 75-year-old with none of these conditions: a dramatic 'biologic aging' effect of poor metabolic health.[36] In sum, 63.5% of Covid-19 hospitalisations in the US were estimated to be attributable to four cardiometabolic conditions, with the largest proportion due to obesity (30.2%).[37] Diet-related chronic diseases are associated with diminished innate and adaptive immune responses.[38,39,40,41] Furthermore, Covid-19 affects not just the lungs but also vascular endothelial cells, causing focal and systematic inflammation.[42] Diet-related cardiometabolic conditions share a foundational pathophysiology of endothelial dysfunction and chronic inflammation.[43,44,45] In sum, Covid-19 can be considered a 'fast on slow pandemic', with the fast pandemic of the virus superimposed on the slower, but no less devastating, global pandemic of obesity and type 2 diabetes over the past 30 years. Finally, not only does poor metabolic health contribute to Covid-19 severity, but emerging evidence indicates that nutrition insecurity caused by the pandemic has contributed to poor eating and unhealthy weight gain.[46] These interlinkages with Covid-19 highlight the major societal burdens and reduced population resilience from diet-related chronic diseases.

Conclusion

Progress made so far by most countries worldwide to tackle malnutrition in all its forms is insufficient to meet the global nutrition targets by 2025. Globally, around 149.2 million children under 5 years of age are stunted, 45.4 million are wasted, and 38.9 million are overweight; 570.8 million girls and women of reproductive age are anaemic. A staggering 2.2 billion adults are overweight or obese, 1.2 billion suffer from raised blood pressure, and 538.7 million from diabetes. Only seven countries are on course for four of the six MIYCN targets, while no country is on course to halt the rise in adult obesity and reduce salt/sodium intake. Only six countries (all high-income) are on course for the target on reducing high blood pressure and to halt diabetes. Over the past two years, the Covid-19 pandemic has posed unprecedented challenges to the global effort to tackle malnutrition in all its forms, and its direct and indirect impacts have not fully unfolded. Around 118 million more people faced hunger in 2020 than in 2019, while up to 13.6 million more children under five are projected to become wasted by 2022 because of Covid-19 in combination with persistent conflicts, climate change and reduction in essential nutrition services' coverage. At the same time, the increased Covid-19 severity among people with diet-related chronic cardiometabolic diseases highlights once again the need to improve nutrition worldwide. The lack of data hinders assessment of progress, while the lack of explicit targeting on diets hinders tackling malnutrition to its full extent. Short- and long-term responses are urgently needed to avoid losing the progress made so far and bring the world back on track. Being the Nutrition Year of Action, 2021 represents a turning point for nutrition and a critical moment for all stakeholders to make strong commitments to win the fight against poor diets and malnutrition in all its forms.

KEY RECOMMENDATIONS

- **Progress made to tackle malnutrition in all its forms is not enough to meet the global nutrition targets by 2025. We now need strong nutrition action that should be supported by a comprehensive framework for accountability.**

  There is an urgent need for all stakeholders to step up efforts and take nutrition action to win the fight against poor diets and malnutrition in all its forms. The Nutrition Accountability Framework has been set up by the Global Nutrition Report to set SMART requirements for monitor nutrition commitments and measure how they translate into impact.

- **To monitor and assess progress in the fight against poor diets and malnutrition, we need higher-quality, comparable data in most countries.**

  The Global Nutrition Report is re-stating the need for better and more granular data collected by countries to inform national and local actions. This is even more critical in light of the impact of the Covid-19 pandemic on nutrition. We need short- and long-term responses urgently, to avoid losing progress made so far and to bring countries back on track.

- **Given the critical role of diets in tackling malnutrition in all its forms, global nutrition targeting should be expanded to monitor key targets for improving diets and health that extend micronutrient deficiencies, hunger or excess weight.**

  There is an urgent need for international bodies, countries and all key stakeholders to recognise, target, and track poor diets in order to ensure accelerated progress in tackling malnutrition in all its forms.

02

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.

Introduction

Our diets affect both our own health and the health of the planet.[1,2] 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.[3,4] 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.[5] 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.

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.[6,7,8] 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.[9,10]

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.[11,12,13,14,15,16]

For our analysis, we followed several steps to ensure that our selection or 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[17,18] and fish,[19,20,21,22] 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.[23,24,25] 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.[26]

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.[27] Several technological and management options exist for reducing other environmental impacts. However, when it comes to greenhouse gas emissions, those are relatively ineffective

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.[28] 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

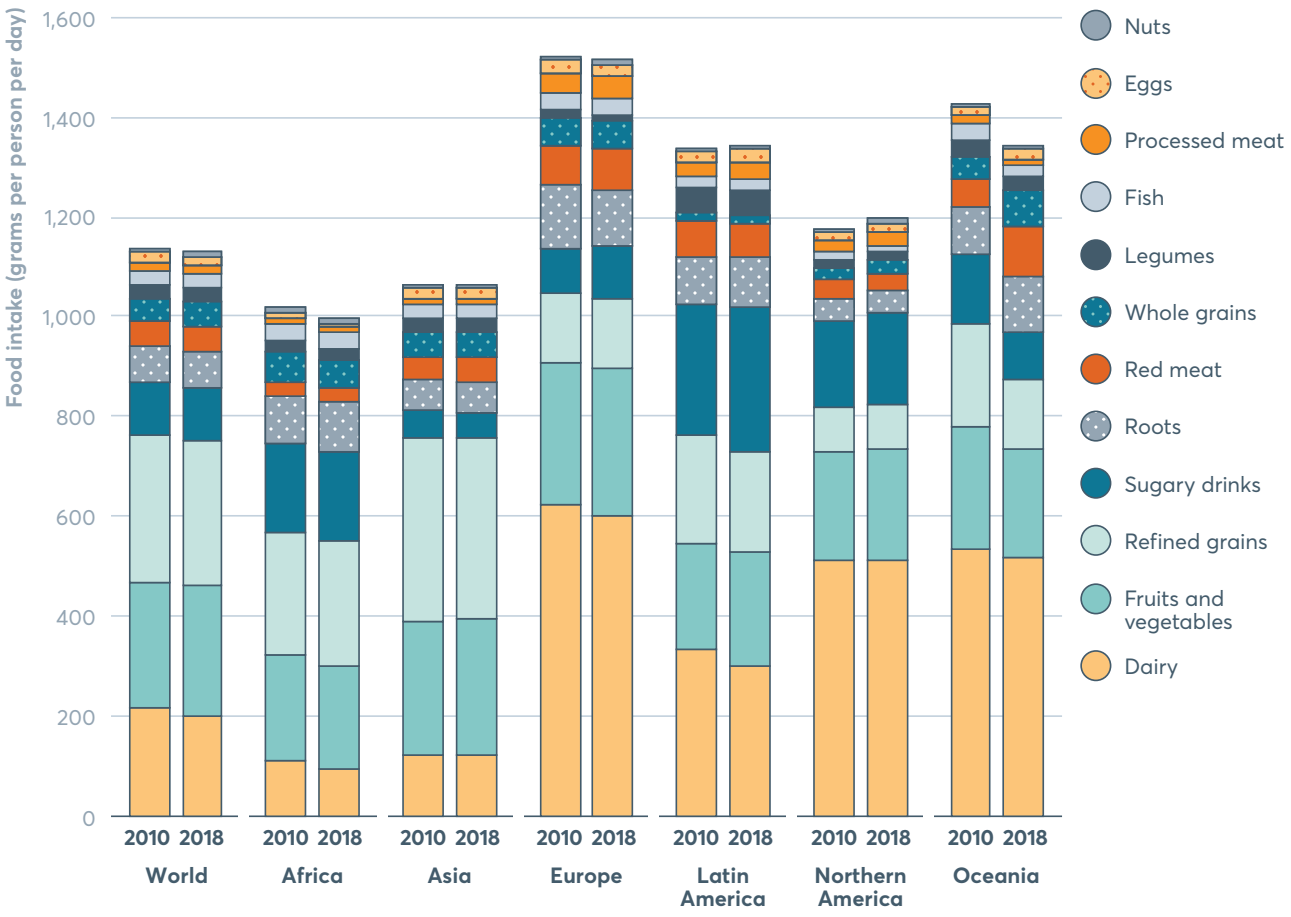
The last decade, based on data for 2010 and 2018, has seen little progress in improving diets (Figure 2.1). Based on analyses of the latest data on average per-person dietary intakes from the Global Dietary Database,[29] intakes of whole grains, and of fruit and vegetables, both critical components of 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%).[30]

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.[31]

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.[32] 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.[33,34] 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
Deviation from minimum recommendations (the darker the orange, the higher the deviation)								
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%

Risk factor	Year	World	Africa	Asia	Europe	Latin America	Northern America	Oceania
Deviation from maximum recommendations (the darker the orange, the higher the deviation; the darker the blue, the more within the recommendations)								
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%

Risk factor	Year	World	Africa	Asia	Europe	Latin America	Northern America	Oceania
Deviation from weight recommendations (the darker the orange, the higher the deviation)								
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).

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.[35] 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.

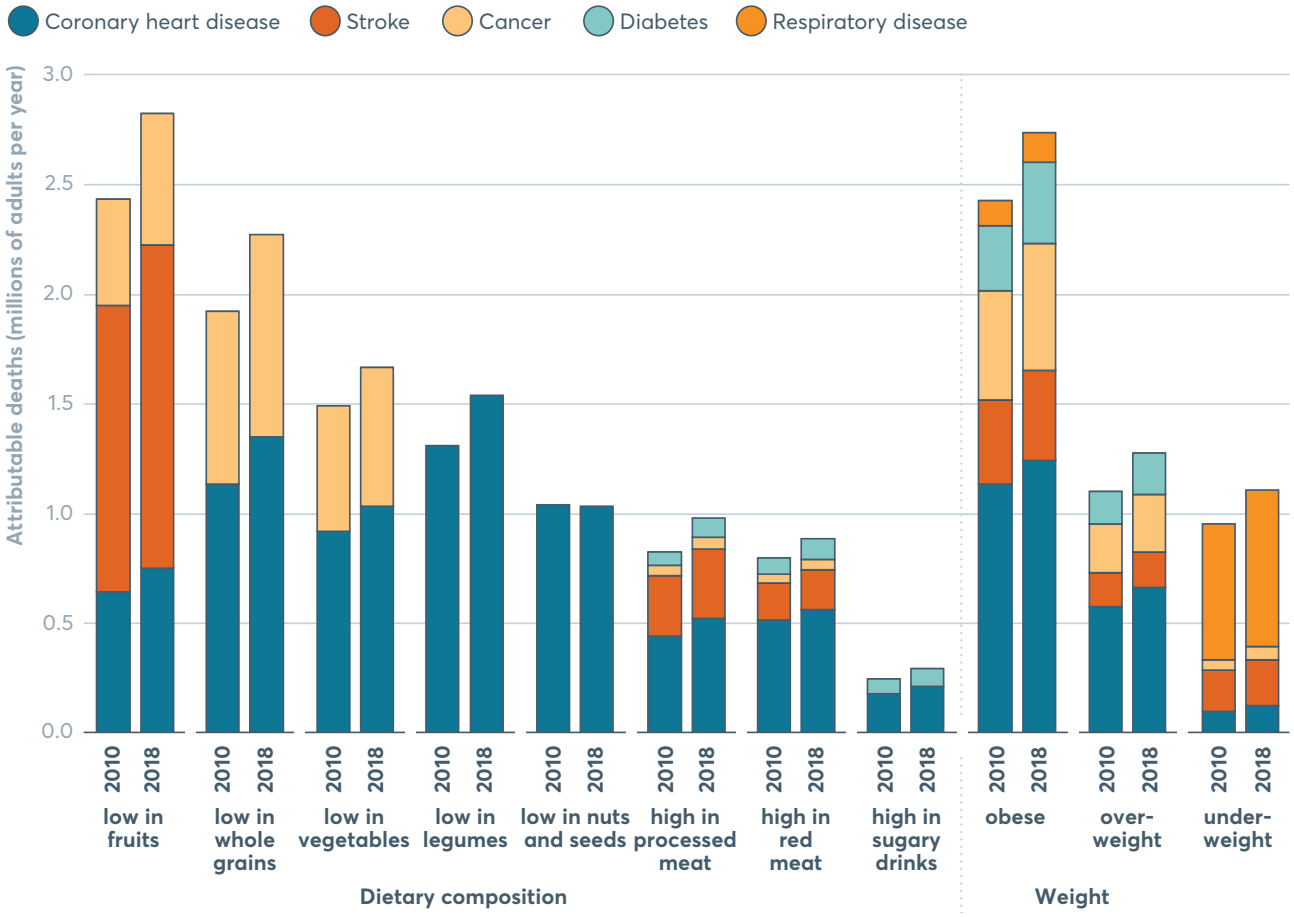
According to our estimates, today's diets are associated with a large and increasing health burden (Figure 2.3). Overall, poor diets were responsible for more than 12 million avoidable deaths in 2018, which represents 26% of all deaths among adults. Compared to 2010, the number of avoidable deaths due 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[36,37,38,39,40,41] 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.

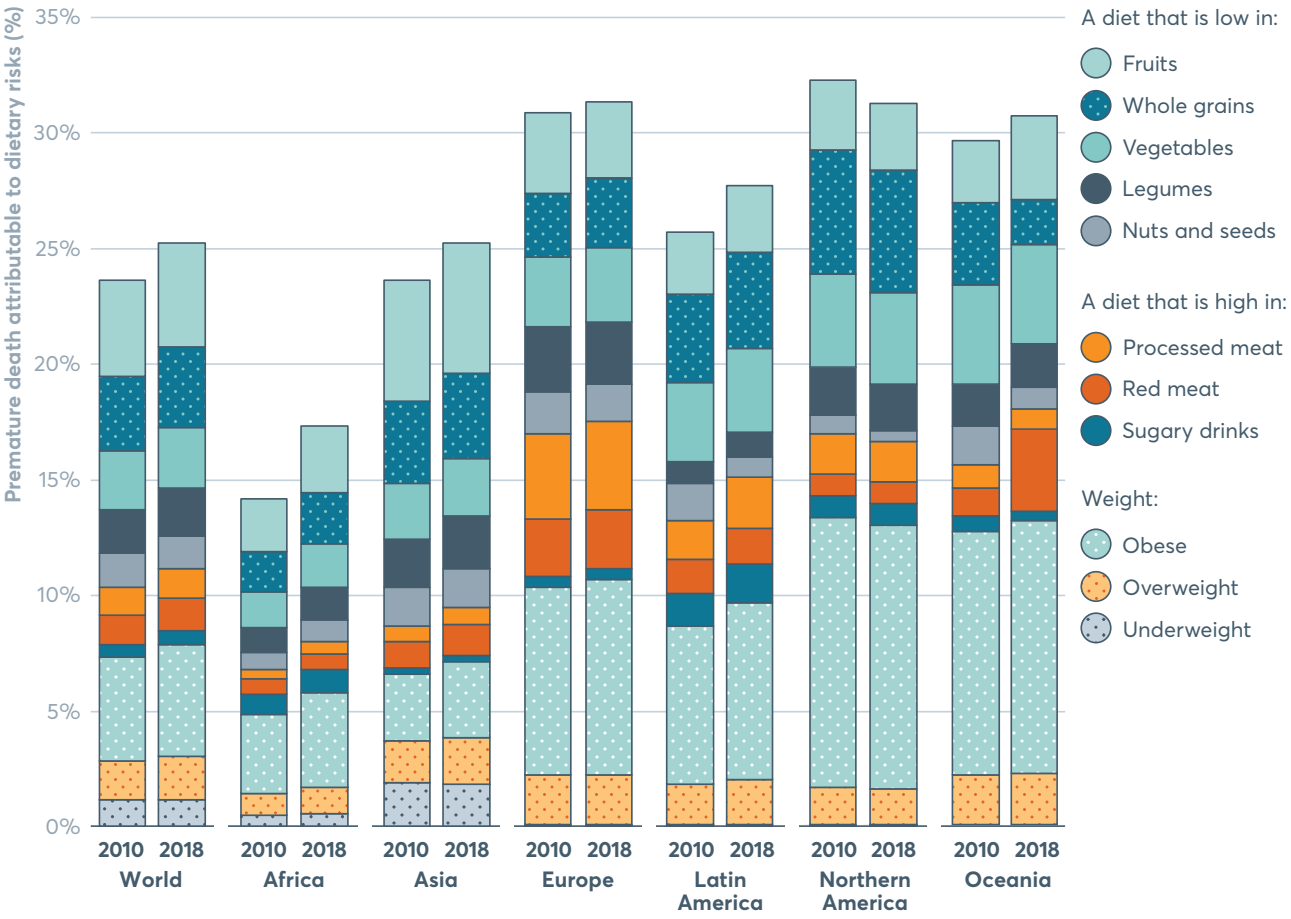
The proportion of premature death attributed to dietary risks differs markedly by region, reflecting regional differences in diets as well as the contribution of NCDs (Figure 2.4). It is highest in higher-income regions, including Northern America (31%) and Europe (31%), and lowest in lower-income regions 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

