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**IN BRIEF**

# THE STATE OF FOOD SECURITY AND NUTRITION IN THE WORLD

**TRANSFORMING FOOD SYSTEMS  
FOR AFFORDABLE HEALTHY DIETS**



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# KEY MESSAGES

→ Updates for many countries have made it possible to estimate hunger in the world with greater accuracy this year. In particular, newly accessible data enabled the revision of the entire series of annual undernourishment estimates for China back to 2000, resulting in a substantial downward shift of the series of the number of undernourished in the world. Nevertheless, the revision confirms the trend reported in past editions: the number of people affected by hunger globally has been slowly on the rise since 2014.

→ Current estimates are that nearly 690 million people are hungry, or 8.9 percent of the world population – up by 10 million people in one year and by nearly 60 million in five years. The number of people affected by severe food insecurity, which is another measure that approximates hunger, shows a similar upward trend. In 2019, close to 750 million – or nearly one in ten people in the world – were exposed to severe levels of food insecurity.

→ Considering the total affected by moderate or severe food insecurity, an estimated 2 billion people in the world did not have regular access to safe, nutritious and sufficient food in 2019.

→ The world is not on track to achieve Zero Hunger by 2030. If recent trends continue, the number of people affected by hunger would surpass 840 million by 2030.

→ A preliminary assessment suggests that the COVID-19 pandemic may add between 83 and 132 million people to the total number of undernourished in the world in 2020 depending on the economic growth scenario.

→ Globally, the burden of malnutrition in all its forms remains a challenge. According to current estimates, in 2019, 21.3 percent (144.0 million) of children under 5 years of age were stunted, 6.9 percent (47.0 million) wasted and 5.6 percent (38.3 million) overweight.

→ The world is making progress but is not on track to achieve the 2025 and 2030 targets for child stunting and low birthweight, and for exclusive breastfeeding, is on track only for the 2025 target. The prevalence of wasting is notably above the targets. Most regions are not on track to achieve the targets for child overweight. Adult obesity is on the rise in all regions. Urgent action is needed to reverse these upward trends.

- The nutritional status of the most vulnerable population groups is likely to deteriorate further due to the health and socio-economic impacts of COVID-19.
- Food insecurity can worsen diet quality and consequently increase the risk of various forms of malnutrition, potentially leading to undernutrition as well as overweight and obesity.
- Low-income countries rely more on staple foods and less on fruits and vegetables and animal source foods than high-income countries. Only in Asia, and globally in upper-middle-income countries, are there enough fruits and vegetables available for human consumption to be able to meet the FAO/WHO recommendation of consuming a minimum of 400 g/person/day.
- While we still face significant challenges in just accessing food, challenges are even more important in terms of accessing healthy diets.
- Healthy diets are unaffordable to many people, especially the poor, in every region of the world. The most conservative estimate shows they are unaffordable for more than 3 billion people in the world. Healthy diets are estimated to be, on average,

five times more expensive than diets that meet only dietary energy needs through a starchy staple.

- The cost of a healthy diet exceeds the international poverty line (established at USD 1.90 purchasing power parity (PPP) per person per day), making it unaffordable for the poor. The cost also exceeds average food expenditures in most countries in the Global South: around 57 percent or more of the population cannot afford a healthy diet throughout sub-Saharan Africa and Southern Asia.
- All diets have hidden costs, which must be understood to identify trade-offs and synergies in relation to other SDGs. Two hidden costs that are most critical relate to the health (SDG 3) and climate-related (SDG 13) consequences of our dietary choices and the food systems that support these.
- Under current food consumption patterns, diet-related health costs linked to mortality and non-communicable diseases are projected to exceed USD 1.3 trillion per year by 2030. On the other hand, the diet-related social cost of greenhouse gas emissions associated with current dietary patterns is estimated to be more than USD 1.7 trillion per year by 2030.

→ Shifting to healthy diets can contribute to reducing health and climate-change costs by 2030, because the hidden costs of these healthy diets are lower compared to those of current consumption patterns. The adoption of healthy diets is projected to lead to a reduction of up to 97 percent in direct and indirect health costs and 41–74 percent in the social cost of GHG emissions in 2030.

→ However, not all healthy diets are sustainable and not all diets designed for sustainability are always healthy. This important nuance is not well understood and is missing from ongoing discussions and debates on the potential contribution of healthy diets to environmental sustainability.

→ To increase the affordability of healthy diets, the cost of nutritious foods must come down. The cost drivers of these diets are seen throughout the

food supply chain, within the food environment, and in the political economy that shapes trade, public expenditure and investment policies. Tackling these cost drivers will require large transformations in food systems with no one-size-fits-all solution and different trade-offs and synergies for countries.

→ Countries will need a rebalancing of agricultural policies and incentives towards more nutrition-sensitive investment and policy actions all along the food supply chain to reduce food losses and enhance efficiencies at all stages. Nutrition-sensitive social protection policies will also be central for them to increase the purchasing power and affordability of healthy diets of the most vulnerable populations. Policies that more generally foster behavioural change towards healthy diets will also be needed.

# FOREWORD

Five years after the world committed to end hunger, food insecurity and all forms of malnutrition, we are still off track to achieve this objective by 2030. Data tell us that the world is progressing neither towards SDG target 2.1, of ensuring access to safe, nutritious and sufficient food for all people all year round, nor towards target 2.2, of eradicating all forms of malnutrition.

There are many threats to progress. The 2017 and 2018 editions of this report showed that conflict and climate variability and extremes undermine efforts to end hunger, food insecurity and malnutrition. In 2019, the report showed that economic slowdowns and downturns also undercut these efforts. In 2020, the COVID-19 pandemic, as well as unprecedented Desert Locust outbreaks in Eastern Africa, are obscuring global economic prospects in ways no one could have anticipated, and the situation may only get worse if we do not act urgently and take unprecedented action.

The most recent estimate for 2019 shows that prior to the COVID-19 pandemic, almost 690 million people, or 8.9 percent of the global population, were undernourished. This estimate is based on new data on population, food supply and more importantly, new household survey data that enabled the revision of the inequality of food consumption for 13 countries, including China. Revising the undernourishment estimate for China going back to the year 2000 resulted in a significantly lower number of undernourished people worldwide. This is because China has one-fifth of the global population. Despite this, the trend reported in past editions of this report still stands: since 2014, the number of hungry people worldwide has been slowly rising. The new estimate for 2019 has revealed that an additional 60 million people have become affected by hunger since 2014. If this trend continues, the number of undernourished people will exceed 840 million by 2030. Hence, the world is not on track to achieve Zero Hunger, even without the negative effects that COVID-19 will likely have on hunger. Preliminary projections based on the latest available global economic outlooks, also presented in this report, suggest that the COVID-19 pandemic may add an additional 83 to 132 million people to the ranks of the undernourished in 2020.

Beyond hunger, a growing number of people have had to reduce the quantity and quality of the food they consume. Two billion people, or 25.9 percent of the global population, experienced hunger or did not have regular access to nutritious and sufficient food in 2019. This situation could deteriorate if we do not act immediately and boldly.

These trends in food insecurity contribute to increasing the risk of child malnutrition, as food insecurity affects diet quality, including the quality of children's and women's diets, and people's health in different ways. Hence, as painful as it is to accept, it is unsurprising that the burden of child malnutrition remains a threat around the world: in 2019, 21.3 percent (144.0 million) of children under 5 years of age were estimated to be stunted, 6.9 percent (47.0 million) wasted and 5.6 percent (38.3 million) overweight, while at least 340 million children suffered from micronutrient deficiencies. The good news is that between 2000 and 2019, the global prevalence of child stunting declined by one-third. However, the world is not on track to achieve the global nutrition targets, including those on child stunting, wasting and overweight by 2030. Furthermore, adult obesity is on the rise in all regions. Projections for 2030, even without considering a potential global recession, serve as an added warning that the current level of effort is not anywhere near enough to end malnutrition in the next decade.

We can still succeed, but only by ensuring all people's access not only to food, but to nutritious foods that make up a healthy diet. With this report, all five agencies are sending a strong message: A key reason why millions of people around the world suffer from hunger, food insecurity and malnutrition is because they cannot afford the cost of healthy diets. Costly and unaffordable healthy diets are associated with increasing food insecurity and all forms of malnutrition, including stunting, wasting, overweight and obesity. Food supply disruptions and the lack of income due to the loss of livelihoods and remittances as a result of COVID-19 means that households across the globe are facing increased difficulties to access nutritious foods and are only making it even more difficult for the poorer and vulnerable populations to have access to healthy diets.

It is unacceptable that, in a world that produces enough food to feed its entire population, more than 1.5 billion people cannot afford a diet that meets the required levels of essential nutrients and over 3 billion people cannot even afford the cheapest healthy diet. People without access to healthy diets live in all regions of the world; thus, we are facing a global problem that affects us all.

Current food consumption patterns also generate what this year's report calls "hidden costs" related to health costs (SDG 3) and climate-change costs (SDG 13). If current food consumption patterns continue, diet-related health costs linked to mortality and diet-related non-communicable diseases are projected to exceed USD 1.3 trillion per



year by 2030. The diet-related social cost of greenhouse gas emissions associated with current dietary patterns is estimated to reach more than USD 1.7 trillion per year by 2030. Both of these hidden costs are a significant underestimation. The environmental costs do not account for other negative environmental impacts and the health costs do not account for the negative impacts of undernutrition due to data constraints. In light of this evidence, it is clear that the adoption of healthy diets that include sustainability considerations can significantly reduce these hidden costs, generating important synergies with other SDGs.

We must look throughout the food system to address the factors that are driving up the cost of nutritious foods. This means supporting food producers – especially small-scale producers – to get nutritious foods to markets at low cost, making sure people have access to these food markets, and making food supply chains work for vulnerable people – from small-scale producers to the billions of consumers whose income is simply insufficient to afford healthy diets.

Clearly, then, we face the challenge of transforming food systems to ensure that no one is constrained by the high prices of nutritious foods or the lack of income to afford a healthy diet, while we ensure that food production and consumption contribute to environmental sustainability. However, there is no one-size-fits-all solution for countries, and policymakers will need to assess the context-specific barriers, manage trade-offs and maximize synergies – such as potential environment gains – to achieve the required transformations.

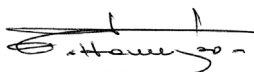
We trust that the recommendations in this report, once tailored to each country context, will help governments to reduce the cost of nutritious foods, make healthy diets affordable for everyone and enable vulnerable people working in food systems to earn decent incomes that enhance their own food security. This will set in motion a transformation of existing food systems that makes them resilient and sustainable. Areas of policy emphasis should include rebalancing of agricultural policies and incentives towards more nutrition-sensitive investment; and policy actions all along food supply chains, with a focus on nutritious foods for healthy diets, to reduce food losses, create opportunities for vulnerable small-scale producers and others working in food systems, and enhance efficiencies. Nutrition-sensitive social protection policies will also be central to increase the purchasing power and affordability of healthy diets by the most vulnerable populations. An enabling environment should also be promoted by policies that, more generally, improve the nutritional quality of the food produced and available on the market, support the marketing of diverse and nutritious food, and provide education and information for fostering individual and social behaviour change towards healthy diets.

These policy recommendations are in line with key recommendations under the United Nations Decade of Action on Nutrition, 2016–2025. We believe that the analysis conducted and policy recommendations provided in this report will also help set the agenda for the first UN Food Systems Summit, which will take place in 2021 with the overarching goal of helping stakeholders better understand and manage complex choices that affect the future of food systems and their needed transformation to significantly accelerate progress towards achieving the SDGs by 2030.

Our agencies stand firmly committed to support a shift that makes healthy diets affordable to all and contributes to the eradication of hunger, food insecurity and all forms of malnutrition in children and adults. Our efforts shall ensure that this shift unfolds in a sustainable way, for people and the planet, and creates synergies to spur progress on other SDGs.