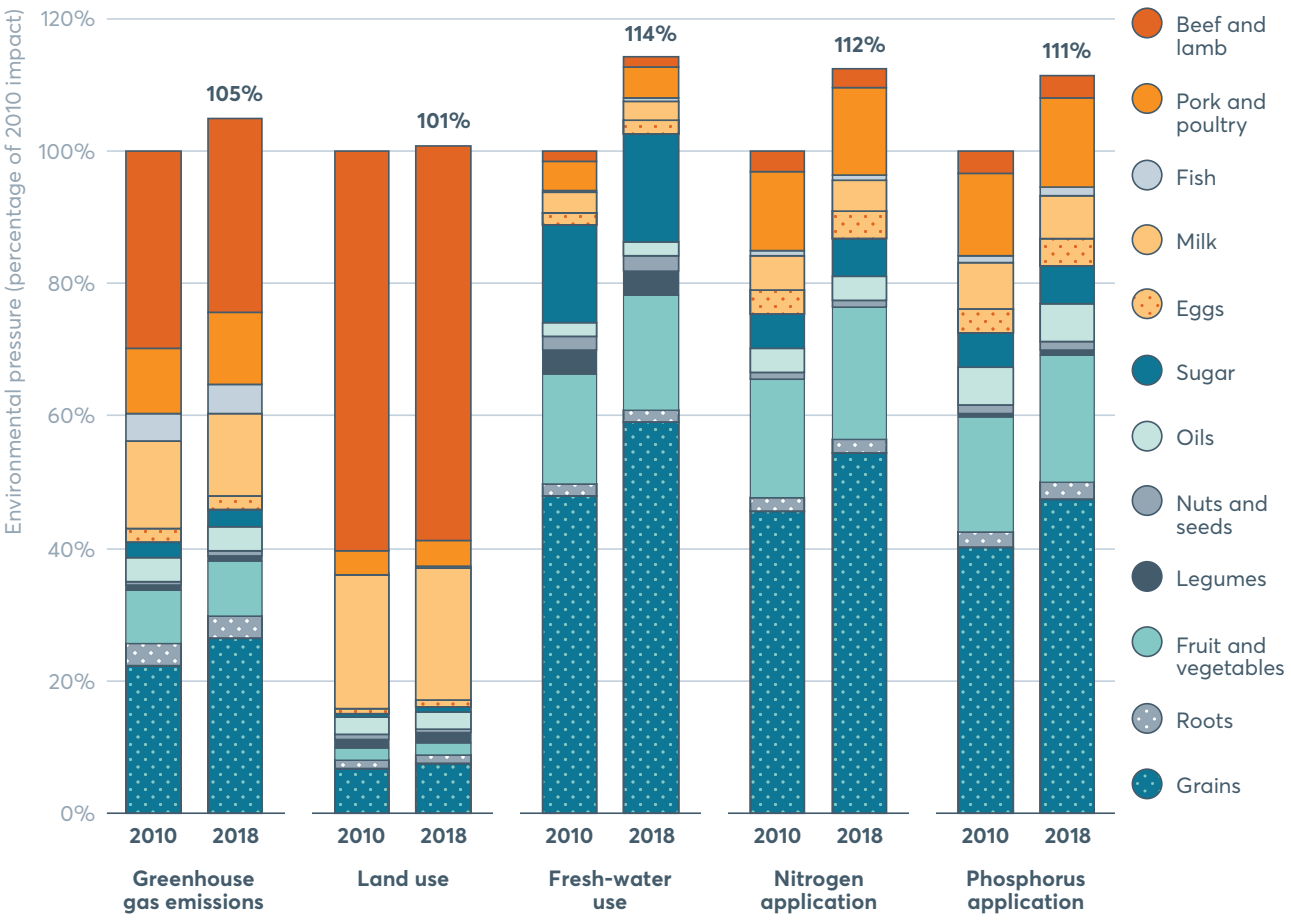
Our dietary habits and the current level and mix of foods we demand are also associated with substantial and increasing levels of environmental pollution and resource use (Figure 2.5). For this new analysis, we paired data on food demand for each country from the Food and Agriculture Organization of 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).[42] 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, $GtCO_2eq$) in 2018, which represents more than a third (35%) of global emissions. Methane and nitrous oxide, two greenhouse gases primarily associated with agriculture, contributed $7.5GtCO_2eq$. The food system also

required 15.8 million square kilometres (Mkm^2) of cropland and 43.9Mkm^2 of pastureland, 2,500 cubic kilometres (km^3) 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.

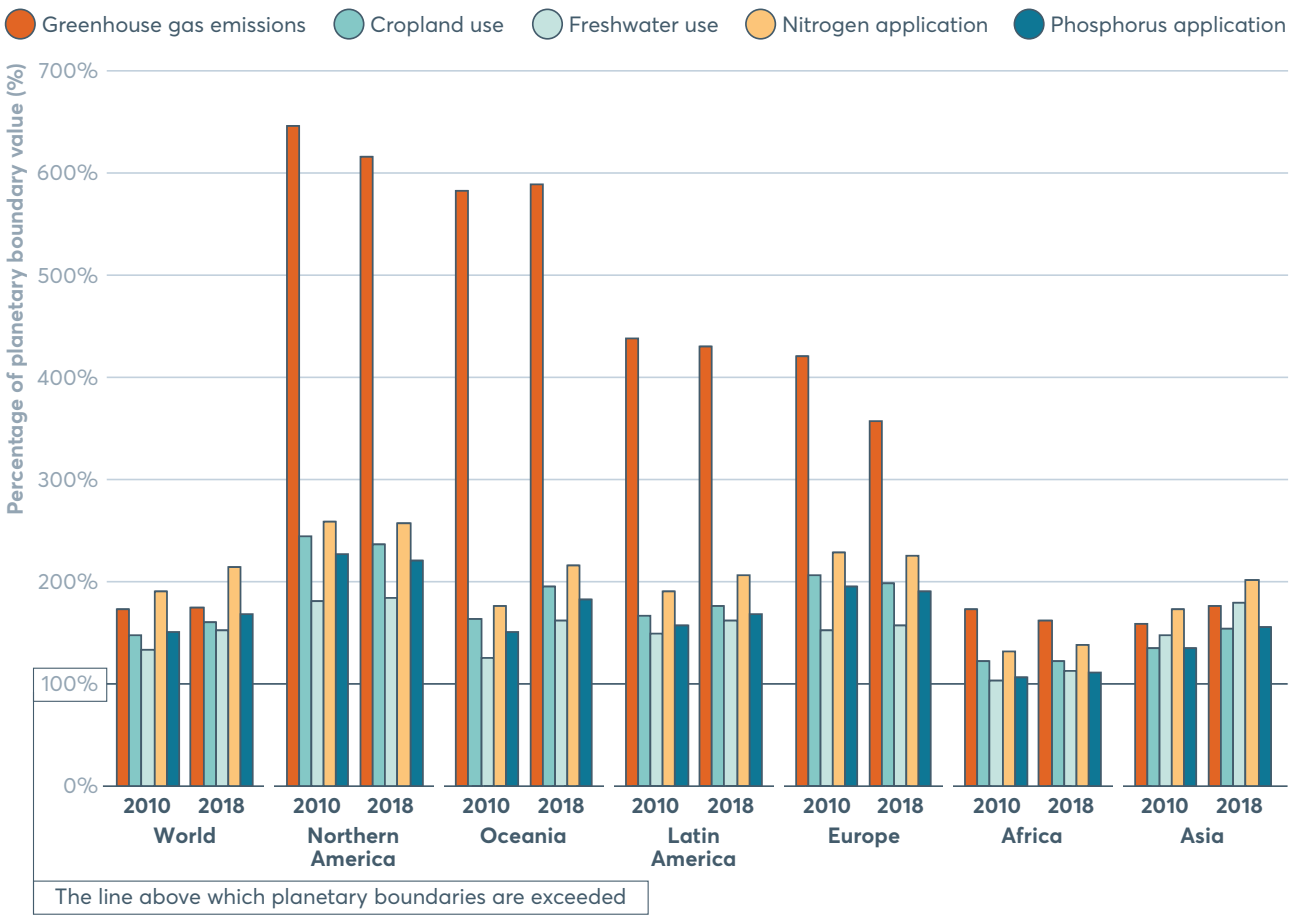
The environmental impacts of the global food system are not in line with global environmental targets (Figure 2.6) as specified by the EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems (Box 2.1). In 2018, food-related greenhouse gas emissions exceeded by three-quarters (74%) the limit 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.

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.[43,44] 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.

03

2016. Nepal.
The Rural Women's Economic Empowerment Joint Programme seeks to improve women farmers' agricultural production and income.
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More money for nutrition, more nutrition for the money: Financing nutrition

KEY POINTS

1. The economic downturn triggered by the Covid-19 pandemic, combined with disrupted food and health systems, threatens to increase malnutrition significantly in low- and middle-income countries. Estimated nutrition-specific financing needs for select maternal, infant and young child global targets have increased, from previous estimates of US$7 billion/year for 2016–2025 to US$10.8 billion/year over 2022–2030; accounting for nutrition-sensitive needs towards the full gamut of SDG 2 targets, the total needs are estimated at US$39–50 billion per year.

2. Given these economic challenges, when donor and domestic resources are constrained by the pandemic, the need for concessional, private sector and catalytic innovative finance is more urgent than ever. There are unexplored opportunities for scaling up innovative finance in nutrition.

3. New tools are available for enhancing the quality of nutrition spending, focusing on evidence and results. Nutrition public expenditure reviews and allocative efficiency tools like Optima Nutrition allow for careful expenditure planning and tracking, and optimising financing to achieve better results.

Introduction

The focus of this chapter is the global financing and resource needs to address all forms of malnutrition and build human capital. We present the latest estimates of financing needs for nutrition-specific interventions from 2022 to 2030, supplemented with available information on nutrition-sensitive financing. We also explore related trends in available resources – domestic, official development assistance (ODA) including grants and concessional loans, innovative sources, and the private sector.

The financing challenges laid out in the *2020 Global Nutrition Report* remain and are exacerbated by the effects of the Covid-19 pandemic because of increased overall financing needs and the consequences for available resources.[1] Given these challenges, increasing investments for nutrition through the collective efforts of all key stakeholders is of utmost priority. Such a need has been clearly articulated and emphasised by the G20 Call to Action[2] and by the G7, which encouraged strong investment commitments for food security, food systems and nutrition at the G20, UN Food Systems Summit, COP26 and Tokyo Nutrition for Growth Summit.[3]

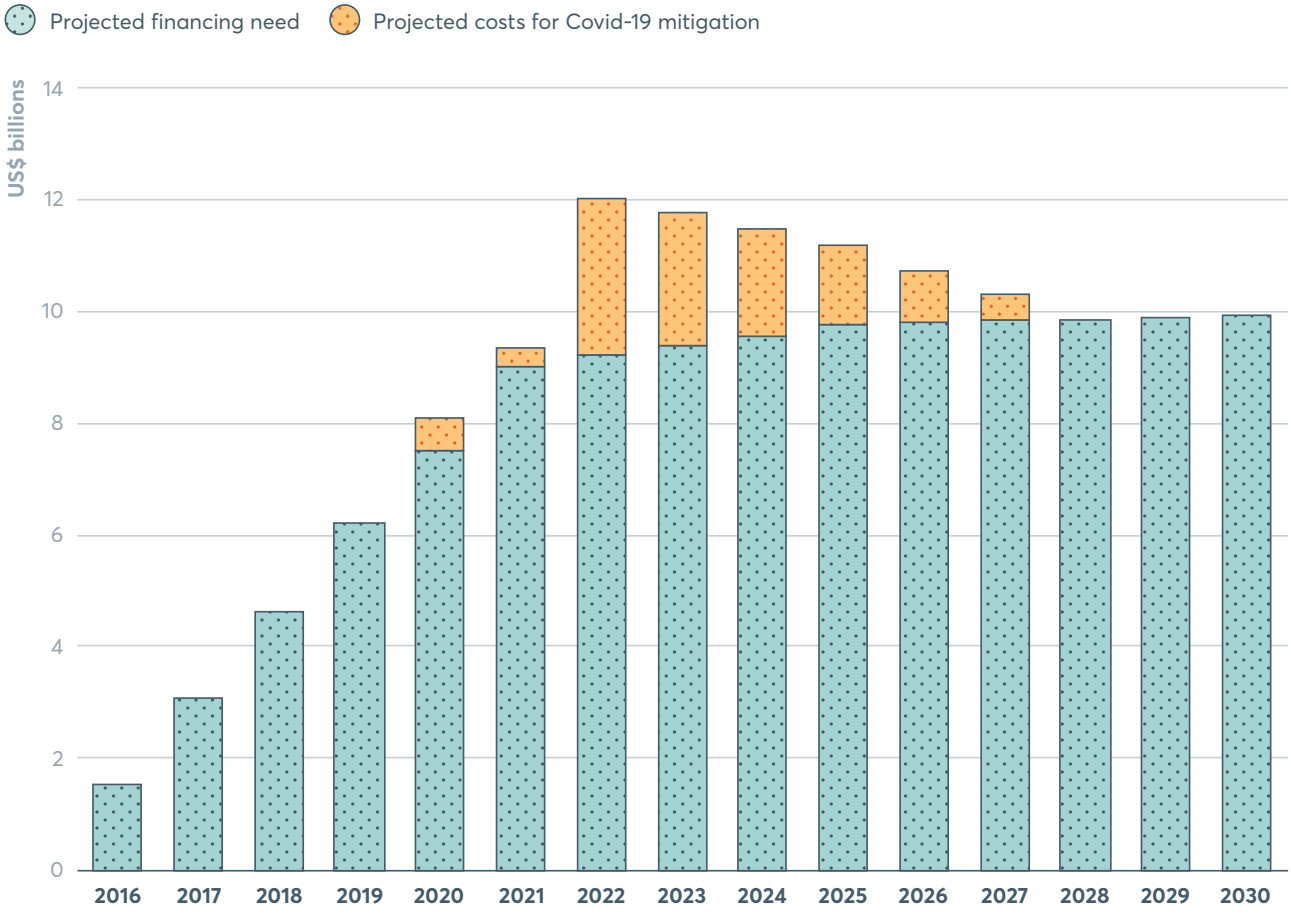
Financing needs for nutrition

Updated estimates for nutrition-specific financing needed to achieve four of the MIYCN global nutrition targets for which data is available,[4] are an average of US$10.8 billion annually over 2022–2030 (Figure 3.1),[5] in addition to current spending. These build on the 2017 methodology and estimates[6] of an average US$7.0 billion annually over 2016–2025,[7] add additional costs for mitigating the impact of Covid-19 and extend these estimates to 2030.

FIGURE 3.1

An additional US$10.8 billion/year, on average, over 2022–2030 is required to achieve four global nutrition targets

Updated preliminary estimates of financing needs for progress toward four global nutrition targets focused on child and maternal undernutrition



Source: Authors (unpublished estimates based on available data).
Note: The four global nutrition targets concern: stunting in children under 5 years of age, wasting in children under 5 years of age, anaemia in women of reproductive age, and breastfeeding.

Of the US$70 billion estimated in 2017 as the total financing need to close the financing gap during 2016–2025, it was anticipated that US$35 billion cumulatively would have been invested by 2021. Extending the needs to 2030, this analysis estimates that US$97 billion will be needed over the 2022–2030 period.[8] This averages to about US$10.8 billion annually over 2022–2030, including additional costs for Covid-19 mitigation measures.[9] These estimates are conservative and underestimate the nutrition-specific financing investments needed to tackle malnutrition to its full extent.

A more detailed update for these four targets is planned by the World Bank in 2022.

These investments, when complemented with nutrition-sensitive investments, will bring us close to achieving targets on stunting, maternal anaemia, breastfeeding and childhood wasting.[10] Additional needs for diet-related obesity and non-communicable diseases (NCDs) have not yet been estimated, although OECD reports suggest that treating the diseases caused by obesity will cost US$425 billion/year across 52 countries.[11]

New estimates for 'hunger-reduction targets' (SDG 2 targets 2.1–2.6) suggest a total need of about US$39–50 billion annually until 2030 for both nutrition-specific and nutrition-sensitive needs.[12] Yet another estimate suggests that ending hunger by 2030 could cost up to US$160 billion/year,[13] although evidence for the potential contribution of these large investments to the global nutrition targets is unclear. While these costs seem high, the costs of not intervening are even higher; estimated total economic gains to society of investing could reach US$5.7 trillion/year by 2030 and US$10.5 trillion/year by 2050. New business opportunities – including from tackling food loss, creating new value chains for regenerative agriculture and shifting to healthy diets – are worth an estimated US$4.5 trillion/year by 2030.[14]

The current state of nutrition financing

Domestic government spending on nutrition

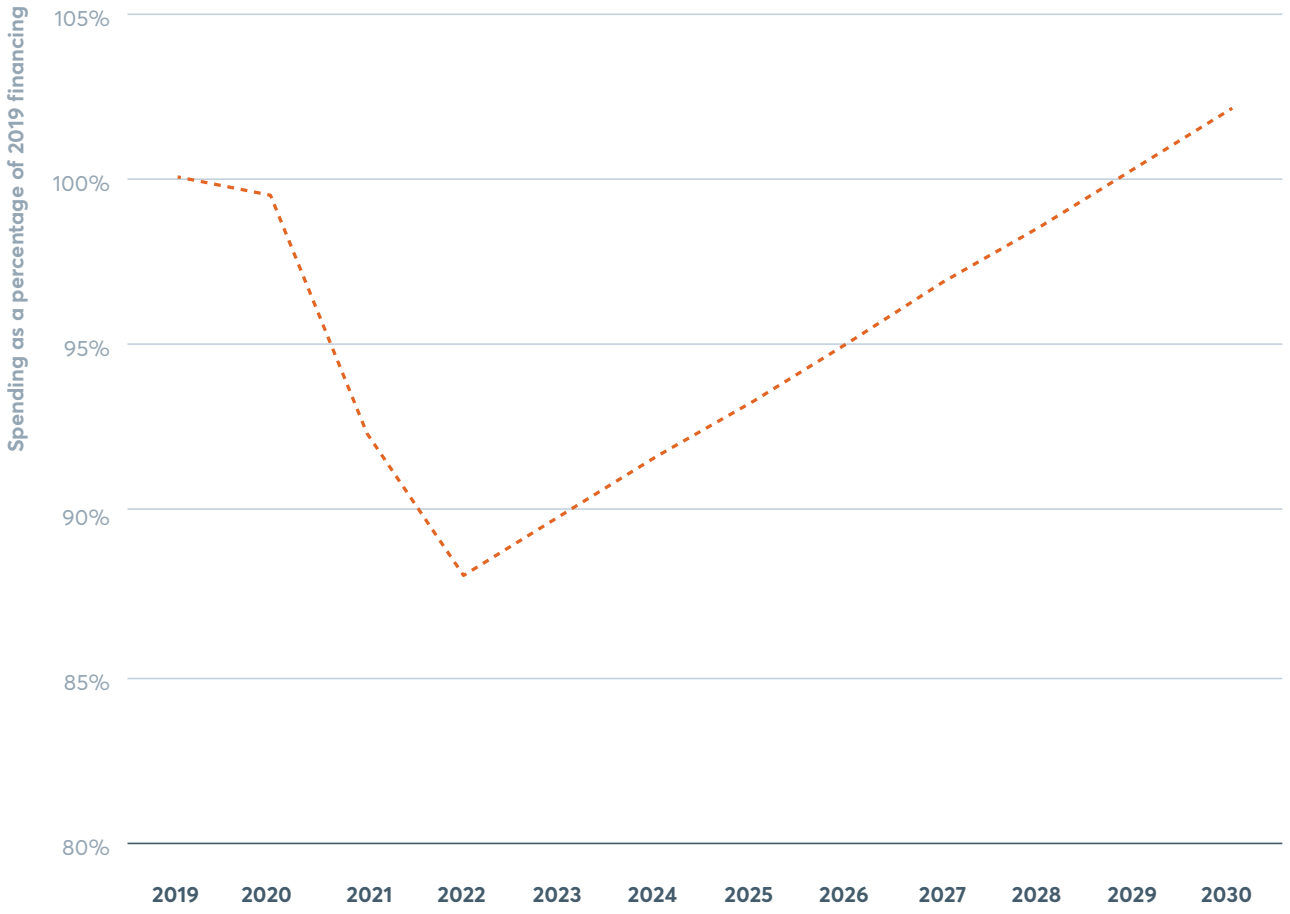
Domestic financing, in the Investment Framework for Nutrition (IFN) projections and reaffirmed in the *2020 Global Nutrition Report*, was expected to scale up gradually to contribute nearly 80% of the additional funding required to meet select 2025 global nutrition targets. There was a bold but necessary call for additional domestic funding to ramp up significantly by 2025 towards the goal of sustainable financing, while ODA would scale down.