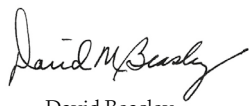
Qu Dongyu  
FAO Director-General



Gilbert F. Houngbo  
IFAD President



Henrietta H. Fore  
UNICEF Executive Director



David Beasley  
WFP Executive Director



Tedros Adhanom Ghebreyesus  
WHO Director-General

# PART 1

## FOOD SECURITY AND NUTRITION AROUND THE WORLD IN 2020

**F**ive years into the 2030 Agenda, it is time to assess progress and to question whether continuing efforts implemented thus far will allow countries to reach SDG 2 targets. For this reason, this year's report complements the usual assessment of the state of food security and nutrition in the world with projections of what the world may look like in 2030 if trends of the last decade continue. Importantly, as the COVID-19 pandemic continues to evolve, this report attempts to foresee some of the impacts of this global pandemic on food security and nutrition. However, given that the full extent of the devastation that COVID-19 will cause is still largely unknown, it is important to recognize that any assessment at this stage is subject to a high degree of uncertainty and should be interpreted with caution.

### 1.1 PROGRESS TOWARDS HUNGER AND FOOD INSECURITY TARGETS

#### KEY MESSAGES

→ Updates for many countries have made it possible to estimate hunger in the world with greater accuracy this year. In particular, newly accessible data enabled the revision of the entire series of annual undernourishment estimates for China back to 2000,

resulting in a substantial downward shift of the series of the number of undernourished in the world. Nevertheless, the revision confirms the trend reported in past editions of this report: the number of people affected by hunger globally has been slowly on the rise since 2014.

→ Current estimates are that nearly 690 million people are hungry, or 8.9 percent of the world population – up by 10 million people in one year and by nearly 60 million in five years.

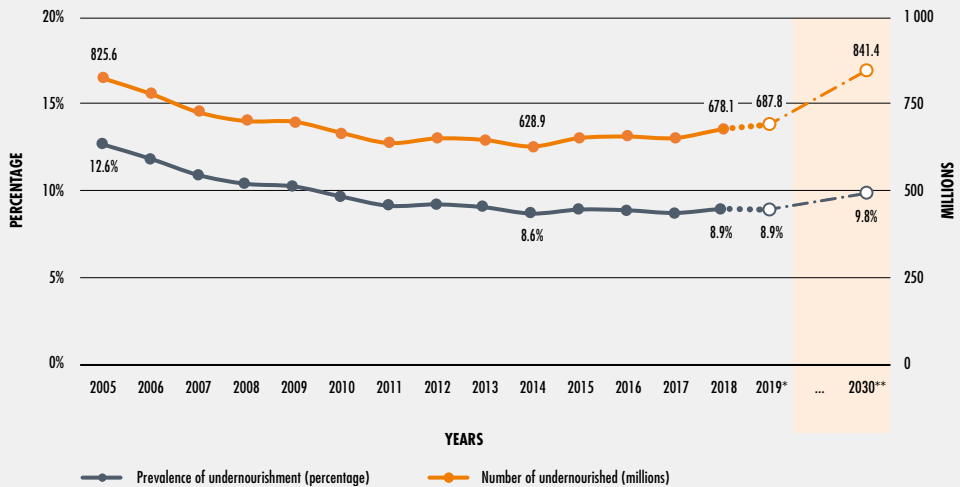
→ Despite the re-assessment of the extent of hunger in China, the majority of the world's undernourished – 381 million – are still found in Asia. More than 250 million live in Africa, where the number of undernourished people is growing faster than in any other region of the world.

→ The number of people affected by severe food insecurity, which is another measure that approximates hunger, also shows an upward trend. In 2019, close to 750 million – or nearly one in ten people in the world – were exposed to severe levels of food insecurity.

→ Considering the total affected by moderate or severe levels of food insecurity, an estimated 2 billion people in the world did not have regular access to safe, nutritious and sufficient food in 2019.

→ The world is not on track to achieve Zero Hunger by 2030. If recent trends continue, the number of people affected by hunger will surpass 840 million by 2030, or 9.8 percent of the population.

**FIGURE 1** THE NUMBER OF UNDERNOURISHED PEOPLE IN THE WORLD CONTINUED TO INCREASE IN 2019. IF RECENT TRENDS ARE NOT REVERSED, THE SDG 2.1 ZERO HUNGER TARGET WILL NOT BE MET



NOTES: Projected values in the figure are illustrated by dotted lines and empty circles. The shaded area represents projections for the longer period from 2019 to the 2030 target year. The entire series was carefully revised to reflect new information made available since the publication of the last edition of the report; it replaces all series published previously. \* See Box 2 in the report for a description of the projection method. \*\* Projections to 2030 do not consider the potential impact of the COVID-19 pandemic.

SOURCE: FAO.

➔ A preliminary assessment suggests that the COVID-19 pandemic may add between 83 and 132 million people to the total number of undernourished in the world in 2020. The expected recovery in 2021 would bring the number of undernourished down but still above what was projected in a scenario without the pandemic.

### SDG Indicator 2.1.1 Prevalence of undernourishment (PoU)

The three most recent editions of this report already presented evidence that the decades-long decline in hunger in the world, as measured using the

prevalence of undernourishment (PoU), had unfortunately ended. Additional evidence and several important data updates, including a revision of the entire PoU series for China back to 2000, shows that almost 690 million people in the world (8.9 percent of the world population) are estimated to have been undernourished in 2019 (Figure 1). Revision in light of the new data, which results in a parallel downward shift of the entire global PoU series, confirms the conclusion of past editions of this report: the number of people affected by hunger

in the world continues to increase slowly. This trend started in 2014 and extends to 2019. There are nearly 60 million more undernourished people now than in 2014, when the prevalence was 8.6 percent – up by 10 million people between 2018 and 2019.

The reasons for the observed increase of the last few years are multiple. Much of the recent increase in food insecurity can be traced to the greater number of conflicts, often exacerbated by climate-related shocks. Even in some peaceful settings, food security has deteriorated as economic slowdowns challenge access to food for the poor.

The evidence also reveals that the world is not on track to achieve the SDG 2.1 Zero Hunger target by 2030. Combined projections of recent trends in the size and composition of the population, in the total food availability, and in the degree of inequality in food access point to an increase of the PoU by almost 1 percentage point. As a result, the global *number* of undernourished people in 2030 would exceed 840 million.

The PoU in Africa was 19.1 percent of the population in 2019, or more than 250 million undernourished people, up from 17.6 percent in 2014. This prevalence is more than twice the world average (8.9 percent) and is the highest among all regions.

Asia is home to more than half of the total undernourished people in the world – an estimated 381 million people

in 2019. Yet, the PoU in the population for the region is 8.3 percent, below the world average (8.9 percent), and less than half of that of Africa. Asia has shown progress in reducing the number of hungry people in recent years, down by 8 million since 2015.

In Latin America and the Caribbean, the PoU was 7.4 percent in 2019, below the world prevalence of 8.9 percent, which still translates into almost 48 million undernourished people. The region has seen a rise in hunger in the past few years, with the number of undernourished people increasing by 9 million between 2015 and 2019.

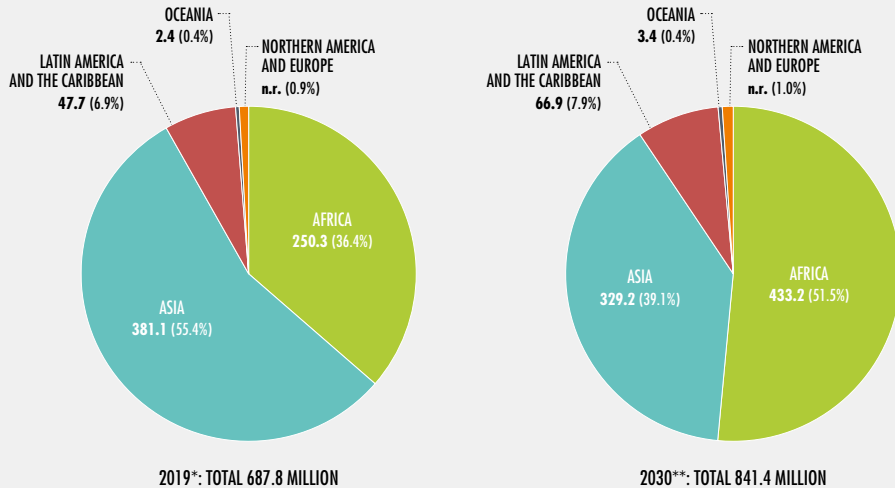
In terms of the outlook for 2030, Africa is significantly off track to achieve the Zero Hunger target in 2030. If recent rates of increase persist, the PoU will rise from 19.1 to 25.7 percent. Latin America and the Caribbean is also off track, even though at a much lower level. Mostly due to deterioration in recent years, the trend will bring the PoU from 7.4 percent in 2019 to 9.5 in 2030. Asia, while making progress, will also not achieve the target by 2030 based on recent trends.

Overall, and without considering the effects of COVID-19, projected trends in undernourishment would change the geographic distribution of world hunger dramatically (Figure 5, right chart).

While Asia would still be home to almost 330 million hungry people in 2030, its share of the world's hunger would shrink substantially. Africa would overtake



**FIGURE 5** IF RECENT TRENDS PERSIST, THE DISTRIBUTION OF HUNGER IN THE WORLD WILL CHANGE SUBSTANTIALLY, MAKING AFRICA THE REGION WITH THE HIGHEST NUMBER OF UNDERNOURISHED IN 2030



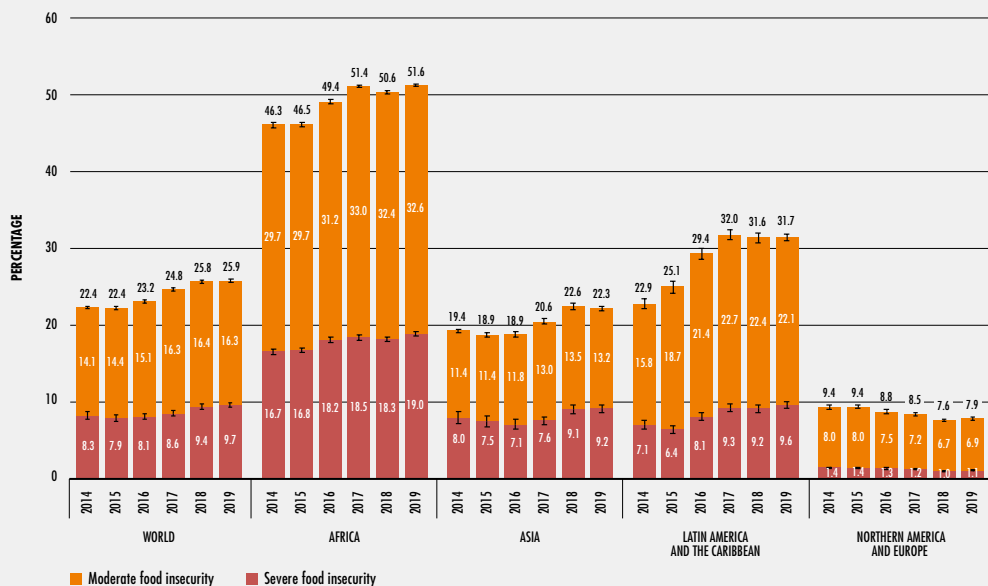
NOTES: Number of undernourished people in millions. \* Projected values. \*\* Projections to 2030 do not consider the potential impact of the COVID-19 pandemic. n.r. = not reported, as the prevalence is less than 2.5 percent. SOURCE: FAO.

Asia to become the region with the highest number of undernourished people (433 million), accounting for 51.5 percent of the total.

At the time of this writing, the COVID-19 pandemic was spreading across the globe, clearly posing a serious threat to food security. Preliminary assessments based on the latest available global economic outlooks suggest that the COVID-19 pandemic may add between 83 and 132 million people to the total number

of undernourished in the world in 2020 depending on the economic growth scenario (losses ranging from 4.9 to 10 percentage points in global GDP growth). The expected recovery in 2021 would bring the number of undernourished down but still above what was projected in a scenario without the pandemic. It is important to recognize that any assessment at this stage is subject to a high degree of uncertainty and should be interpreted with caution.

**FIGURE 7** MODERATE OR SEVERE FOOD INSECURITY AFFECTS ONE QUARTER OF THE WORLD POPULATION, AND IT HAS BEEN INCREASING OVER THE PAST SIX YEARS. OVER HALF OF THE POPULATION IN AFRICA, ALMOST ONE-THIRD IN LATIN AMERICA AND THE CARIBBEAN AND MORE THAN ONE-FIFTH IN ASIA ARE FOOD INSECURE



NOTES: Differences in total are due to rounding of figures to the nearest decimal point.  
SOURCE: FAO.