A recent analysis, focused on low- and middle-income settings, documents the anticipated effect of Covid-19 on domestic health expenditure. This is the best available proxy for anticipated future trends in nutrition-specific spending. This analysis projects declines in government expenditures on health across 118 lower-middle-income countries (LMICs) by 7.2% in 2020, 4.2% in 2021, and 2.2% in 2022, with recovery to pre-pandemic levels not anticipated until the end of the decade unless there is strong growth in LMICs (Figure 3.2). Other reports on trends in domestic health financing show similar trajectories,[15] although a new *Lancet* study[16] suggests more optimistic trends in health financing.

FIGURE 3.2

Domestic resources for nutrition may not recover until 2030

Implied trends in domestic resources for nutrition-specific investments



Source: Authors, based on Osendarp et al. (2021).[17]

Note: The implied trends in nutrition-specific spending are based on projected trends for government health expenditure which is used as a proxy.

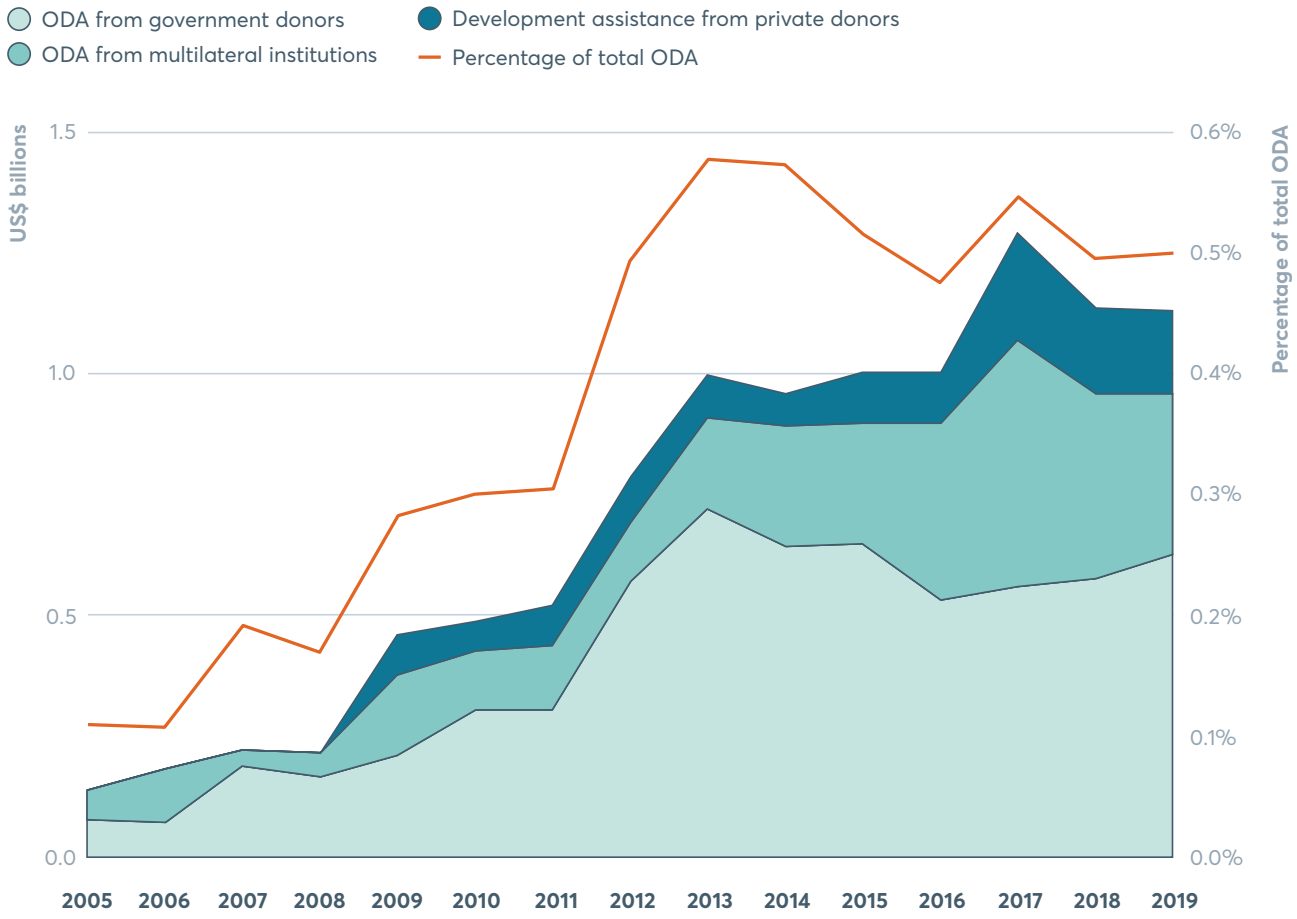
As the World Bank's 'From Double Shock to Double Recovery' report[18] highlights, rifts in health-financing capacities are widening, with many lower-income countries facing stark choices, being unable to invest sufficiently in the Covid-19 response, while also seeing investments in other health services (including nutrition) suffer as a consequence of pandemic-related impacts on domestic funding.

The report identifies that the most impacted low-income countries will on average have to double the share of their spending on health, from 10% pre-Covid-19 to 20% in 2026, and in impacted lower-middle-income countries from 8% to 13.5%, in order to keep health spending growing at pre-pandemic rates. This would be an unlikely outcome, strengthening the case for increases in external financing to offset declines in domestic spending.

External financing for nutrition

Official Development Assistance (ODA)[19] and development assistance from private donors[20] supporting nutrition-specific interventions have stagnated in recent years. Despite steady increases since 2005, ODA disbursements reported under the Creditor Reporting System (CRS) code for basic nutrition[21] (a proxy for nutrition-specific aid) have stalled recently, remaining at US$0.96 billion in 2018 and 2019, down from US$1.07 billion in 2017 (Figure 3.3). This is equivalent to approximately 0.50% of total ODA in 2019, down from a peak of 0.58% in 2013.

FIGURE 3.3
ODA disbursements for basic nutrition have plateaued in recent years
ODA disbursements for basic nutrition, 2005–2019



Source: Development Initiatives based on OECD Development Assistance Committee (DAC) Creditor Reporting System (CRS).
Notes: ODA amounts are based on gross ODA disbursements, and include ODA grants and loans but exclude other official flows reported to the OECD DAC CRS. Government donors include DAC-member country donors and other government donors (Kuwait and the United Arab Emirates). Multilateral institutions include all multilateral organisations reporting ODA to the OECD DAC CRS. The amounts for private donors are based on private development assistance reported to the OECD DAC. It includes contributions from the Bill and Melinda Gates Foundation, the Children's Investment Fund Foundation, plus contributions from other philanthropic foundations. All amounts are constant 2019 prices.

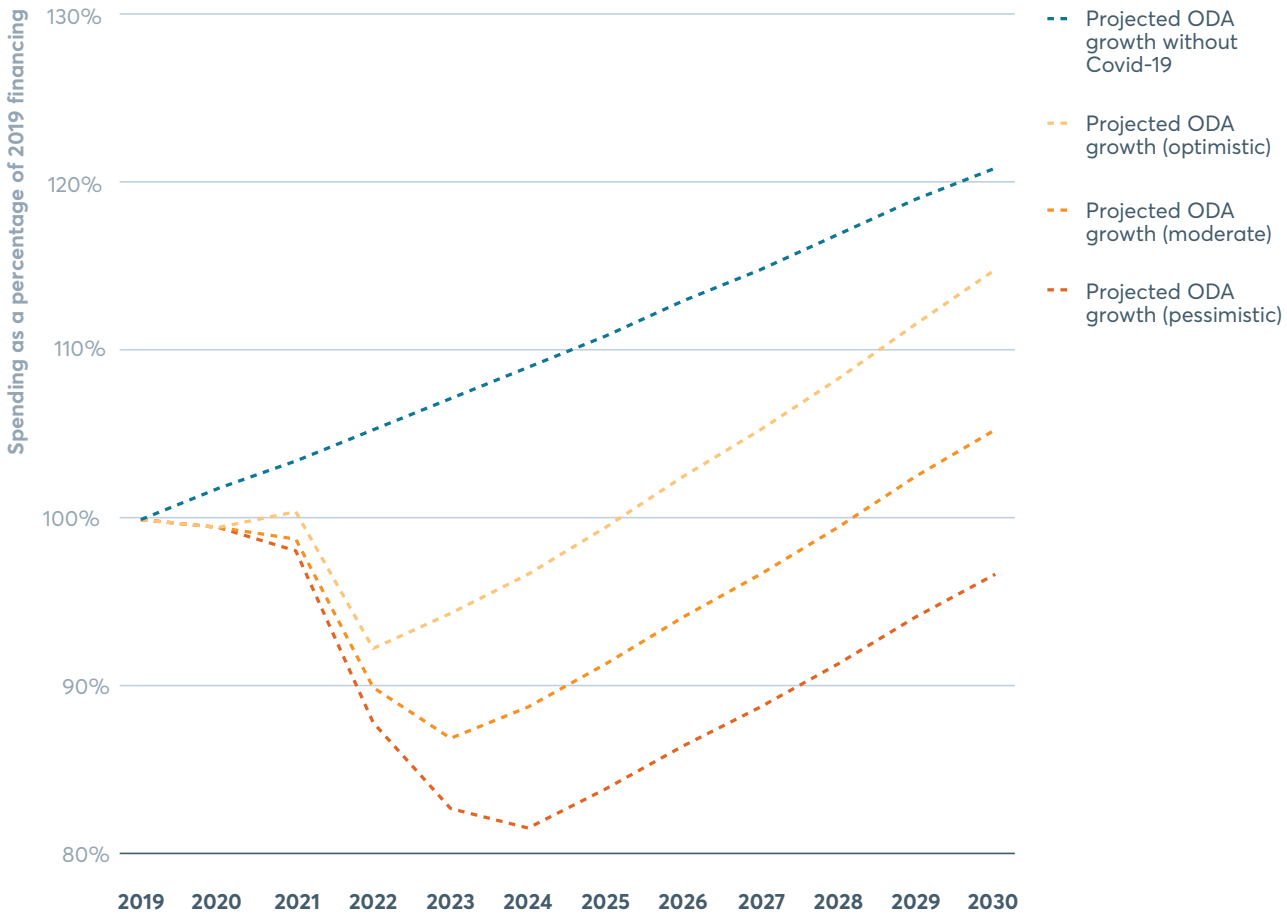
Even before the effects of Covid-19, ODA for basic nutrition was not achieving the growth rates sought in the IFN projections. Further reductions in external funding for health, due to the impact of the pandemic on donor-country economies, will severely impact lower-income countries' ability to meet the increased post-pandemic funding needs and invest in health- and nutrition-related targets.

Other interventions contribute to nutrition but are not accounted for under the basic nutrition CRS code[22] (including obesity and diet-related NCDs), and there is limited information on donors outside the OECD DAC and on South–South donors. ODA for nutrition (specific and sensitive) is projected to decline slightly in 2021, with a more significant fall in 2022. Recovery to pre-pandemic levels is not expected until 2028 (Figure 3.4).

FIGURE 3.4

On current trends, ODA for nutrition is projected to decline due to Covid-19

Projected trends in ODA for nutrition relative to 2019 levels



Source: Authors, based on Osendarp et al. (2021).[23]

There is a clear need for ODA donors to continue honouring past commitments and to raise these at the Tokyo Nutrition for Growth Summit.[24] This is especially important since the countries hardest hit by the economic impact of Covid-19 will be unable to step up domestic resources sufficiently, if at all, especially in the immediate future. Increases in ODA could help offset the expected declines in government expenditures on health and basic nutrition, especially in the next few years.

Further, concessional finance needs to play a bigger role in these circumstances, yet few development banks besides the World Bank Group have as yet stepped up to the challenge.[25] Similarly, data suggests that, besides the Bill & Melinda Gates Foundation (which made a bold commitment at the 2021 UN Food Systems Summit of US$992 million over five years),[26] and to some extent the Children's Investment Fund Foundation, few foundations have delivered substantive financing. However, several new foundations seem to be poised to contribute through the Coalition of Philanthropies for Global Nutrition.[27]

Latest estimates of ODA support for diet-related NCDs suggest that donor resources have increased slightly since 2017, though from a low base, reaching US$117 million in 2019, equal to just 0.06% of total ODA in the same year.[28] Concurrently, many regressive agricultural subsidies, estimated at about US$700 billion annually,[29] continue to be financed through both domestic and ODA sources, with potential for repurposing.

Innovative financing for nutrition

There are currently only two significant sources of innovative finance available for nutrition – the Power of Nutrition[30] (TPoN) and the Global Financing Facility[31] (GFF). TPoN has provided US$171 million and leveraged an additional US$352 million, enabling US$523 million of funding across 17 programmes in 13 LMIC countries and over 40 strategic partnerships, delivering services to over 600 million children and preventing an estimated 415,000 cases of child stunting. GFF, which focuses more broadly on health systems, has allocated US$184 million of grant financing for nutrition linked to US$1.84 billion of International Development Association / International Bank for Reconstruction and Development investments across 25 LMICs, and an additional US$14 million for technical assistance.

In the future, nutrition needs to explore new options for crowding-in innovative finance. Lessons from other development sectors, like education, health and climate change, suggest there is a huge opportunity to leverage new money for nutrition, for example, through sustainable investing and social bonds that have seen rapid growth, and exploring with new climate-related financiers (Box 3.1).
But unless we act now – and ambitiously – we risk perpetuating, in innovative finance, nutrition's traditional status as an aid orphan.

BOX 3.1

Nutrition financing can learn from sustainable investing and social bonds

The Power of Nutrition team, Palladium Impact Capital and World Bank

Some US$1 trillion in sustainable debt for environmental, social and governance (ESG) projects was issued over the last year alone, now totalling US$3 trillion to date. Within this, social bonds soared by 720% from 2019 to 2020, with US$150 billion issued in 2020[32] and US$715 billion in assets under management in 2020 (versus US$50 billion in 2007).[33]

Only two nutrition bonds have ever been issued (IBRD bonds[34] sold in Japan in 2020/21, and one domestic SDG bond issued by the Government of Mexico) – compared to 634 green bonds that mobilised over US$290 billion in 2020 alone.[35] There have been 31 health and 24 education social/development impact bonds, but only 1 in nutrition.

No impact investment funds currently exist in nutrition, although one is being planned.[36] The global health sector has mobilised over US$285 million through five impact investment funds. Philanthropies spent about US$1.2 billion on marine conservation efforts in 2020, and the number of marine funders more than tripled from 486 to around 1,600 between 2010 and 2020,[37] and fishing is a potential source of healthy foods.

There is global interest in repurposing over US$700 billion of agricultural subsidies, some of which could potentially flow to nutrition,[38] as well as using social protection and universal health coverage (UHC) platforms to leverage resources for nutrition (Box 3.2). All of these are unexplored opportunities for nutrition financing, in terms of both the financing instruments and potential links with the sustainable development agenda.

Private sector financing for nutrition: Time to go beyond CSR?

The private sector has a key role to play in nutrition and food systems. While industry leaders have made many public statements about the need to go beyond shareholder value, most private sector investments in nutrition remain at the level of small corporate social responsibility (CSR) projects. While well intentioned, these are sometimes mis-directed, rarely evaluated and usually not designed for impact or scale.

Given current fiscal constraints in the public sector, this is an opportune time for the private sector to fill the financing gap. While much of the focus to date has been on food companies to reformulate unhealthy and ultra-processed foods, other parts of the private sector can contribute with investments through innovative financing facilities, as well as workplace health/nutrition policies and new ESG approaches that have yielded superior financial returns for companies, suggesting a potential win–win solution.[39] Institutional investors, hedge funds, family offices and venture capital are powerful and underutilised stakeholders to stimulate change and innovate toward responsible practices aligned with consumer health, diets and diet-related obesity and NCDs. These approaches not only contribute to market-shaping, but also go well beyond the usual CSR approaches.