## SDG Indicator 2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the FIES

The latest estimates suggest that 9.7 percent of the world population (slightly less than 750 million people) was exposed to **severe** levels of food insecurity in 2019. In all regions of the world except Northern America and Europe, the prevalence of severe food insecurity has increased from 2014 to

2019. This is also broadly consistent with recent trends in the PoU in the world and across regions, with the partial exception of Asia (Figure 7).

While the 746 million people facing severe food insecurity are of utmost concern, an additional 16 percent of the world population, or more than 1.25 billion people, have experienced food insecurity at moderate levels.

People who are moderately food insecure do not have regular access to nutritious and sufficient food, even if not necessarily suffering from hunger.

The prevalence of both moderate and severe levels of food insecurity (SDG Indicator 2.1.2) is estimated to be 25.9 percent in 2019 for the world as a whole. This translates into a total of 2 billion people. Total food insecurity (moderate or severe) has consistently increased at the global level since 2014, mostly because of the increase in moderate food insecurity.

Although Africa is where the highest levels of total food insecurity are observed, it is in Latin America and the Caribbean where food insecurity is rising the fastest: from 22.9 percent in 2014 to 31.7 percent in 2019, due to a sharp increase in South America.

In terms of the distribution of total food insecure (moderate or severe) people in the world, out of the 2 billion people suffering from food insecurity, 1.03 billion are in Asia, 675 million in Africa, 205 million in Latin America and the Caribbean, 88 million in Northern America and Europe, and 5.9 million in Oceania. At the global level, the prevalence of food insecurity at moderate-or-severe level, and severe level only, is higher among women than men. The gender gap in accessing food increased from 2018 to 2019, particularly at the moderate or severe level. ■

## 1.2 PROGRESS TOWARDS GLOBAL NUTRITION TARGETS

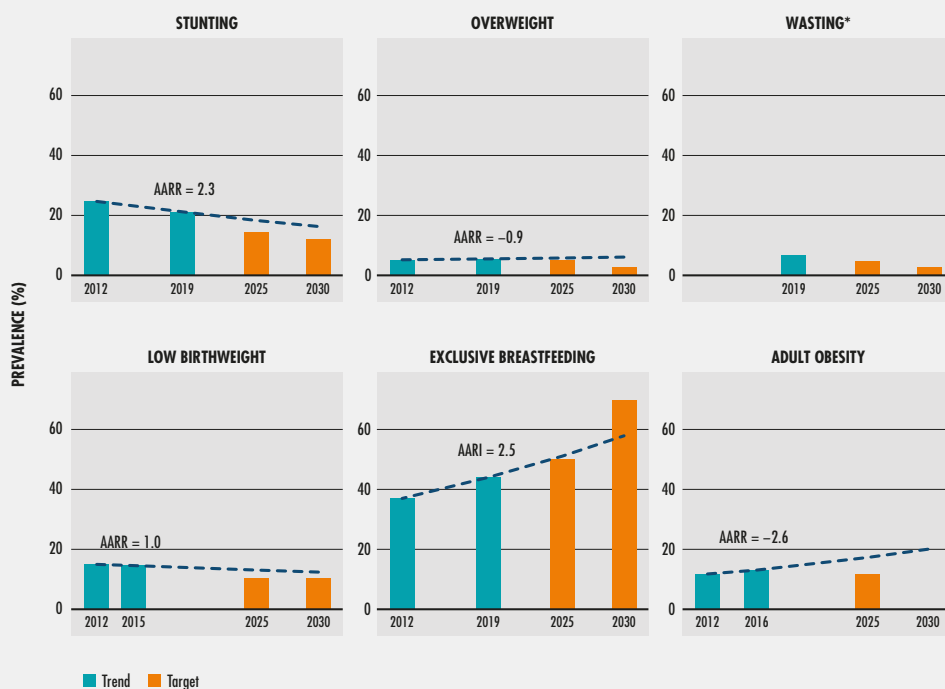
### KEY MESSAGES

- Globally, the burden of malnutrition in all its forms remains a challenge. According to estimates, in 2019, 21.3 percent (144.0 million) of children under 5 years of age were stunted, 6.9 percent (47.0 million) wasted and 5.6 percent (38.3 million) overweight.
- The world is making progress but is not on track to achieve the 2025 and 2030 targets for child stunting and low birthweight, and for exclusive breastfeeding, is on track only for the 2025 target. The prevalence of wasting is notably above the targets.
- Central Asia, Eastern Asia and the Caribbean have the largest rates of reduction in the prevalence of stunting and are the only subregions on track to achieve the 2025 and 2030 stunting targets.
- Most regions are not on track to achieve the targets for child overweight. Adult obesity is on the rise in all regions.

Worldwide, the prevalence of child stunting was 21.3 percent in 2019, or 144 million children. Although there has been some progress, rates of stunting reduction are far below what is needed to reach the World Health Assembly (WHA) target for 2025 and the SDG target for 2030. If recent trends continue, these targets will only be achieved in 2035 and 2043, respectively (Figure 10).

In 2019, more than nine out of ten stunted children lived in Africa or Asia, representing 40 percent and 54 percent of all stunted children in the world, »

**FIGURE 10** DESPITE SOME PROGRESS FOR MOST INDICATORS, ONLY THE 2025 TARGET FOR EXCLUSIVE BREASTFEEDING IS ON TRACK TO BE ACHIEVED. CHILDHOOD OVERWEIGHT AND ADULT OBESITY TRENDS NEED TO BE REVERSED



NOTES: \* No projection over time is generated for wasting, as it is an acute condition that can change frequently and rapidly over the course of a calendar year, not captured by input data available. Average Annual Rate of Reduction (AARR) and Average Annual Rate of Increase (AARI) are calculated using all data from 2008 onwards for stunting, overweight and low birthweight (recent trend period), and from 2012 (baseline) for the other indicators.

SOURCES: UNICEF, WHO & World Bank. 2020. *UNICEF-WHO-World Bank: Joint child malnutrition estimates - levels and trends in child malnutrition: key findings of the 2020 edition*. [online]. data.unicef.org/resources/jme, www.who.int/nutgrowthdb/estimates, data.worldbank.org/child-malnutrition; NCD Risk Factor Collaboration (NCD-RisC). 2017. Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. *The Lancet*, 390(10113): 2627–2642; UNICEF & WHO. 2019. *UNICEF-WHO Joint Low Birthweight Estimates*. [online]. [Cited 28 April 2020]. www.unicef.org/reports/UNICEF-WHO-low-birthweight-estimates-2019; www.who.int/nutrition/publications/UNICEF-WHO-lowbirthweight-estimates-2019; UNICEF. 2020. UNICEF Global Database on Infant and Young Child Feeding. In: *UNICEF* [online]. New York, USA. [Cited 28 April 2020]. data.unicef.org/topic/nutrition/infant-and-young-child-feeding

- » respectively. Most regions have made some progress in reducing stunting between 2012 and 2019 but not at the rate needed to achieve the 2025 and 2030 targets. Globally, stunting estimates vary by wealth. Children from the poorest wealth quintile had a stunting prevalence that was more than double that of children from the richest quintile.

The global prevalence of overweight among children under 5 years of age has not improved, going from 5.3 percent in 2012 to 5.6 percent, or 38.3 million children, in 2019. Of these, 24 percent lived in Africa and 45 percent in Asia. Australia and New Zealand is the only subregion with a very high prevalence (20.7 percent). Southern Africa (12.7 percent) and Northern Africa (11.3 percent) have prevalences considered high.

Globally, 6.9 percent of children under 5 (47 million) were affected by wasting in 2019 – a figure significantly above the 2025 target (5 percent) and the 2030 target (3 percent) for this indicator.

Worldwide, 14.6 percent of infants were born with low birthweight (less than 2 500 g) in 2015. The trends for this indicator at global and regional levels show that some progress has been made in recent years, but not enough to achieve the target of a 30 percent reduction in low birthweight by 2025 or even by 2030.

Globally, as of 2019, it was estimated that 44 percent of infants aged less than six months were exclusively breastfed. Currently, the world is on track to achieve the 2025 target of at least 50 percent of babies younger than six months being exclusively breastfed. If additional efforts are not made, however, the global target for 2030 of at least 70 percent will not be achieved before 2038. Most subregions are making at least some progress, except Eastern Asia and the Caribbean. If the Eastern Africa, Central Asia and Southern Asia subregions maintain their current rates of progress, they will reach the targets set for both 2025 and 2030.

Adult obesity continues to rise, from 11.8 percent in 2012 to 13.1 percent in 2016 and is not on track to reach the global target to halt the rise in adult obesity by 2025. If the prevalence continues to increase by 2.6 percent per year, adult obesity will increase by 40 percent by 2025, compared to the 2012 level. All subregions show increasing trends in the prevalence of adult obesity between 2012 and 2016. ■



## 1.3 THE CRITICAL LINK BETWEEN FOOD SECURITY AND NUTRITION OUTCOMES: FOOD CONSUMPTION AND DIET QUALITY

### KEY MESSAGES

→ The exact make-up of a healthy diet varies depending on individual characteristics, cultural context, local availability of foods and dietary customs, but the basic principles of what constitutes a healthy diet remain the same.

→ There are large discrepancies in the per capita availability of foods from different food groups across different country income groups. Low-income countries rely more on staple foods and less on fruits and vegetables and animal source foods than high-income countries.

→ Only in Asia, and globally in upper-middle-income countries, are there enough fruits and vegetables available for human consumption to be able to meet the FAO/WHO recommendation of consuming a minimum of 400 g/person/day.

→ Globally, only one in three children 6 to 23 months of age meets the recommended minimum dietary diversity, with wide variation among the regions of the world.

→ Diet quality is negatively affected by food insecurity, even at moderate levels of severity. People who experience moderate or severe food insecurity consume less meat, and fewer dairy products and fruits and vegetables, than those who are food secure or mildly food insecure.

Diet quality comprises four key aspects: variety/diversity, adequacy, moderation, and overall balance. According to WHO, a healthy diet protects against malnutrition in all its forms, as well as non-communicable diseases (NCDs) such as diabetes, heart disease, stroke and cancer. It contains a balanced, diverse and appropriate selection of foods eaten over a period of time. A healthy diet ensures that a person's needs for macronutrients (proteins, fats and carbohydrates including dietary fibres) and essential micronutrients (vitamins and minerals) are met, specific to their gender, age, physical activity level and physiological state. Healthy diets include less than 30 percent of total energy intake from fats, with a shift in fat consumption away from saturated fats to unsaturated fats and the elimination of industrial trans fats; less than 10 percent of total energy intake from free sugars (preferably less than 5 percent); consumption of at least 400 g of fruits and vegetables per day; and not more than 5 g per day of salt (to be iodized). While the exact make-up of a healthy diet varies depending on individual characteristics, as well as cultural context, locally available foods and dietary customs, the basic principles of what constitutes a healthy diet are the same.

Global assessment of food consumption and diet quality poses many challenges. To date, there is no single, validated composite index to measure the multiple dimensions of diet quality across all countries.

## Trends in food availability

Data on food availability at the country level show large discrepancies in the per capita availability of foods from different food groups across different country income groups. Low-income and lower-middle-income countries rely heavily on staple foods like cereals, roots, tubers and plantains. Overall, the availability of staple foods for the world has changed little between 2000 and 2017. Availability of roots, tubers and plantains increased in lower-middle-income countries, driven by a rise in Africa, whereas it decreased in high-income countries.

In low-income countries, cereals, roots, tubers and plantains represent nearly 60 percent of all food available in 2017 (Figure 20). This percentage decreases gradually with country income groups, down to 22 percent in high-income countries.

The world average availability of fruits and vegetables increased; however, only in Asia, and globally in upper-middle-income countries, are there enough fruits and vegetables available to meet the FAO/WHO recommendation of consuming a minimum of 400 g per day.

Availability of animal source foods overall is highest in high-income countries, but it is growing rapidly in upper-middle-income countries. Most of the global increases in animal source foods were observed in lower- and upper-middle-income countries.