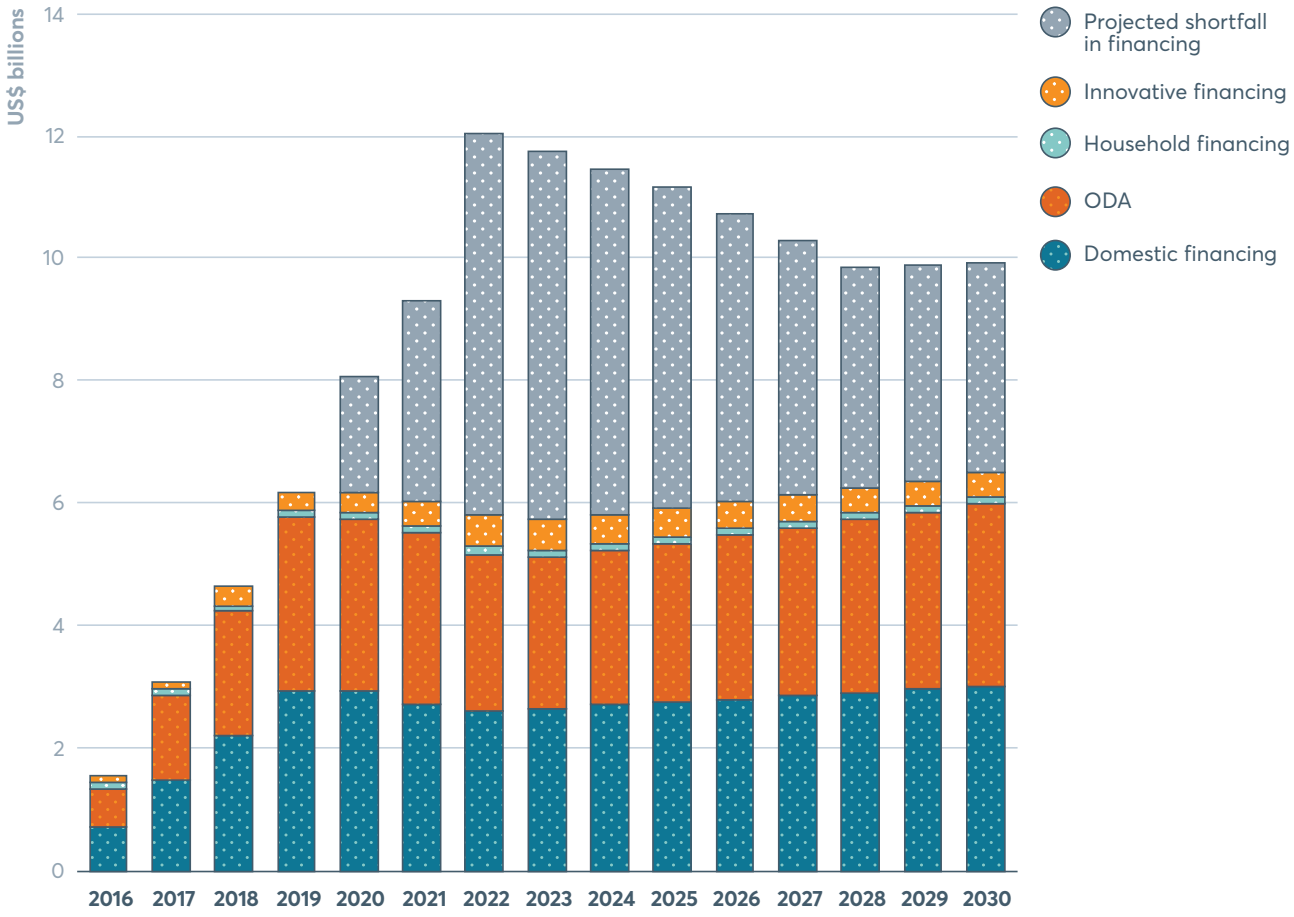
N4G 2020 and beyond: More money for nutrition, more nutrition for the money

The projections for both ODA and domestic financing availability discussed in this chapter suggest a downward trend exacerbated by Covid-19, with recovery to pre-pandemic levels expected only towards the end of the decade. Figure 3.5 shows the expected financing gap and revised projections for burden-sharing across stakeholders.

FIGURE 3.5

Pressure on ODA and domestic financing highlight the need to protect these sources of funds, while encouraging private, innovative and other sources to step up

Projected share of financing need by source, post-Covid-19, and expected gap in total financing



Source: Authors, based on Osendarp et al. (2021).[40]

Note: Shortfall estimates are based on projected trends in financing for the global nutrition targets on stunting in children under 5 years of age, wasting in children under 5 years of age, anaemia in women of reproductive age, and breastfeeding, showing that both ODA and domestic financing will recover only in 2028/2030.

Compared with the projections in the *2020 Global Nutrition Report*, the big shifts are the additional Covid-19-inspired spending on nutrition and the reduction and flattening of the previous anticipated growth trends, especially in additional domestic contributions. As a consequence, the projected shortfalls in required financing are significant. Unless ODA and domestic sources are protected, and non-traditional sources of finance such as innovative financing and private sector sources are stepped up to fill the gap, these financing needs will be unmet.

Looking ahead, three new types of financing mechanisms could fill the resource gap for nutrition.

1. More non-traditional sources of financing could include: domestic bonds, blended impact investment funds and market guarantees, alongside repurposing of agricultural subsidies towards productive food-security/nutrition needs; grant resources to leverage domestic and ODA financing through mechanisms such as The Power of Nutrition complemented with fiscal policies such as taxation on unhealthy foods and beverages;[41] and sovereign bonds such as SDG bonds in Mexico to generate fiscal space in-country.
2. Shifting financing emphasis to the country level could offer low-cost financing to country governments and work with them to earmark nutrition spending and build it sustainably and systemically into long-term country budgets. Large mechanisms in other development areas (such as the International Finance Facility for Education) use guarantees and grants to mobilise low-cost financing at scale that could offer lessons for nutrition.
3. Leveraging the private sector could shape markets towards healthier food systems. The private sector is the most untapped financing source in nutrition, and could go far beyond reformulating unhealthy foods, workforce nutrition and CSR projects, to include ESG investments catalysed by hedge funds and institutional investors in the food sector. This is a key area for growth that could bring together the private sector's need for a business case and new opportunities for ESG-related nutrition financing.

We need more money for nutrition, but we also need to deliver more nutrition with the available resources (Box 3.3). exemplifies how efficiency can be improved – either through use of an allocative efficiency tool, the Optima Nutrition tool, or improving the efficiency of spending by encouraging countries to undertake careful Public Expenditure Reviews (PERs) albeit the multisectoral nature of nutrition offers significant challenges.

BOX 3.2

Financing nutrition under UHC can increase resources for nutrition

Michelle Mehta, Ali Subandoro and Meera Shekar

Nutrition-specific service coverage and quality remains low across many settings. Optimising health financing levers under universal healh coverage (UHC) remains an untapped area because countries often commit to 'include nutrition' in UHC but fail to specify what this involves. Countries need:

- a clearly defined nutrition package of services under UHC
- a financing strategy that effectively enhances allocative efficiency (e.g. Optima Nutrition or NPERs)
- an integrated system to monitor expenditure, service delivery, and results.

In the current fiscal environment, countries need to align their nutrition objectives with health financing systems, including specific mechanisms of revenue raising, pooling and purchasing under UHC. These can also help to integrate nutrition into UHC financing plans, as the President of Ghana committed to do at the 2021 UN Food Systems Summit. Some possible mechanisms include revenue raising through fiscal policies such as taxation on unhealthy foods, pooling and aligning different sources of financing and bringing off-budget donor funds on-budget, and developing performance-based financing schemes that include high-impact nutrition services.

BOX 3.3:

Improved spending efficiency can produce better results: Examples from the Optima Tool and Nutrition PERs

Nick Scott, Jonathan Akuoku, Yi-Kyoung Lee, Davide De Beni, Kyoko Shibata Okamura, Ali Subandoro and Huihui Wang

Allocative efficiency refers to resource allocation that maximises benefits by funding the most cost-effective mix of interventions. The Optima Nutrition model was used to estimate the impact of optimising a US$180 million per annum additional investment among the lowest wealth quintile in Pakistan. Specialised nutritious food (SNF) supplementation is a high-impact but expensive intervention for reducing stunting in children. A proposed approach to investing in SNF for only children and pregnant or lactating women was estimated to lead to an additional 54,000 alive and non-stunted children over 2020–2024. The same investment allocated optimally across interventions was estimated to lead to more than four times the impact – an additional 230,000 alive and non-stunted children turning age five years over 2020–2024, providing guidance for efficient allocations (Figure 3.6).

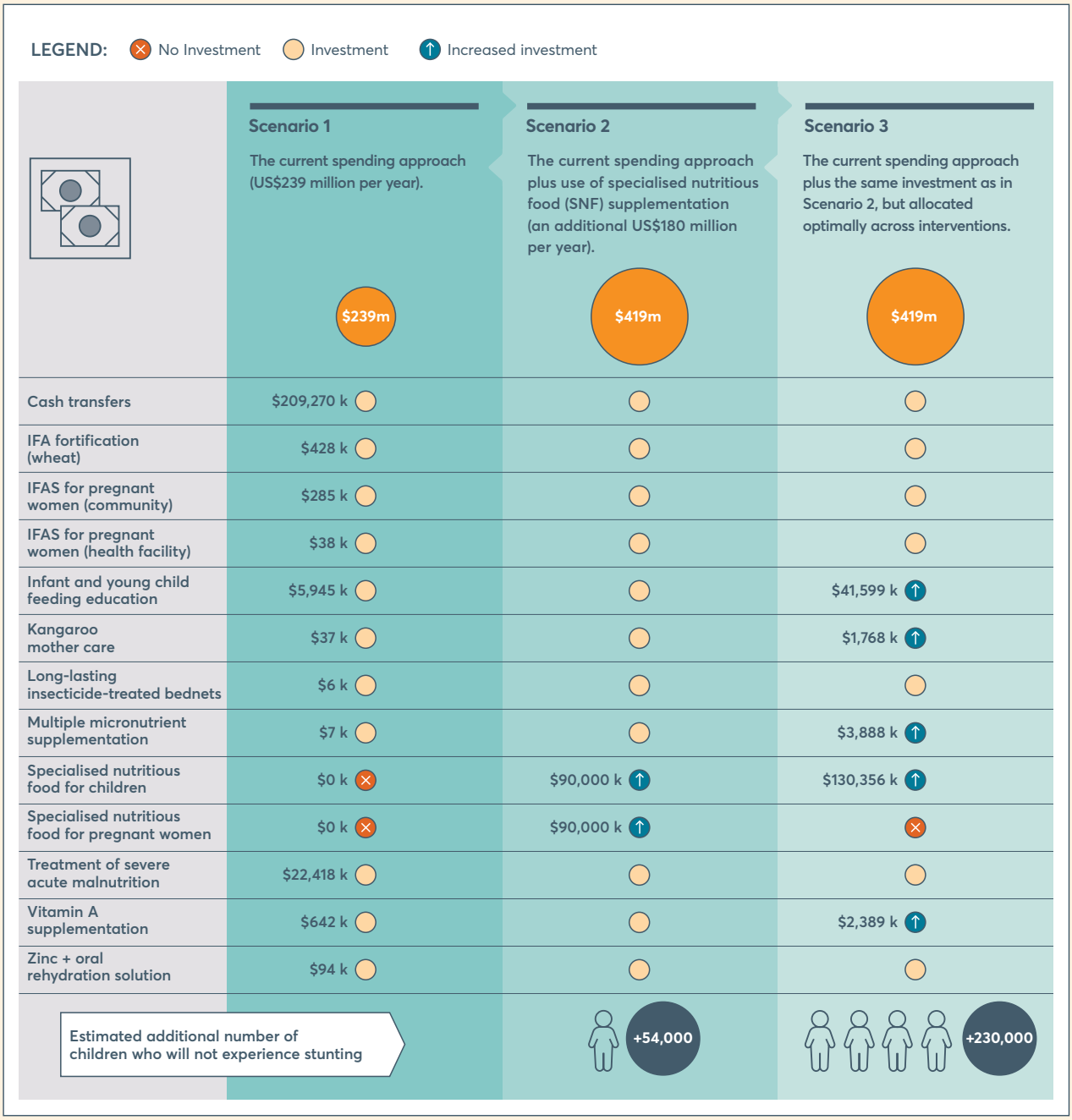
Nutrition public expenditure reviews (NPERs), another approach to improving efficiency, differ from sectoral PERs since they transcend multiple sectors. When done well, an NPER goes beyond quantifying how much is allocated or spent on nutrition to analyse how well the money is being spent across sectors. An NPER encourages:

- engagement of ministries of finance and/or planning in multisectoral discussions of fiscal implications
- transparency, through publication and consultation, on what constitutes nutrition spending
- informing the national nutrition strategy and investment plans
- formulating evidence-based, actionable recommendations on strategic resource allocation for improved effectiveness, efficiency and equity
- addressing institutional strengths and weaknesses and mainstreaming nutrition expenditure within public financial management.

In Bangladesh, the NPER of 2019 resulted in major policy revisions, including explicit nutrition- and gender-sensitive elements in social safety net programmes, and the addition of a chapter on nutrition in the National Social Security Strategy. Similarly, the Rwandan NPER of 2020 contributed to advancing dialogue with the ministry of finance on the need for 'nutrition-responsive budgeting' to improve oversight across all agencies and levels of government.

FIGURE 3.6

Additional annual budget allocations and estimated impact of the scenarios modelled among the lowest wealth quintile in Pakistan, 2020–2024



Source: Nick Scott and Jonathan Akuoku based on Nick Scott (Burnet Institute), Jonathan Akuoku (World Bank), Yi-Kyoung Lee (World Bank), Davide De Beni (Consultant) (2020) Optima Nutrition Analysis: Pakistan, February 2019.

Notes: A larger budget does not necessarily mean an intervention has greater coverage or priority than another with a lower budget. An intervention with a relatively low unit cost, such as vitamin A supplementation, could be scaled up to full coverage while receiving a small portion of the overall budget, whereas an intervention like SNF may be allocated a greater portion of the budget but achieve lower coverage due to a higher unit cost. Figures are rounded to the nearest thousand. IFA = iron and folic acid; SNF = specialised nutritious food; SAM = severe acute malnutrition.

Conclusion

Estimated nutrition-specific financing needs have increased, at least partly due to Covid-19 mitigation measures, from US$7 billion/year to US$10.8 billion/year over 2022–2030 (based on an estimated total of US$97 billion). When nutrition-sensitive needs and the wider SDG 2/ global nutrition targets are included, financing needs are estimated at US$39–50 billion/year, although the impact of additional investments on the global nutrition targets is unclear.

Domestic and ODA resources will need to be protected, while increased needs are met by other sources. These include greater investment through concessional loans, innovative financing mechanisms and the private sector, as well as repurposing regressive subsidies and delivering more with less through utilisation of better data and improved allocative efficiencies.

Despite recent improvements,[42] data on the external, domestic and private resources available to support nutrition remain limited. Information on financing needs for nutrition-sensitive elements are even more limited, with little information on expected results. Continued improvement in data systems is critical for monitoring progress and is a prerequisite for accountability against past, present and future commitments and for driving efficiencies. The Nutrition Accountability Framework by the Global Nutrition Report has been designed to support the monitoring of nutrition commitments, including financial investments, to improve accountability for nutrition worldwide.[43]

Overall, there are significant opportunities for strengthening innovative financing for nutrition but developing these will require significant risk appetite from non-traditional financiers, especially in the private sector. Nutrition investments can be accessed across multiple platforms, including UHC, social protection and food security, in order to maximise potential financing across these sectors. Scaling non-traditional and innovative finance requires an appetite for risk and a focused effort, yet the opportunity for nutrition is strong. Dedicated technical skills and venture capital could solve major issues the sector has faced in unlocking new capital.

KEY RECOMMENDATIONS

- **External and domestic financing for nutrition should be sustained and increased, with nutrition embedded within universal health coverage, social protection and food security programmes.**

  Nutrition has suffered greatly as a consequence of Covid-19. This underpins the need for sustained growth in financing, already lagging even before the pandemic. Nutrition must be included as a key component of international aid and domestic resources as part of the 'building back better' agenda true to the aspirations of the G7 Communique and G20 Call for Action to meet the updated post-Covid-19 financing needs of US$10.8 billion/year for nutrition-specific needs and up to US$50 billion/year inclusive of nutrition-sensitive needs.

- **In the face of inevitable funding challenges, non-traditional sources of finance – such as innovative finance and the private sector – need to step up.**

  Given constraints on both domestic and international resources, non-traditional sources of finance urgently need to fill the gap in the short to medium term. The private sector and venture capital financiers, in particular, have a key role to play, assuming the role of investors and change agents.

- **In the current environment, new tools that maximise the impact of available financing should be leveraged to support national governments.**

  More money alone will not solve nutrition challenges. We need to deliver more nutrition for the money we have. This requires, for example, nutrition-focused public expenditure reviews to enhance how money is spent to achieve better nutrition outcomes, and smart tools to enable better-targeted allocations of resources.

2012. Laos.
Local communities contribute to a feeding program for primary school students.
© Bart Verweij / World Bank

04

From promise to action: Progress towards the 2013 and 2017 Nutrition for Growth commitments

KEY POINTS

1. By 2020, while slightly over 40% of donors and civil society organisations had reached their financial commitment goals on Nutrition for Growth, there was limited progress towards country financial and impact commitment goals.

2. Only 36% of all the Nutrition for Growth commitment goals were aligned with the six global targets on maternal, infant and young child nutrition. No commitment goals aligned with the diet-related targets on non-communicable diseases.

3. The Covid-19 pandemic severely affected 43% of country commitment goals. Progress was hindered due to a lack of funding or diversion of national revenue and resources towards Covid-19 mitigation.

Introduction

Nutrition for Growth (N4G) is a global effort that brings together all stakeholders, including country governments, donors, businesses, and civil society organisations (CSOs) to accelerate progress on tackling poor diets and malnutrition in all its forms.[1] During the 2013 N4G Summit, stakeholders came together to scale up political commitments, increase financial investments and take urgent action[2] that led to 110 stakeholders making 357 commitments. The 2017 N4G Summit led to an additional 34 commitments from 16 stakeholders. Between 2013 and 2017, the N4G effort raised US$7.4 billion[3] in nutrition-specific and US$19 billion in nutrition-sensitive investments.[4]

The Global Nutrition Report (GNR) was a key commitment of the N4G Summit in 2013 to monitor nutrition commitments and assess translation to impact, to accelerate progress in tackling poor diets and malnutrition in all its forms worldwide (Chapter 1). In 2021, to support the registration and reporting of new and SMART[5] nutrition commitments made in the Nutrition for Growth Year of Action and beyond, the GNR has set up the Nutrition Accountability Framework (NAF). The role of the GNR and its stewardship in monitoring the state of the world's nutrition is more critical than ever, given the toll of the Covid-19 pandemic on food systems, nutrition and food security, and consequences for maternal and child undernutrition,[6,7,8] as well as the powerful intersections between diet-related non-communicable diseases (NCDs) and Covid-19 outcomes (Chapter 1 Box 1.1 and Box 1.2).