Asia showed the largest increase in the total amount of animal source foods available.

The contribution from animal source foods varies with the country income group. It is higher in high-income countries (29 percent) compared to upper-middle and lower-middle-income countries (20 percent), and lowest in low-income countries (11 percent) (Figure 20).

## Dietary diversity

According to UNICEF, dietary diversity in infants and young children was low in the majority of the regions, with less than 40 percent of children meeting minimum dietary diversity in seven out of the eleven subregions. In addition, there are stark disparities in the prevalence of minimum dietary diversity by the place of residence (urban/rural) and wealth status.

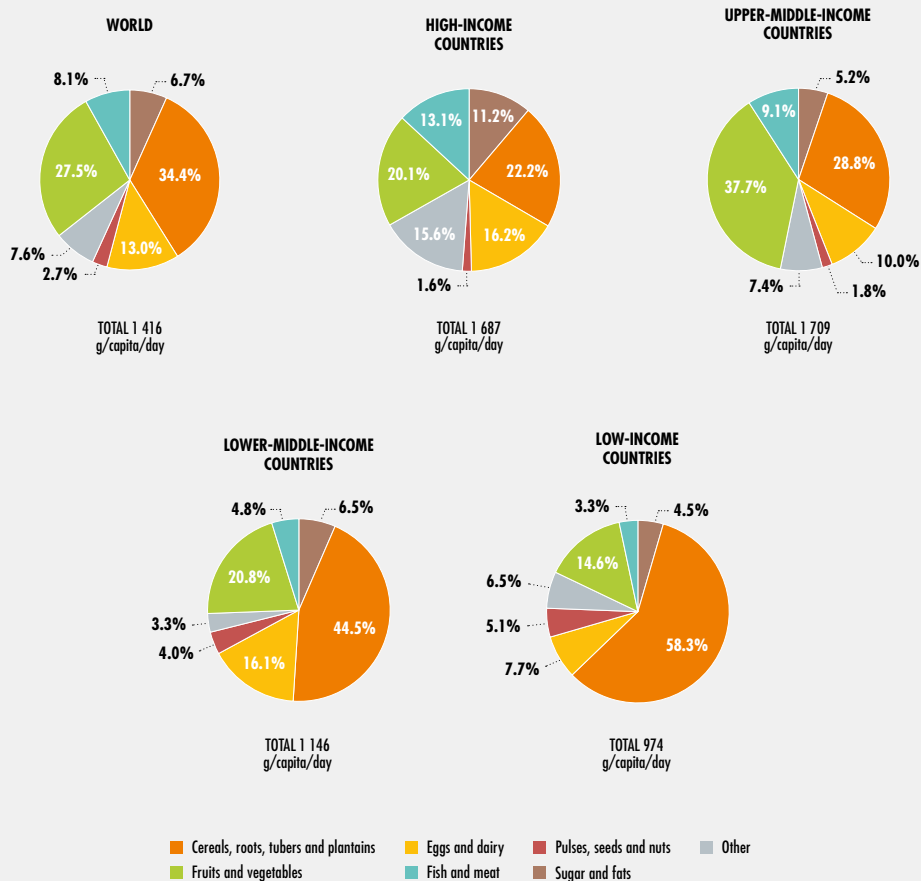
The prevalence of children eating foods from at least five out of eight food groups is on average 1.7 times higher among children living in urban households than in rural, and among those living in the richest households compared to the poorest.

## How does food insecurity affect what people eat?

An analysis of dietary patterns according to levels of food insecurity found that diet quality worsens with increasing severity of food insecurity. »

**FIGURE 20** THE PROPORTIONS OF DIFFERENT FOOD GROUPS AVAILABLE FOR HUMAN CONSUMPTION DIFFER ACROSS COUNTRY INCOME GROUPS: A SNAPSHOT OF 2017

**A) EDIBLE QUANTITIES AVAILABLE**



NOTES: The estimates presented here are adjusted for food losses that happen along part of the supply chain, from post-harvest up to (and including) retail, and are adjusted for inedible portions. The “other” group includes beverages (i.e. alcoholic, fruit juice, fruit juice concentrate, vegetable juice, vegetable juice concentrate and sweetened beverages), stimulants (tea, coffee and cocoa), spices and condiments, and sugar-preserved fruits. For more details about the food groupings, see Annex 2 in the report.  
SOURCE: FAO.

- » The ways in which moderately food insecure people modify their diets vary according to the income level of the country. In two lower-middle-income countries studied (Kenya and Sudan), there is a marked decrease in consumption of most food groups, and an increase in the share of staples in the diet. In two upper-middle-income countries examined (Mexico and Samoa), people who are moderately food insecure consume more foods that are typically cheaper on a per-calorie basis (cereals, roots, tubers and plantains), and consume lesser amounts of expensive foods (meat and dairy), compared with those who are food secure. Mexico in particular shows a decrease in fruit and dairy consumption as the severity of food insecurity increases. ■

## 1.4 CONCLUSIONS

With ten years to go until 2030, the world is off track to achieve the SDG targets for hunger and malnutrition. After decades of long decline, the number of people suffering from hunger has been slowly increasing since 2014. Beyond hunger, a growing number of people have been forced to compromise on the quality and/or quantity of the food they consume, as reflected in the increase in moderate or severe food insecurity since 2014. Projections for 2030, even without considering the potential impact of COVID-19, serve as a warning that the current level of effort is not enough to reach Zero Hunger ten years from now.

As for nutrition, progress is being made on decreasing child stunting and low birthweight and on increasing exclusive breastfeeding for the first six months of life. However, the prevalence of wasting is notably above the targets and the prevalence of both child overweight and adult obesity is increasing in almost all regions. COVID-19 is expected to exacerbate these trends, rendering vulnerable people even more vulnerable.

Increasing availability of and access to nutritious foods that comprise healthy diets must be a key component of stronger efforts to achieve the 2030 targets. The remaining years of the UN Decade of Action on Nutrition 2016–2025 present an opportunity for policymakers, civil society and the private sector to work together and accelerate efforts. ■

# PART 2

## TRANSFORMING FOOD SYSTEMS TO DELIVER AFFORDABLE HEALTHY DIETS FOR ALL

Part 2 of this year's report looks closely at the cost and affordability of healthy diets. As noted in Part 1, diet quality is a critical link between food security and nutrition outcomes that needs to be present as part of all efforts to achieve the hunger, food security and nutrition targets of SDG 2. Meeting these targets will only be possible if we ensure that people have enough food to eat, and that *what they are eating is nutritious*.