In this chapter, we assess progress on N4G 2013 and the Global Nutrition Summit 2017 commitment goals in 2020, followed by preliminary analysis of the ongoing 2021 assessment, and examine the alignment of these N4G commitments with the global nutrition targets. We also assess the impact of the Covid-19 pandemic on stakeholders' ability to achieve their ongoing commitment goals (Box 4.1).

The N4G commitments

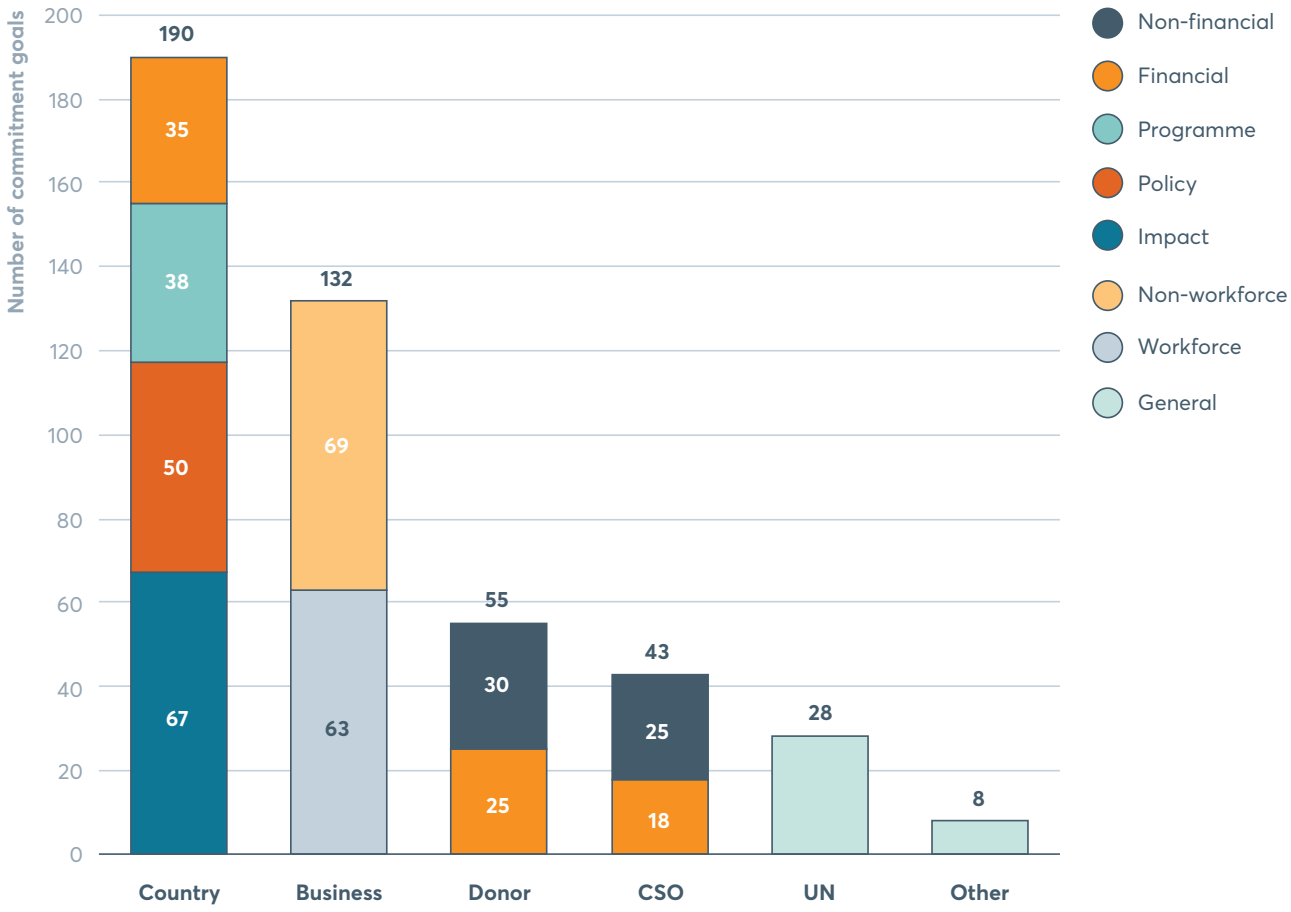
The GNR has implemented the N4G tracker survey annually since 2014, to assess progress towards commitments made by stakeholders at the 2013 and the 2017 Summits (Figure 4.1).[9,10] Progress is assessed using a comprehensive methodology available online: Global Nutrition Report | N4G Commitment Tracker methodology. With no "a priori" classification system established, the past N4G commitments were categorised into specific categories by stakeholder type.[11] Country commitments were grouped into policy, programme, financial and impact commitments; business commitments into workforce and non-workforce commitments; commitments from UN, and other groups into general commitments; while commitments from donors and civil society organizations (CSOs) into financial and non-financial commitments.[12] Details on progress for each stakeholder can be found on the Nutrition for Growth Commitment Tracker webpage of the Global Nutrition Report.

Commitments, as reported by stakeholders, could have one or multiple measurable goals. A measurable goal is what the stakeholder has committed to achieve and is used to track and assess progress made towards the commitment. Given the lack of initial classification on how formulated commitments were to be tracked (ensuring SMART-ness and comparability across stakeholders),[13] we standardised commitments by disaggregating them into 'commitment goals'. Thus, if a stakeholder had made one commitment with two distinct measurable goals, progress was assessed for each of the two commitment goals separately. We refer to these measurable goals as commitment goals.[14] Of 391 commitments, we enumerated 456 commitment goals, 416 made during the 2013 Summit and 40 during the 2017 Summit.

FIGURE 4.1

Countries have the highest number of commitment goals, most made in the N4G 2013 Summit

Number of commitment goals by stakeholder type



Source: Authors and collaborators based on Global Nutrition Report (2020) Nutrition for Growth Commitment Tracker. Bristol, UK: Development Initiatives.
Notes: The total number of commitment goals is 456 (of 391 commitments). The 'other' category includes research agencies and institutes such as the Consultative Group for International Agricultural Research. Values reflect the absolute number of commitment goals by stakeholder type made at past N4G summits (2013 and 2017 combined).

Progress in 2020, on achieving the 2013 and 2017 N4G commitments

Progress reporting in 2020 had a response rate of 61% (69% for the 2013 commitment goals and 48% for the 2017 commitment goals). The highest response rate was recorded among donors (79%) and CSOs (80%) and the lowest response rate among businesses (33%) and the 'other' category (28%).[15] This represents a substantial decline in the response rate compared to 2014 (90%), but an increase since the lowest response rate recorded in 2017 (51%).[16] Irrespective of summit year, the 2020 progress assessment revealed that 38% of commitment goals were on course while 16% of commitment goals had been reached by 2020. Of those commitment goals made in 2013 (n=343), 17% (n=58) had been reached by 2020 and 39% (n=135) were on course. Of those made in 2017 (n=40), only 5% (n=2) had been reached and 30% were on course (n=12).

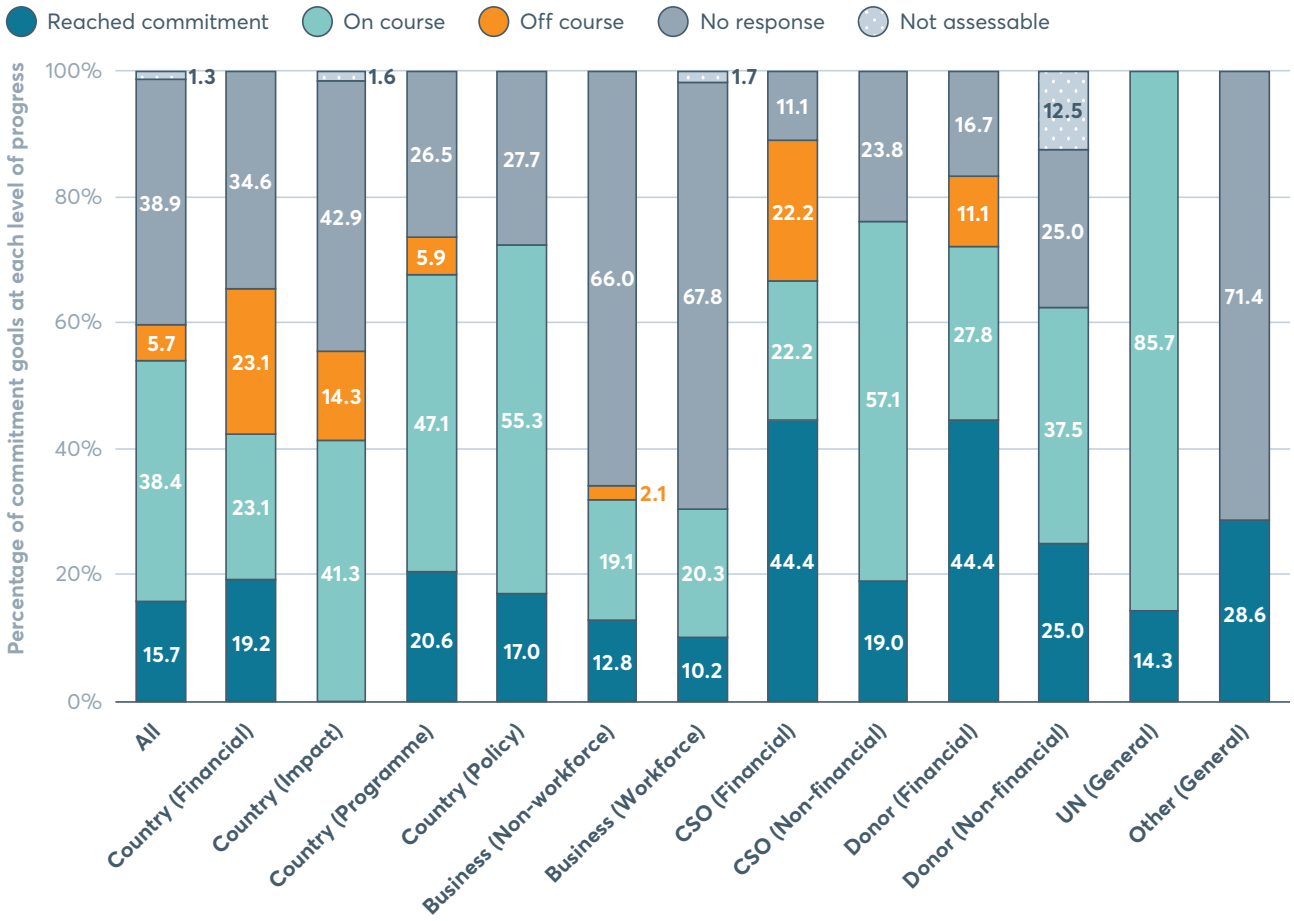
By stakeholder type, goals made in the 2013 Summit that had been reached were: 39% of donor goals (12 of 31 commitment goals), 13% country (20 of 150), 29% civil society (8 of 28), 29% other (2 of 7), 14% UN (4 of 28) and 12% business (12 of 125). The 2013 goals on course to be met were: 86% of UN (24 of 28 commitment goals), 26% donor (8 of 31), 46% country (69 of 150), 46% civil society (13 of 28) and 21% business (21 of 99). Of commitment goals set at the 2017 summit, 18% of donor goals had been reached (2 of 11), while there was progress 'on course' for 50% of civil society commitment goals (1 of 2), 25% country (5 of 20) and 55% donor (6 of 11).[17] No business commitment goal made in 2017 had been reached or were on course.

Figure 4.2 shows progress in 2020 by stakeholder and type of commitment goal, combined for both summits (n=383 goals).[18] As of 2020, over 40% of financial commitment goals made by donors (8 of 18 goals) and civil society (4 of 9 goals) had been reached, but 23% of country (6 of 26 goals), 22% of civil society (2 of 9 goals) and 11% of the financial commitment goals made by donors (2 of 18 goals) were off course. Between 40% and 55% of country impact, programme and policy commitment goals and civil society non-financial commitment goals were on course, as were 86% of UN commitment goals. For the 2013 Summit specifically, 18% of country financial, 14% of civil society and 9% of donor financial commitment goals were off course. Commitment goals made in the 2017 Global Nutrition Summit were fewer and response rate was low.

FIGURE 4.2

Just over half of all commitment goals made at past N4G summits were either reached (16%) or on course (38%) by 2020

Reported progress in 2020 towards commitments made in the 2013 and 2017 N4G Summits



Source: Authors and collaborators based on Global Nutrition Report (2020) Nutrition for Growth Commitment Tracker. Bristol, UK: Development Initiatives.
Notes: This figure shows percentages of all unique commitment goals (n=383) made at past N4G summits (2013, 2017) and excludes those classified as not applicable (n=73).

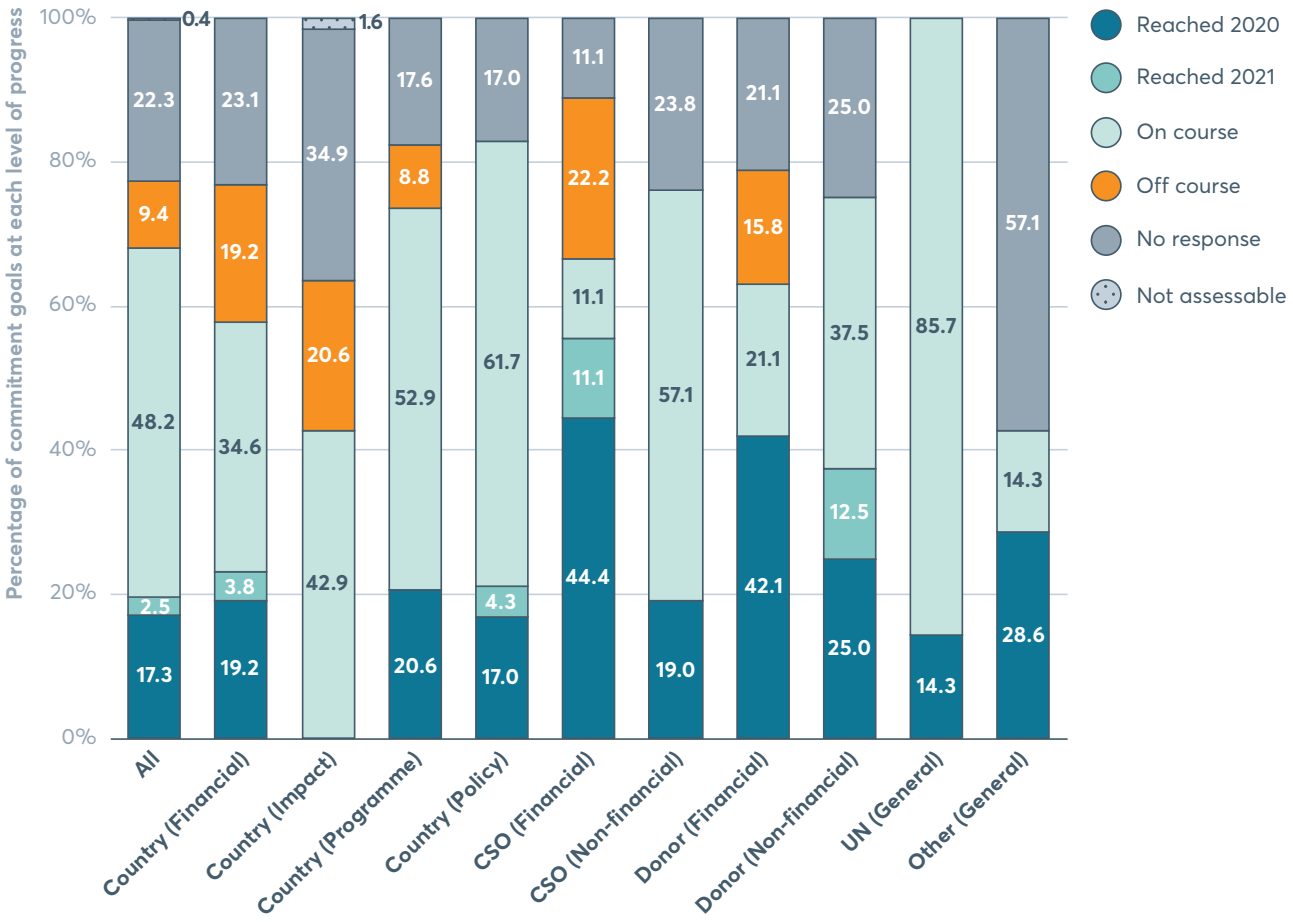
Progress on achieving the 2013 and 2017 commitment goals in 2021: Preliminary findings

The 2021 N4G tracker survey was deployed in June 2021; by August 2021, 54 stakeholders had reported on their progress.[19] While there is substantial progress across stakeholders, about 20% of country-level financial and impact commitment goals are still off course (Figure 4.3). A complete picture of progress will be available on completion of the survey (November 2021) on the N4G tracker website.[20] The N4G tracker also included questions to assess the impact of Covid-19 on progress in achieving goals (Box 4.1).

FIGURE 4.3

Donors and civil society made the best progress between 2020 and 2021 towards meeting financial commitment goals

Progress achieved by commitment goal and stakeholder type, 2021



Source: Authors and collaborators based on the 2020 and 2021 Global Nutrition Report Nutrition for Growth Commitment Trackers. Bristol, UK: Development Initiatives.
Notes: The total number of unique commitment goals followed up on was 456. The substantially reduced unique commitment goals are due to exclusion of business stakeholders (n=132) and those classified as not applicable (n=46). Thus, a total of 278 unique commitment goals are assessed in this figure and include those that reached commitment in 2020 (n=48), reached commitment in 2021 (n=7), on course (n=134), off course (n=26), non-assessable (1) and no response (62) as of August 2021.

Alignment of N4G commitment goals with the global nutrition targets

We assessed the alignment of N4G commitment goals (2013 and 2017) with the global nutrition targets by conducting an in-depth review of all commitment goals and coding each goal based on the language of the commitment. The global nutrition targets include the six maternal, infant and young child nutrition (MIYCN) targets and the three diet-related non-communicable disease (NCD) targets. To assess alignment, we coded each commitment goal as aligning with a global nutrition target if the goal made any reference to that global nutrition target. For example, with respect to the stunting target, a commitment goal was considered aligned if it addressed stunting whether it specified the exact target or had a different one (e.g., 50% reduction instead of 40% reduction in stunting). Similarly, if a goal outlined actions to support a target (e.g., a social behaviour change campaign to promote breastfeeding or a maternal workforce nutrition policy), it was considered to align with the exclusive breastfeeding target.

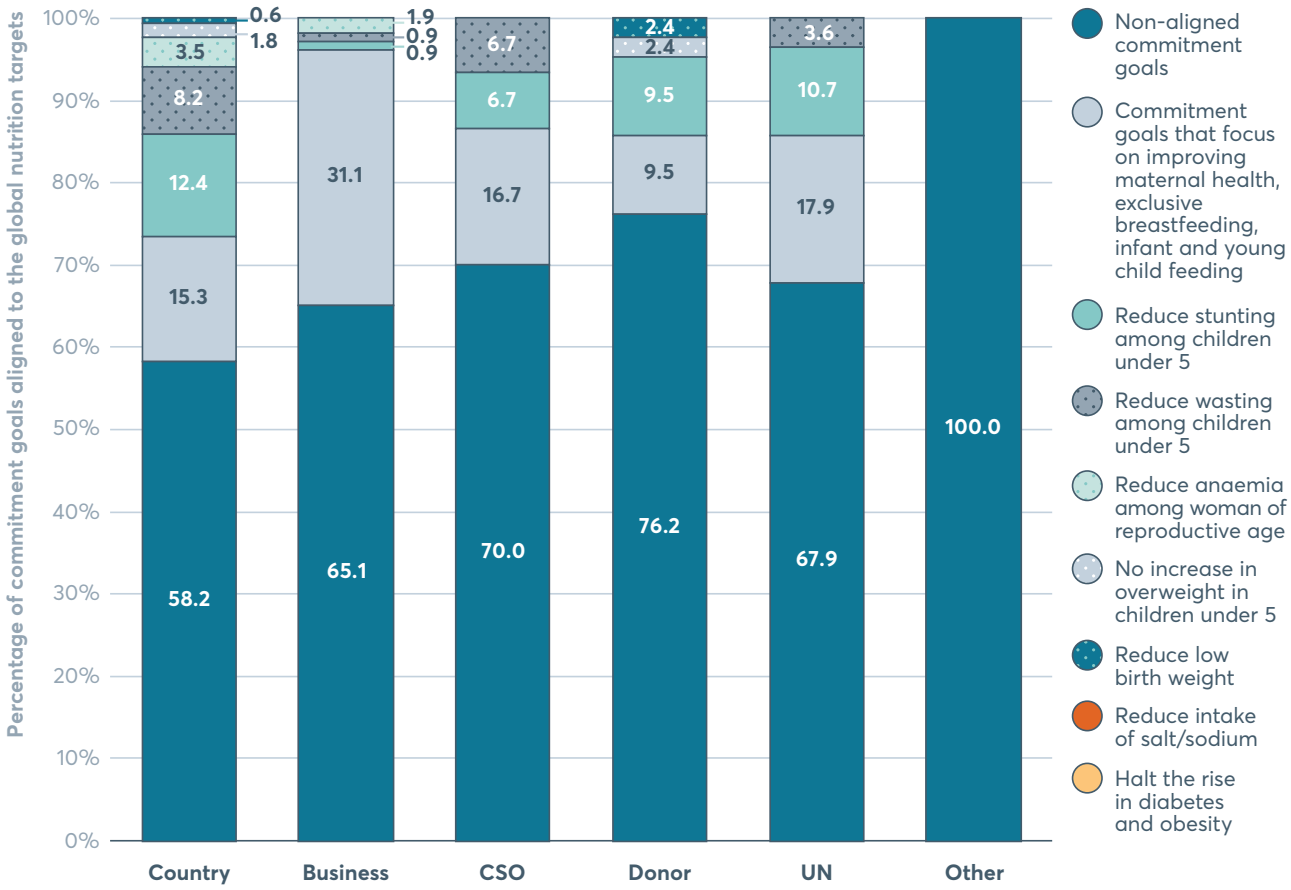
Of the 383 commitment goals, 136 commitment goals (36%) aligned to at least one of the six MIYCN global nutrition targets. These were 71 country, 9 UN agency, 9 civil society, 10 donor and 37 business commitment goals. There were no commitment goals aligned with the three-diet related NCD targets. Most aligned country commitment goals focused on MIYCN improvements, and reduction in stunting and wasting. In absolute numbers: 31 goals were aligned with reduction of stunting (8.1%), 8 with reducing anaemia (2.1%), 2 with preventing low birth weight (0.5%), 4 with prevention of overweight in children under 5 years of age (1.0%), 73 on improving maternal health, breastfeeding, infant and young child feeding (19.1%) and 18 on reduction of wasting (4.7%). There were 247 goals not aligned with any of the nine targets (64.5%) (Figure 4.4).

We separately examined all the commitment goals and found few that referred to improvements in diets. Only 17 commitment goals focused on improving food production/quality and emphasised nutrition-sensitive agriculture which may indirectly support improved diets. While committing to diet-related goals or other diet-related targets was not part of the commitment-making process in either the 2013 or 2017 Summits, healthy diets are critical in preventing all forms of malnutrition. This deficiency is being addressed with the Tokyo N4G 2021 Summit calling for action on prioritising nutrition across health and food systems, advocating for instance for a 'Whole of Government Food System Action Plan' and forming a multisectoral response to promote healthy and sustainable diets and reduce diet-related diseases.[21]

FIGURE 4.4

Commitment goals aligned to the global nutrition targets primarily focused on reducing stunting and improving MIYCN

Distribution of commitment goals by alignment to the global nutrition targets



Source: Authors and collaborators based on Global Nutrition Report (2020) Nutrition for Growth Commitment Tracker. Bristol, UK: Development Initiatives

Notes: The total number of commitment goals aligned were 383, of which 247 were general commitment goals, 136 aligned with six MIYCN targets. No goals aligned with the three diet-related targets.

Challenges in measuring progress

The GNR established a systematic and standardised approach in tracking the N4G commitments, yet there were several challenges that affected assessment.[22] First, commitments as formulated at the time did not meet the SMART (Specific, Measurable, Achievable, Relevant and Time-bound) criteria. An assessment made in 2015 and 2016 found that only 29% of the N4G commitments met the SMART criteria. While impact and financial commitments were more likely to be SMART, progress towards these was also least likely to be on course.[23]

The need for trackable SMART nutrition commitments has been long emphasised as critical, and essential for accountability. An independent accountability framework for nutrition was advocated and called for by a joint statement of the N4G Summit on Nutrition and the UN Food Systems Summit.[24] The Nutrition Accountability Framework (NAF) is the world's first independent and comprehensive global accountability framework for nutrition, designed to drive stronger nutrition action and accelerate progress in tackling poor diets and malnutrition in all its forms. The NAF has established SMART criteria for assessing commitments, with commitments made during the Nutrition for Growth Year of Action being the first to be assessed.[25]

Second, progress toward these commitments is self-reported by stakeholders, there is potential for incomplete or biased reporting that threatens the validity of the reporting.[26] Information bias can be generated by either poor or incorrect recall or the need for social desirability or approval. Validating data-collection tools can help to overcome such biases, as addressed by the NAF.

Third, the lack of initial guidance and a classification system for commitment goals led stakeholders to use different approaches in formulating and recording their commitments. While some stakeholders bundled multiple goals within one commitment, others submitted individual goals or actions as commitments. This made comparison over time and across stakeholder groups difficult. In this chapter, we disaggregate commitments into individual 'unique' commitment goals to make them comparable. This also allows us to assess alignment with the global nutrition targets, as well as to compare progress more accurately across and within stakeholder groups. The NAF also uses this approach during the commitment registration process.[27]

Fourth, the response rate across stakeholders has declined considerably over time, indicating reporting fatigue. Coordination and collaboration across different mechanisms of measuring accountability and tracking progress is critical to relieve reporting burden, a major consideration being addressed through the NAF.[28]

BOX 4.1

The Covid-19 pandemic has affected progress in country commitment goals

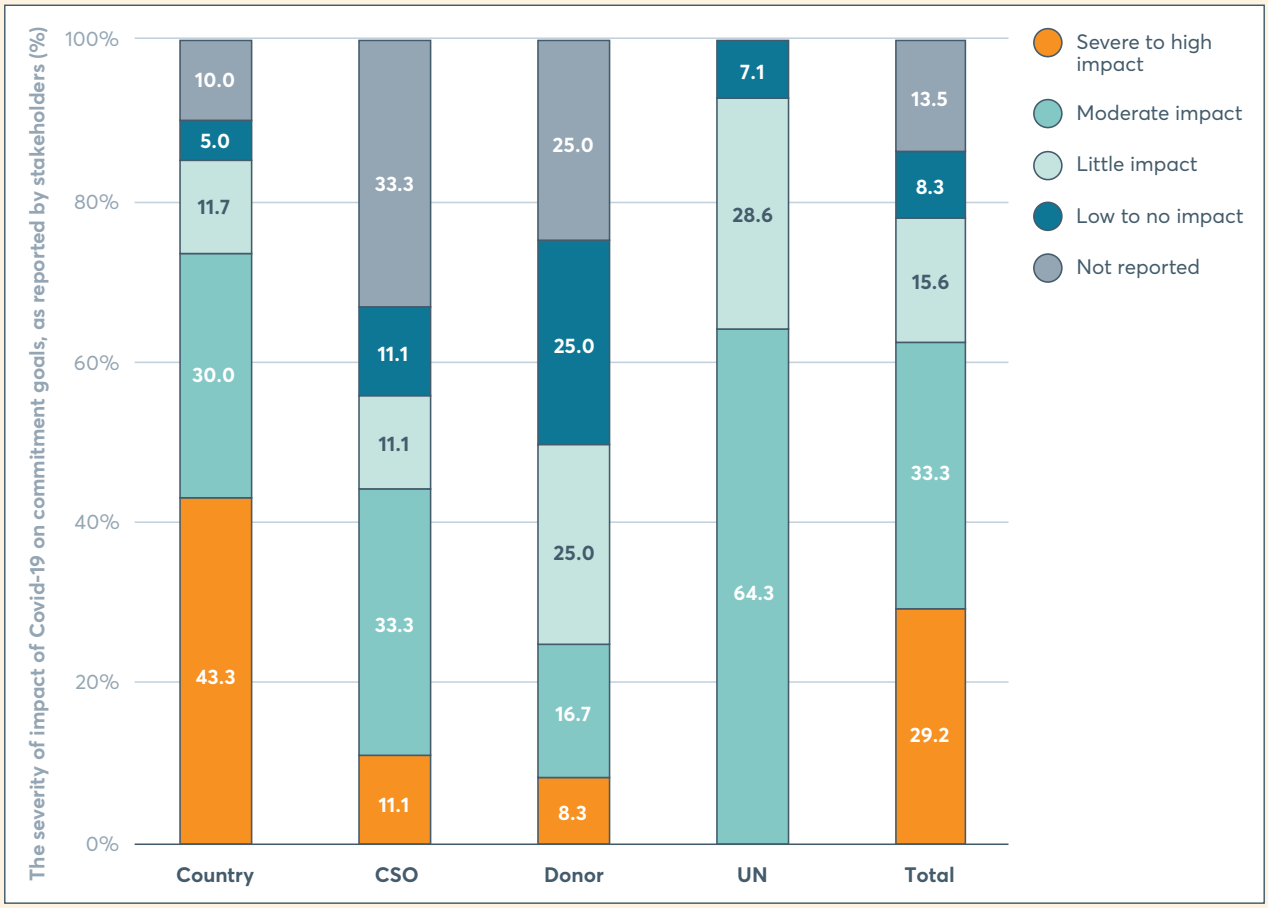
Shibani Ghosh and Mariachiara Di Cesare

The impacts of the Covid-19 pandemic on maternal and child undernutrition and child mortality and food security have been highlighted by the global community (Chapter 1).[29,30,31,32] The impacts of overweight and obesity, type 2 diabetes and hypertension on worsening complications of Covid-19 are also well documented.[33,34] The GNR, as part of its annual N4G tracking, has expanded the 2021 survey to assess how the Covid-19 pandemic has affected progress in achieving commitment goals. In this ongoing survey, of the 230 commitment goals that have been reported on, 28 were reported to have been severely-to-highly impacted by the pandemic, 32 moderately and 23 with little or low-to-no impact. Twenty-six country commitment goals were severely to highly impacted (43% of all country commitment goals), with 18 moderately impacted and 15 with low/little-to-no impact by Covid-19 (Figure 4.5). The most common stated reasons were a general lack of funding for achieving the nutrition commitment, due to either a lack of revenue at the national level because of economic disruptions or diversion of resources (both national and donor aid) for Covid-19 interventions.

FIGURE 4.5

Covid-19 has primarily affected commitment goals made by countries

Reported impact of the Covid-19 pandemic by stakeholder type, 2021



Source: Global Nutrition Report (2021) Nutrition for Growth Commitment Tracker. Bristol, UK: Development Initiatives.
Notes: This figure includes stakeholders that had not reached their commitment goals by 2020 and responded to the Covid-19 questions in the 2021 survey (n=96 out of 230 unique commitment goals).

Conclusion

The need to tackle poor diets and malnutrition in all its forms is well established. Malnutrition in all its forms has shared causes, and tackling these necessitates integrated action and surveillance.[35,36] While progress has been made, stunting and wasting remain significant issues in low-income countries, as does prevalence of anaemia in women while the burden of death and disability due to poor-quality and unhealthy diets continues to escalate (Chapter 1 and Chapter 2).[37,38] While there is progress, countries are not on course to meet their financial and impact commitment goals. Only 36% of commitments made in past N4G summits aligned with MIYCN targets while none aligned with the diet related NCD targets. The likely reason for this is the lack of focus on diet-related conditions in the first N4G summit. However, there is renewed attention and focus on addressing malnutrition in all its forms, including emphasis on building food systems that promote sustainable and healthy diets.[39]

There have been significant challenges in measuring progress, which have been long recognised by the nutrition community. The GNR has launched the Nutrition Accountability Framework, which addresses many of these challenges. Finally, the Covid-19 pandemic has had severe impacts on financial resources at the country level, which is likely to decelerate progress. Despite the ongoing pandemic, the global community is galvanising, during the Nutrition for Growth Year of Action, the UN Food Systems Summit and the Tokyo N4G 2021 Summit, to take strong nutrition action to win the fight against poor diets and malnutrition in all its forms.

KEY RECOMMENDATIONS

- **To achieve the global nutrition targets, country stakeholders must intensify and accelerate efforts to reach their commitment goals, particularly financial and impact goals.**

  There has been progress by donor and civil society groups on reaching their commitment goals in 2020, yet there is far less progress by countries towards financial and impact commitment goals. While most country impact commitment goals appear to be 'on course', very few 'reached commitment'.

- **We advocate for stakeholders of the Tokyo N4G Summit to make SMART commitments targeting undernutrition, anaemia, micronutrient inadequacy, overweight, obesity, NCD mortality and disability. Special attention is needed to ensure equitable, sustainable and healthy diets for all.**

  Only 36% of all the N4G commitment goals were aligned with the six MIYCN targets and most do not meet the SMART criteria. None of commitment goals specifically targeted improving diets. While diet-related goals were not explicitly targeted in either the 2013 or 2017 Summits, there is urgent need for action on diet-related commitments and goals.

- **Following revenue and economic disruptions due to the Covid-19 pandemic, which have hampered achievement of country commitment goals, we recommend urgent assessment of the impact of the pandemic and of additional financing needs to ensure that past progress is not lost.**

  Of all country goals, 43% were severely or highly affected due to financial constraints. Diversion of revenue and resources towards the Covid-19 pandemic were reported. We must act to ensure that we do not lose progress made so far in improving nutrition worldwide.

APPENDIX 1: CHAPTER 2 METHODOLOGY AND DATA SOURCES

A2.1 Comparative risk assessment

We estimated the mortality and disease burden attributable to dietary and weight-related risk factors by calculating population impact fractions (PIFs), which represent the proportions of disease cases that would be avoided when the risk exposure was changed from a baseline situation to a counterfactual situation. For calculating PIFs, we used the general formula:[1,2,3]

$$\mathrm{PIF} = \frac{\int \mathrm{RR}(x)\mathrm{P}(x)\mathrm{d}x - \int \mathrm{RR}(x)\mathrm{P}(x)\mathrm{d}x}{\int \mathrm{RR}(x)\mathrm{P}(x)\mathrm{d}x}$$

where $RR(x)$ is the relative risk of disease for risk factor level x, $P(x)$ is the number of people in the population with risk factor level x in the baseline scenario, and $P'(x)$ is the number of people in the population with risk factor level x in the counterfactual scenario. We assumed that changes in relative risks follow a dose-response relationship, and that PIFs combine multiplicatively, that is $PIF = 1 - \prod i(1 - PIFi)$ where the i's denote independent risk factors.[4]

The number of avoided deaths due to the change in risk exposure of risk i, $\Delta deathsi$, was calculated by multiplying the associated PIF by disease-specific death rates, DR, and by the number of people alive within a population, P:

$$\Delta deathsi(r, s, a, d) = PIFi(r, s, a, d) \cdot DR(r, s, a, d) \cdot P(r, s, a)$$

where PIFs are differentiated by region r, sex s, age group a, and disease/cause of death d; the death rates are differentiated by region, sex, age group and disease; the population groups are differentiated by region, sex and age group; and the change in the number of deaths is differentiated by region, sex, age group and disease.

A2.2 Data for comparative risk assessment

We used publicly available data sources to parameterise the comparative risk analysis. We used consumption data differentiated by age and food group from the Global Dietary Database for the years 2010 and 2018.[5] Mortality and population data was adopted from the Global Burden of Disease project.[6] Baseline data on the weight distribution in each country was adopted from a pooled analysis of population-based measurements undertaken by the non-communicable disease (NCD) Risk Factor Collaboration.[7]

The relative risk estimates that relate the risk factors to the disease endpoints were adopted from meta-analyses of prospective cohort studies for dietary weight-related risks.[8,9,10,11,12,13,14,15,16] In line with the meta-analyses, we included non-linear dose-response relationships for fruits and vegetables, and nuts and seeds, and assumed linear dose-response relationships for the remaining risk factors. As our analysis was primarily focused on mortality from chronic diseases, we focused on adults aged 20 years or older, and we adjusted the relative-risk estimates for attenuation with age based on a pooled analysis of cohort studies focused on metabolic risk factors,[17] in line with other assessments.[18]

SI Table 1 provides an overview of the relative-risk parameters used. For the counterfactual scenario, we defined theoretical minimum risk exposure levels (TMRELs) as follows: 300 grams per day (g/d) for fruits, 500g/d for vegetables, 100g/d for legumes, 20g/d for nuts and seeds, 125g/d for whole grains, 0g/d for red meat, 0g/d for processed meat, 0ml/d for sugar-sweetened beverages, and no underweight, overweight or obesity. The TMRELs are in line with those defined by the Nutrition and Chronic Diseases Expert Group (NutriCoDE),[19] with the exception that we used a higher value for vegetables, and we used zero as minimal risk exposure for red meat, in each case based on a more comprehensive meta-analysis.

The selection of risk-disease associations used in the health analysis was supported by available criteria used to judge the certainty of evidence, such as the Bradford-Hill criteria used by NutriCoDE, the World Cancer Research Fund criteria used by the Global Burden of Disease project,[20] as well as the NutriGrade scoring system (SI Table 2).[21] The quality of evidence in meta-analyses that covered the same risk-disease associations as used here was graded with NutriGrade as moderate or high for all risk-disease pairs included in the analysis.[22] In addition, NutriCoDE graded the evidence for a causal association of 10 of the 15 cardiometabolic risk associations included in the analysis as probable or convincing, and the World Cancer Research Fund graded all five of the cancer associations as probable or convincing.[23] The certainty of evidence grading in each case relates to the general relationship between a risk factor and a health outcome, and not to a specific relative-risk value.

We did not include all available risk-disease associations that were graded as having a moderate certainty of evidence and showed statistically significant results in the meta- analyses that included NutriGrade assessments. That was because for some associations, such as for milk[24,25] and fish,[26,27] more detailed meta-analyses (with more sensitivity analyses) were available that indicated potential confounding with other major dietary risks. Such sensitivity analyses were not presented in the meta-analyses that included NutriGrade assessments, but they are important for health assessments that evaluate changes in multiple risk factors. Based on a recent analysis, we might also omit fish as a risk factor.[28]

We calculated uncertainty intervals associated with changes in mortality based on standard methods of error propagation and the confidence intervals of the relative risk parameters. For the error propagation, we approximated the error distribution of the relative risks by a normal distribution and used that side of deviations from the mean which was largest. This method leads to conservative and potentially larger uncertainty intervals as probabilistic methods, such as Monte Carlo sampling, but it has significant computational advantages, and is justified for the magnitude of errors dealt with here (<50%) (see e.g. IPCC Uncertainty Guidelines).

SI TABLE 1

Relative risk parameters for dietary and weight-related risks

Food group	Endpoint	Unit	RR mean	RR low	RR high	Reference
Processed meat	CHD	50 g/d	1.27	1.09	1.49	Bechthold et al (2019)
	Stroke	50 g/d	1.17	1.02	1.34	Bechthold et al (2019)
	Colorectal cancer	50 g/d	1.17	1.10	1.23	Schwingshackl et al (2018)
	Type-2 diabetes	50 g/d	1.37	1.22	1.55	Schwingshackl et al (2017)
Red meat	CHD	100 g/d	1.15	1.08	1.23	Bechthold et al (2019)
	Stroke	100 g/d	1.12	1.06	1.17	Bechthold et al (2019)
	Colorectal cancer	100 g/d	1.12	1.06	1.19	Schwingshackl et al (2018)
	Type-2 diabetes	100 g/d	1.17	1.08	1.26	Schwingshackl et al (2017)
Sugary drinks	CHD	250 ml/d	1.17	1.10	1.27	Xi et al (2015)
		250 ml/d	1.28	1.12	1.46	Imamura et al (2015)
	Type-2 diabetes	100 g/d	0.95	0.92	0.99	Aune et al (2017)
Fruits	CHD	100 g/d	0.77	0.70	0.84	Aune et al (2017)
	Stroke	100 g/d	0.94	0.91	0.97	Aune et al (2017)
	Cancer	100 g/d	0.84	0.80	0.88	Aune et al (2017)
Vegetables	CHD	100 g/d	0.93	0.91	0.95	Aune et al (2017)
	Cancer	57 g/d	0.86	0.78	0.94	Afshin et al (2014)
Legumes	CHD	28 g/d	0.71	0.63	0.80	Aune et al (2016)
Nuts	CHD	30 g/d	0.87	0.85	0.90	Aune et al (2016b)
Whole grains	Cancer	30 g/d	0.95	0.93	0.97	Aune et al (2016b)
	Type-2 diabetes	30 g/d	0.65	0.61	0.70	Aune et al (2016b)
Underweight	CHD	15<BMI<18.5	1.17	1.09	1.24	Global BMI Collab (2016)
	Stroke	15<BMI<18.5	1.37	1.23	1.53	Global BMI Collab (2016)
	Cancer	15<BMI<18.5	1.10	1.05	1.16	Global BMI Collab (2016)
	Respiratory disease	15<BMI<18.5	2.73	2.31	3.23	Global BMI Collab (2016)
Overweight	CHD	25<BMI<30	1.34	1.32	1.35	Global BMI Collab (2016)
	Stroke	25<BMI<30	1.11	1.09	1.14	Global BMI Collab (2016)
	Cancer	25<BMI<30	1.10	1.09	1.12	Global BMI Collab (2016)
	Respiratory disease	25<BMI<30	0.90	0.87	0.94	Global BMI Collab (2016)
	Type-2 diabetes	25<BMI<30	1.88	1.56	2.11	Prosp Studies Collab (2009)
Obesity (grade 1)	CHD	30<BMI<35	2.02	1.91	2.13	Global BMI Collab (2016)
	Stroke	30<BMI<35	1.46	1.39	1.54	Global BMI Collab (2016)
	Cancer	30<BMI<35	1.31	1.28	1.34	Global BMI Collab (2016)
	Respiratory disease	30<BMI<35	1.16	1.08	1.24	Global BMI Collab (2016)
	Type-2 diabetes	30<BMI<35	3.53	2.43	4.45	Prosp Studies Collab (2009)
Obesity (grade 2)	CHD	30<BMI<35	2.81	2.63	3.01	Global BMI Collab (2016)
	Stroke	30<BMI<35	2.11	1.93	2.30	Global BMI Collab (2016)
	Cancer	30<BMI<35	1.57	1.50	1.63	Global BMI Collab (2016)
	Respiratory disease	30<BMI<35	1.79	1.60	1.99	Global BMI Collab (2016)
	Type-2 diabetes	30<BMI<35	6.64	3.80	9.39	Prosp Studies Collab (2009)
Obesity (grade 3)	CHD	30<BMI<35	3.81	3.47	4.17	Global BMI Collab (2016)
	Stroke	30<BMI<35	2.33	2.05	2.65	Global BMI Collab (2016)
	Cancer	30<BMI<35	1.96	1.83	2.09	Global BMI Collab (2016)
	Respiratory disease	30<BMI<35	2.85	2.43	3.34	Global BMI Collab (2016)
	Type-2 diabetes	30<BMI<35	12.49	5.92	19.82	Prosp Studies Collab (2009)

Notes: The parameters are mean and low and high values of 95% confidence intervals. We used non-linear dose-response relationships for fruits and vegetables, and nuts and seeds, as specified in the references, and we used linear dose-response relationships for the remaining risk factors.

SI TABLE 2

Overview of existing ratings on the certainty of evidence for a statistically significant association between a risk factor and a disease endpoint

Food group	Endpoint	Association	Certainty of evidence
Fruits	CHD	Reduction	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
	Stroke	Reduction	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
	Cancer	Reduction	WCRF: strong evidence (probable) for some cancers
			NutriGrade: moderate quality of meta-evidence for colorectal cancer
Vegetables	CHD	Reduction	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
	Cancer	Reduction	WCRF: strong evidence (probable) for non-starchy vegetables and some cancers
			NutriGrade: moderate quality of meta-evidence for colorectal cancer
Legumes	CHD	Reduction	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
Nuts and seeds	CHD	Reduction	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
Whole grains	CHD	Reduction	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
	Cancer	Reduction	WCRF: strong evidence (probable) for colorectal cancer
			NutriGrade: moderate quality of meta-evidence for colorectal cancer
	Type-2 diabetes	Reduction	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
Sugary drinks	CHD	Increase	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
	Type-2 diabetes	Increase	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
Red meat	CHD	Increase	NutriGrade: moderate quality of meta-evidence
	Stroke	Increase	NutriGrade: moderate quality of meta-evidence
	Cancer	Increase	WCRF: strong evidence (probable) for colorectal cancer increase
			NutriGrade: moderate quality of meta-evidence for colorectal cancer
	Type-2 diabetes	Increase	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
Processed meat	CHD	Increase	NutriCoDE: probable or convincing
			NutriGrade: moderate quality of meta-evidence
	Stroke	Increase	NutriGrade: moderate quality of meta-evidence
	Cancer	Increase	WCRF: strong evidence (convincing) for colorectal cancer
			NutriGrade: moderate quality of meta-evidence for colorectal cancer
	Type-2 diabetes	Increase	NutriGrade: high quality of meta-evidence

Notes: The ratings include those of the Nutrition and Chronic Diseases Expert Group (NutriCoDE), the World Cancer Research Fund, and NutriGrade. The ratings relate to the risk-disease associations in general, and not to the specific relative-risk factor used for those associations in this analysis. NutriCoDE = Nutrition and Chronic Diseases Expert Group. NutriGrade = Grading of Recommendations Assessment, Development, and Evaluation (GRADE) tailored to nutrition research. WCRF = World Cancer Research Fund.

A2.3 Environmental analysis

We estimated the environmental impacts of diets by using a global dataset of country and crop-specific environmental footprints for greenhouse gas emissions, cropland use, fresh-water use, and nitrogen and phosphorus application (SI Table 3).[29] The footprints are based on global datasets on environmental resource use in the producing region,[30,31,32] which have been converted to consumption-related footprints by using a food systems model that connects food production and consumption across regions. The model distinguished several steps along the food chain: primary production; trade in primary commodities; processing to oils, oil cakes and refined sugar; use of feed for animals; and trade in processed commodities and animals. It was parameterised with data from the International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT) on food production, processing factors and feed requirements for 62 agricultural commodities and 159 countries.

For greenhouse gas emissions, we used a regionalised and harmonised set of life-cycle assessments for analysing the full set of greenhouse gas emissions associated with the food system, including CO_2 emissions associated with land use changes. However, for the analysis of emissions in proportion to environmental limits, we focused on the non-CO_2 emissions of agriculture, in particular methane and nitrous oxide, in line with methodology followed by the International Panel on Climate Change and estimates of emissions trajectories in line with fulfilling the Paris Climate Agreement. In that analysis, we adopted the data on greenhouse gas emissions from country-specific analyses of methane and nitrous oxide emissions from crops and livestock. Non-CO_2 emissions of fish and seafood were calculated based on feed requirements and feed-related emissions of aquaculture, and on the ratio between wild-caught and farmed fish production.

Data on cropland and consumptive fresh-water use from surface and groundwater (also termed blue water) were adopted from the IMPACT model. To derive commodity-specific footprints, we divided use data by data on primary production, and calculated the footprints of processed goods (vegetable oils, refined sugar) by using country-specific conversion ratios, and splitting co-products (oils and oil meals) by economic value to avoid double counting. We used country-specific feed requirements for terrestrial animals to derive the cropland and fresh-water footprints for meat and dairy, and we used global feed requirements for aquaculture and the ratio between wild-caught and farmed fish production to derive the cropland and fresh-water footprints for fish and seafood. Data on total land use (which in addition to cropland also includes pasture) were adopted from a harmonised set of life-cycle assessments, and data on fertiliser application rates of nitrogen and phosphorous were adopted from the International Fertilizer Industry Association.

SI TABLE 3
Environmental footprints of food commodities, 2010 and 2050

Food groups	Greenhouse gas emissions (kgCO2eq/kg)		Cropland use (m2/kg)		Fresh-water use (m3/kg)		Nitrogen use (kgN/t)		Phosphorus use (kgP/t)	
	2010	2050	2010	2050	2010	2050	2010	2050	2010	2050
Wheat	0.23	0.21	3.36	2.46	0.49	0.37	28.73	19.78	4.39	2.01
Rice	1.18	0.90	3.51	2.78	1.07	0.89	36.64	25.07	5.20	2.28
Maize	0.19	0.17	1.98	1.40	0.15	0.12	22.77	14.36	3.57	1.55
Other grains	0.29	0.22	6.17	4.43	0.17	0.14	16.39	9.82	2.72	0.97
Roots	0.07	0.06	0.69	0.52	0.04	0.04	3.60	2.07	0.71	0.30
Legumes	0.23	0.19	11.11	6.89	0.94	0.61	0.00	0.00	0.00	0.00
Soybeans	0.12	0.09	3.95	3.14	0.14	0.15	2.75	1.75	5.88	3.17
Nuts & seeds	0.69	0.65	6.39	5.13	0.43	0.33	14.16	10.84	2.10	1.17
Vegetables	0.06	0.07	0.49	0.34	0.09	0.06	9.55	6.32	1.67	0.81
Oil crops	0.70	0.64	3.12	2.37	0.22	0.19	13.33	8.50	2.86	1.32
Fruits (temperate)	0.08	0.08	1.18	0.97	0.33	0.28	12.73	8.57	1.91	0.92
Fruits (tropical)	0.09	0.10	0.94	0.62	0.32	0.23	10.27	6.10	1.58	0.70
Fruits (starchy)	0.11	0.10	0.88	0.59	0.11	0.08	6.15	3.76	1.05	0.48
Sugar	0.19	0.19	1.67	1.35	1.22	0.88	22.34	15.26	3.84	1.86
Palm oil	1.85	2.03	3.10	2.39	0.00	0.00	22.34	16.29	3.57	1.85
Vegetable oil	0.67	0.63	10.31	8.46	0.47	0.45	42.73	28.19	11.47	5.66
Beef	36.78	40.36	4.21	2.78	0.22	0.17	27.29	17.16	5.36	2.29
Lamb	36.73	37.21	6.24	4.48	0.49	0.42	27.52	21.82	4.94	2.47
Pork	3.14	3.25	6.08	4.90	0.35	0.29	51.52	34.19	8.87	4.05
Poultry	1.45	1.39	6.59	5.18	0.40	0.36	50.20	36.00	9.02	4.35
Eggs	1.61	1.48	6.86	5.19	0.44	0.39	51.22	35.09	8.81	4.18
Milk	1.28	1.39	1.34	1.01	0.08	0.08	6.32	4.63	1.58	0.78
Shellfish	0.03	0.04	0.36	0.46	0.03	0.04	2.19	2.39	0.50	0.40
Fish (freshwater)	0.12	0.12	1.51	1.37	0.10	0.10	11.26	8.39	2.37	1.29
Fish (pelagic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fish (demersal)	0.01	0.01	0.13	0.20	0.01	0.01	0.75	0.99	0.19	0.18

Notes: Values shown are global averages per kilogram of product. Footprints for animal products represent feed- related impacts, except for greenhouse gas emissions of livestock, which also have a direct component. Footprints for fish and seafood represent feed-related impacts of aquaculture production weighted by total production volumes. The global averages account for expected efficiency improvements, such as improved feed for livestock, and changes in production by 2050, such as increases in extensive beef production in middle-income countries. The analysis is based on country-specific values.

A2.4 Global health and environmental targets

We analysed whether diets were in line with global health and environmental targets by modelling their universal adoption across all countries for which we have consumption and environmental data. With the exception of the proportional NCD target, all targets were expressed in absolute terms, e.g. not exceeding global greenhouse gas emissions (related to food consumption) of a certain amount. In context of these absolute targets, the rationale of the global sustainability test is to assess whether global targets can be met without imposing exceptions for one country or group of countries. From this equity perspective, a country whose diet fails the test is, in effect, outsourcing its responsibility towards fulfilling the target, and other countries would have to divert from its diet to meet it.

The targets included are the Sustainable Development Goal of reducing premature mortality from NCDs by a third, the Paris Agreement to limit global warming to below 2°C, the Aichi Biodiversity Target of limiting the rate of land- use change, as well as the Sustainable Development Goals and planetary boundaries related to fresh-water use, and nitrogen and phosphorus pollution (SI Table 4).

For deriving the target values, we isolated the diet-related portion of the different health and environmental targets, such as the emissions budget allocated to food production under a climate stabilisation pathway in line with fulfilling the Paris Climate Agreement,[33] which mirrored how the planetary boundaries for the food system were derived from the overall boundary values. For NCD risks, we took into account what proportion of NCD risks are due to dietary risks.[34] When targets were expressed for future years, we used projections of environmental footprints that included improvements in technologies and management practices, including reductions in food loss and waste, along a middle-of-the-road socioeconomic development pathway. We summarise the derivation of the target values in SI Table 4.

SI TABLE 4

Overview of global health and environmental targets and their derivation

Global targets	Comment	Implementation
NCD Agenda	Sustainable Development Goal (SDG) 3.4 is to "reduce by one third premature mortality from NCDs through prevention and treatment, and promote mental health and wellbeing", which builds on the World Health Organization (WHO) "25x25" NCD target.	According to the Global Burden of Disease project (GBD 2017), imbalanced diets and weight contribute more than half to preventable causes of NCD deaths (the rest is tobacco, alcohol and low physical activity). Applying this proportion to overall reductions yields a target for diet-related reductions of around 18.5%.
Paris Climate Agreement	The Paris Agreement's long-term goal is to keep the increase in global average temperature to well below 2°C above pre-industrial levels; and to limit the increase to 1.5°C, since this would substantially reduce the risks and effects of climate change. The goal is reflected in SDG 13 and in the planetary boundary for climate change.	The target for agricultural emissions in line with the 2°C target was derived as 4.7 (4.3–5.3) GtCO2-eq (Wollenberg et al, 2016; Springmann et al, 2018). We adjusted this value for the proportion of emissions related specifically to food consumption (92% of emissions of the whole food system, according to Springmann et al, 2018).
Aichi Biodiversity Targets	Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced. The target is related to SDG 15 and the planetary boundary for land-system change.	Contribute to target by not increasing pressure to convert natural land into cropland (or pastures), in line with the food-related planetary boundary for land-systems change (Steffen et al, 2015; Springmann et al, 2018). The planetary boundary value was set to the extent of current cropland (+/- 16%). We internally recalculated the value for consistency with the baseline parameters and our focus on food available for consumption (9.9Mkm2, 8.3–11.5).
SDG target on water withdrawals	SDG 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity. The goal is in line with the planetary boundary for fresh-water use.	Adopt the food-related planetary-boundary target of maintaining environmental flow requirements by limiting agricultural fresh-water use to below 2,000km3, with a range of 800–3,350 km3 (Springmann et al, 2018). We adjusted the value for the proportion of the food system attributed to diets (1,600km3, 640–2,600).
SDG target on nutrient pollution	SDG 14.1: By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution. The goal is in line with the planetary boundary for biogeochemical flows of nitrogen and phosphorus.	Adopt the food-related planetary-boundary target for nitrogen and phosphorus application in line with limiting eutrophication risk (de Vries et al, 2013; Springmann et al, 2018). We recalculated the value for our focus on consumption-related impacts by applying the original risk fractions to estimates of baseline use, which yielded target values of 51TgN (38–83) and 11TgP (5.6–12.9).

NOTES

Executive Summary

1 According to the Global Dietary Database, 2021.

2 Recommended healthy and sustainable diets developed by the EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems.

3 Nutrition for Growth (N4G) is a global effort that brings together all stakeholders, including country governments, donors, businesses and civil society organisations to accelerate progress on tackling poor diets and malnutrition in all its forms. The Global Nutrition Report was first conceived following the first N4G summit in 2013, as a mechanism for annually tracking the commitments made by 100 stakeholders spanning governments, aid donors, civil society, the UN and businesses, and assessing their translation to impact – and this role continues today.

4 SMART: Specific, Measurable, Achievable, Relevant and Time-bound.

Chapter 1

1 Swinburn BA, et al. The global syndemic of obesity, undernutrition, and climate change: The Lancet Commission report. Lancet 2019; 393(10173): 791–846 (doi: 10.1016/S0140-6736(18)32822-8).

2 Global nutrition targets to improve maternal, infant and young child nutrition (www.who.int/teams/nutrition-and-food-safety/global-targets-2025).

3 Noncommunicable Diseases Global Monitoring Framework: indicator definitions and specifications (www.who.int/nmh/ncd-tools/indicators/GMF_Indicator_Definitions_Version_NOV2014.pdf).

4 As the diet-related NCD Target 7 includes both obesity and diabetes, the GNR assesses progress for these indicators separately. Progress is therefore assessed for a total of 10 indicators and 9 targets. In the text we refer to 9 targets and/or 10 indicators.

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6 The Nutrition Accountability Framework (NAF) comes with a wealth of guidance and information to support SMART commitment-making by all stakeholders including governments, donors, civil society organisations, businesses and others. It helps inform, shape and inspire strong commitments for nutrition through comprehensive methods for qualifying, classifying and reporting on nutrition action, and monitoring how action translates to impact. This is facilitated through the NAF enabling transparent and accessible sharing of data, evidence and best practice. Available at: www.globalnutritionreport.org/resources/naf/

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Chapter 2

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Chapter 3

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5 Previous analyses used to estimate the financing need for achieving the 2025 WHA targets for nutrition were extended to estimate the additional resources required to finance interventions toward achieving goal 2 of the 2030 SDG targets. In the 10-year projection (2016–2025) of financing needs for the WHA targets, interventions were scaled up to full coverage in the first five years and maintained at full coverage for the remaining five years. For the current analysis, it is assumed that interventions will continue to be maintained at full coverage for the additional five-year period. The costs were adjusted for population growth and include 12% for overhead costs (M&E, capacity strengthening and policy development). In addition, the estimated cost of mitigating the additional burden of malnutrition resulting as secondary impacts of the Covid-19 pandemic was included for the period 2020–2027.

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41 Bloomberg Philanthropies and NORAD have kick-started this with a contribution of US$6.5 million for the Global Tax Program (GTP) Health Tax Window Launch. Countries such as Egypt and others have recently implemented sin-taxes to create fiscal space.

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Chapter 4

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4 Nutrition-sensitive actions are interventions, programmes or policies in sectors other than nutrition that address the underlying determinants of fetal and child nutrition and development, and incorporate specific nutrition goals and actions. Sectors include agriculture, health, social protection, early child development, education, and water and sanitation. Nutrition-specific actions are interventions, programmes or policies intended to have a direct impact on immediate determinants of nutrition. Nutrition-specific actions can include: promotion of adequate food and nutrient intake; feeding, caregiving and parenting practices; and prevention of infectious diseases. Examples are breastfeeding promotion, disease management and treatment of acute malnutrition in emergencies.

5 SMART goals are: Specific, Measurable, Achievable, Relevant and Time-bound.

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11 No a priori classification system was established; while the original N4G compact focuses on four types of commitments, subsequent data processing led to separate categories by stakeholder type.

12 Commitments at the country level range from regulatory and cross-sectoral policies for nutrition to specific actions targeting maternal, infant and young child nutrition, and increasing domestic support. At the business level, these include workforce policies to support maternal health and wellness and non-workforce commitments to improve nutrition delivered through the food system. Commitments also include mobilisation and alignment of international resources, empowering country-led coordination and facilitating mutual learning by donors, mobilising private sector resources to support scaling up nutrition programmes, and, at the UN and donor level, jointly setting targets for nutrition with relevant Sustainable Development Goal indicators by the United Nations and UN member states.

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14 Details are available in the methodology. Available at: www.globalnutritionreport.org/resources/nutrition-growth-commitment-tracking/methodology/

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ACRONYMS AND ABBREVIATIONS

AARR	Average annual rate of reduction
CO2eq	Carbon dioxide equivalent
CRS	Creditor Reporting System
CSO	Civil society organisation
CSR	Corporate social responsibility
DAC	Development Assistance Committee
ESG	Environmental and social governance
GFF	Global Financing Facility
GNR	Global Nutrition Report
Gt	Billion tonnes
IEG	Independent Expert Group (GNR)
IFA	iron and folic acid
IFN	Investment Framework for Nutrition
IMPACT	International Model for Policy Analysis of Agricultural Commodities and Trade
LBW	Low birth weight
LMIC	Lower-middle-income country
MDD	Minimum dietary diversity
MIYCN	Maternal, infant and young child nutrition
MMF	minimum meal frequency
Mt	Million tonnes
N4G	Nutrition for Growth
NAF	Nutrition Accountability Framework
NCD	Non-communicable disease
NPER	Nutrition public expenditure review
NutriCoDE	Nutrition and Chronic Diseases Expert Group
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
PIF	Population impact fraction
SDG	Sustainable Development Goal
SAM	severe acute malnutrition
SMART	Specific, Measurable, Achievable, Relevant and Time-bound
SNF	Specialised nutritious food
SSB	Sugar-sweetened beverage
ST4N	Standing Together for Nutrition
TEAM: WHO/ UNICEF:	Technical Expert Advisory Group on Nutrition Monitoring
TMREL	theoretical minimum risk exposure level
TPoN	The Power of Nutrition
UHC	Universal health coverage
UNICEF	United Nations Children's Fund
UPF	Ultra-processed food
UN	United Nations
WHA	World Health Assembly
WHO	World Health Organization
YLL	Years of life lost

GLOSSARY

Anaemia	Anaemia is a medical condition in which a person's red blood cell (or, more precisely, haemoglobin) level is less than normal. Anaemia is a global public health issue, faced by people in both low- and high-income countries, and is a particular concern for adolescent girls and women of reproductive age. There are many forms of anaemia, with different causes and treatment. The most common causes of anaemia include nutritional deficiencies, due to inadequate (or insufficient) intake of minerals (particularly iron) and vitamins from the diet.
Commitments	Commitments are made by different stakeholder groups including country, donor, civil society and business, many of whom signed the Compact of the Nutrition for Growth (N4G) 2013 Summit. Commitments are tracked by the N4G tracker on annual basis. Commitments at the country level range from regulatory and cross-sectoral policies for nutrition to increasing domestic support and implementing actions targeting maternal, infant and young child nutrition. At the business level, these include workforce policies to support maternal health and wellness and non-workforce commitments to improve nutrition delivered through the food system. At the civil society and donor level, these include actions to mobilise and align international resources, support country coordination and mobilise resources to scale up programmes. At the UN and donor level, these include jointly setting targets for nutrition with relevant Sustainable Development Goal indicators by the United Nations and UN member states.
Commitment goals	Each commitment made by a stakeholder consists of one or more measurable goals. A commitment goal is what the stakeholder has committed to achieve and is tracked through the N4G tracker under each commitment.
Concessional loans	Concessional loans are extended on terms substantially more generous than market loans. The concessionality is achieved either through interest rates below those available on the market or by grace periods, or a combination of these.
Diet-related non-communicable disease (NCD) targets	Diet- (or nutrition)-related NCD targets are four of the ten global nutrition targets adopted at the World Health Assembly in 2013, to be attained by 2025, including for salt/sodium intake, raised blood pressure, adult obesity and adult diabetes. For example, Target 4 is "Achieve a 30% relative reduction in mean population intake of salt/sodium".
Dietary diversity	Dietary diversity (or dietary variety) refers to the variety in the number and type of foods in a person's diet over a reference period. There is no consensus on the optimal standardised measure for dietary diversity. It is also used as a proxy measure for food security, adequacy of energy/nutrient intake and diet quality.

Global nutrition targets	Global nutrition targets here refer collectively to the World Health Assembly targets on both maternal, infant and young child nutrition (MIYCN), and on diet-related NCDs. These were adopted in 2012 (MIYCN) and 2013 (NCDs) by the World Health Assembly, to be reached by 2025. The 2025 global nutrition targets include targets for six MIYCN indicators: low birth weight, stunting in children under 5 years of age, wasting in children under 5 years of age, overweight in children under 5 years of age, anaemia in women of reproductive age, and exclusive breastfeeding. They also include targets for four diet-related NCD indicators in adults: salt/sodium intake, raised blood pressure, diabetes and obesity.
Grants	Grants are transfers made in cash, goods or services for which no repayment is required.
Innovative financing	The OECD defines innovative financing as mechanisms of raising funds or stimulating actions in support of international development that go beyond traditional spending approaches by either the official or private sectors.
Malnutrition	Malnutrition, in all its forms, refers to both undernutrition (including stunting, wasting, underweight and micronutrient deficiencies) and overweight, obesity and other diet-related NCDs. It includes a range of diet-related conditions caused by not having enough calories, nutrients or quality (healthy) food, or having too much low-quality (or unhealthy) food.
Maternal, infant and young child nutrition targets	The maternal, infant and young child nutrition (MIYCN) targets are six global targets adopted at the World Health Assembly in 2012, to be attained by 2025, on: low birth weight, stunting in children under 5 years of age, wasting in children under 5 years of age, overweight in children under 5 years of age, anaemia in women of reproductive age, and exclusive breastfeeding. For example, Target 1 is "Achieve a 40% reduction in the number of children under 5 who are stunted".
Micronutrients	Micronutrients are dietary components, commonly known as vitamins and minerals. They are critical to health, despite being required in only small amounts. They include minerals such as iron, calcium, sodium, magnesium, zinc and iodine, and vitamins such as A, B group (such as folate), C and D.
Micronutrient deficiencies	Micronutrient deficiencies are caused by inadequate (or insufficient) intake or absorption of one or more vitamins or minerals and lead to suboptimal nutrition status. Although less common than deficiencies, taking in too many of some micronutrients, usually from supplementing with excess amounts, may also lead to adverse effects (micronutrient toxicity).

Non-communicable diseases (NCDs) and diet-related NCDs	NCDs are non-infectious chronic diseases that last a long time, progress slowly, and are caused by a combination of modifiable and non-modifiable risk factors, including lifestyle/behavioural, environmental, physiological and genetic factors. There are four main types of NCDs: cardiovascular disease (e.g., coronary heart disease, stroke), diabetes, cancer and chronic respiratory disease. Obesity is both a chronic disease and a risk factor for other NCDs. We refer to NCDs related to diet (or nutrition) as 'diet-related NCDs'. These mainly include obesity, cardiovascular disease, diabetes and specific cancer types.
Nutrition-sensitive	Nutrition-sensitive actions are interventions, programmes or policies in sectors other than nutrition that address the underlying determinants of fetal and child nutrition and development, and incorporate specific nutrition goals and actions. Sectors include agriculture, health, social protection, early child development, education, and water and sanitation.
Nutrition-specific	Nutrition-specific actions are interventions, programmes or policies intended to have a direct impact on immediate determinants of nutrition. Nutrition-specific actions can include: promotion of adequate food and nutrient intake; feeding, caregiving and parenting practices; and prevention of infectious diseases. Examples are breastfeeding promotion, disease management and treatment of acute malnutrition in emergencies.
Official development assistance (ODA)	Official Development Assistance is defined by the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) as foreign (government) aid to developing countries and territories on the DAC list of ODA recipients and from multilateral development institutions designed to promote their economic development and welfare.
Overweight and obesity	A person is overweight or obese if they have excessive fat accumulation that poses a risk to their health. Being obese means having more excessive fat than being overweight. Depending on age, there are different methods to classify overweight or obesity. Body mass index (BMI), which is a person's weight in kilograms divided by the square of height in metres, is used as a population-level screening tool to classify overweight or obesity in adults. The World Health Organization (WHO) defines overweight in adults as a BMI greater than or equal to 25kg/m^2, and obesity as a BMI greater than or equal to 30kg/m^2. See the methodology for definitions of overweight and obesity by age as used in the present report.
Risk factor	A risk factor is an attribute or characteristic of a person or something they are exposed to that increases their chance of developing a disease, infection or injury. If a person has more risk factors for a given disease, they are more likely to get it. Risk factors can be classified as modifiable or non-modifiable. Modifiable risk factors can be changed, such as through lifestyle changes (like diet, smoking and physical activity) and environmental conditions. Non-modifiable factors, such as age, sex and ethnicity, cannot be changed. For example, high salt/sodium intake is a modifiable dietary risk factor for coronary heart disease.

Stunting	Stunting refers to the impaired growth and development that children experience from poor nutrition, repeated infection and inadequate psychosocial stimulation. The World Health Organization (WHO) defines childhood stunting (moderate and severe) as a length- or height-for-age z-score more than two standard deviations below the median of the WHO Child Growth Standards. Children who are stunted are also more likely to be wasted. See the methodology for the definition of stunting used in the present report.
Thinness	Thinness is defined as a form of undernutrition in school-age children and adolescents when a person's body mass index is less than 2 standard deviations below the median of the WHO Child Growth Standards.
Undernutrition	Undernutrition is a diet-related condition resulting from insufficient food intake to meet needs for energy and nutrients. It includes being underweight, too short (stunted) or too thin (wasted) for age or height, or deficient in vitamins and minerals (micronutrients). Being undernourished means suffering from undernutrition.
Underweight	Underweight is a form of undernutrition when body weight, or weight for height, is too low for a person's age.
Universal health coverage (UHC)	UHC is a healthcare system in which all people are assured access to essential healthcare services without facing financial hardship.
Wasting	Children who are too thin because of undernutrition are 'wasted'. The World Health Organization (WHO) defines childhood wasting as a weight-for-length or weight-for-height z-score more than two standard deviations below the median of the WHO Child Growth Standards. Children who are wasted are more likely to be stunted. See the methodology for the definition of wasting used in the present report.

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The purpose of the Global Nutrition Report (GNR) is to drive greater action to end malnutrition in all its forms.

The GNR is a multi-stakeholder initiative consisting of a Stakeholder Group of high-level members of government, donor organisations, civil society, multilateral organisations and the business sector, and an Independent Expert Group of world leading experts in nutrition. It was conceived following the first Nutrition for Growth Initiative Summit (N4G) in 2013 as a mechanism for tracking the commitments made by 100 stakeholders spanning governments, donors, civil society, the UN and businesses.

Today, it provides a world-leading independent assessment of the state of global nutrition through an annual report that uses the best available data and in-depth analysis to cast a light on progress and challenges and inspire action.

The Report is complemented by the provision of online Country Nutrition Profiles and an N4G tracking tool. The Nutrition Profiles provide an overview of the state of nutrition in every region and country in the world, updated annually with the latest data available. The N4G tracking tool brings the latest data reported by commitment makers on their progress towards meeting nutrition commitments made at past N4G Summits.

The GNR has also created the world's first independent Nutrition Accountability Framework, launched in September 2021. This comprises a comprehensive platform, with accompanying guidance and support, for all stakeholders to register SMART nutrition commitments and monitor nutrition action. It is the official mechanism for commitments made at the 2021 N4G Summit, endorsed by the Government of Japan as the host of the Summit, and other key stakeholders including the World Health Organisation, the Scaling Up Nutrition (SUN) movement, UNICEF, USAID and others.

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