One of the biggest challenges to achieving this is the current cost and affordability of healthy diets. New evidence presented in this part of the report shows that healthy diets are unaffordable for many people in every region of the world, especially for the poor and those facing economic challenges. However, the story does not end here, because there are also hidden costs and externalities associated with current food consumption patterns, notably those related to the health and environmental consequences of our dietary choices.

Further, this part of the report also identifies the main drivers behind the high cost of nutritious foods and provides guidance on policy and investments for countries to transform their food systems to provide access to

affordable healthy diets for everyone, while tackling trade-offs and making the most of synergies for environmental sustainability.

### 2.1 THE COST AND AFFORDABILITY OF HEALTHY DIETS AROUND THE WORLD

#### KEY MESSAGES

- Analyses conducted for this report show that healthy diets cost 60 percent more than diets that only meet the requirements for essential nutrients and almost 5 times as much as diets that meet only the dietary energy needs through a starchy staple.
- The cost of a diet increases incrementally as the diet quality increases – from a basic energy sufficient diet to a nutrient adequate diet and then a healthy diet including more diversified and desirable food groups – across all regions and country income groups globally.
- The high cost and unaffordability of healthy diets is associated with increasing food insecurity and different forms of malnutrition, including child stunting and adult obesity.
- Healthy diets – that reflect global guidelines and include foods from several groups and have greater diversity within food groups – are unaffordable for more than 3 billion people, and more than 1.5 billion people cannot even afford a diet that only meets required levels of essential nutrients.



→ The cost of a healthy diet is much higher than the international poverty line, established at USD 1.90 purchasing power parity (PPP) per day. This puts healthy diets beyond the reach of those living in poverty or just above the poverty line.

→ Food systems transformation is required to address the problem of millions of people not being able to afford healthy diets because of high food price and income constraints. At the same time, this transformation should create supportive food environments, encourage people to learn about nutrition and spur behaviour change that can lead to healthy food choices.

### Cost and affordability of healthy diets are critical for food security and nutrition

The world faces immediate challenges of making healthy diets accessible for everyone, an essential requirement in meeting the hunger and nutrition targets of SDG 2. The COVID-19 pandemic has made the situation even more difficult. One of the biggest challenges is the current cost and unaffordability of healthy diets.

#### What does the evidence tell us?

The cost and affordability of the foods that form a healthy diet are important determinants of food choices. As such, they can affect food security, nutrition and health. The cost refers to what people have to pay to secure a specific diet. Affordability, on the other hand, is the cost of the diet relative to income.

New analysis in this report shows that, across regions and country income groups, the more unaffordable a

healthy diet is, the greater the prevalence of undernourishment (PoU) and child stunting becomes. The association between adult obesity and affordability of a healthy diet is the inverse of the other associations. High-income countries have the highest affordability figures for the healthy diet and, at the same time, the highest rates of adult obesity.

### Healthy diets are unaffordable for many people in all regions of the world, especially the poor

New evidence presented below shows that healthy diets are unaffordable to many people, especially for the poor, in every region of the world. This evidence emanates from analysing the estimated cost of three reference diets denoting increasing levels of diet quality, starting from a basic energy sufficient diet meeting calorie needs, to a nutrient adequate diet and then a healthy diet, the latter including an estimation of recommended intake of more diversified and desirable food groups. Subsequently, the affordability – or cost relative to people’s income – of the three diets was estimated and compared across regions and country income groups.

The ultimate aim of the analysis presented is to measure whether the food system brings the three levels of diet quality within reach of the poorest, using those foods that meet each standard at the lowest possible cost.

## Analysis of cost and affordability of three diets

### Lowest cost of the three diets around the world

As expected, the cost of a diet increases incrementally as the diet quality increases. This pattern holds across all regions and country income groups (Table 7). The cost of a healthy diet is 60 percent higher than the cost of the nutrient adequate diet, and almost 5 times the cost of the energy sufficient diet.

To understand what is driving the high cost of healthy diets, we need to look at cost contribution of each food group in a healthy diet to identify the most costly food groups. An analysis of the percentage share of the total cost of each food in a healthy diet shows that the highest-cost food groups are those that are more nutritious: dairy, fruits, vegetables and protein-rich foods (plant-based and animal source), with some variations by region.

### Affordability of the three diets around the world

The affordability analysis shows that while most of the poor around the world can afford an energy sufficient diet, as defined here, they cannot afford either a nutrient adequate or a healthy diet (Figure 28). A healthy diet is far more expensive than the full value of the international poverty line of USD 1.90 PPP per day, let alone the upper bound portion of the poverty line that can credibly be reserved for food of USD 1.20 PPP per day.

It is estimated that more than 3 billion people in the world could not afford a healthy diet in 2017.<sup>1</sup> Most of these people live in Asia (1.9 billion) and Africa (965 million), although there are millions that live in Latin America and the Caribbean (104.2 million), and in Northern America and Europe (18 million).

Countries in food crisis face even greater challenges in accessing a healthy diet, especially countries with a protracted crisis situation which are characterized by complex, multidimensional conflicts and extreme fragility. In these contexts, most or 86 percent of the population cannot afford a healthy diet. This is more than double the world average figure (38 percent) and is 57 percent higher than what is estimated for the Global South.

These findings imply that: i) the cost of nutritious foods that constitute healthy diets need to decrease, particularly nutritious foods that contribute to a healthy diet including dairy, fruits, vegetables and protein-rich foods; and ii) poverty lines may need to rise, as they are the basis for programme targets and social safety net programmes, and currently do not provide a good gauge of people's ability to access even the least-cost versions of a healthy diet.

<sup>1</sup> To estimate the cost of the aforementioned three diets, this report uses retail prices from the World Bank's International Comparison Program (ICP) for internationally standardized items for 2017, which was the most updated available at the time of writing.



**KENYA**

Women harvesting  
French beans at one  
of Kenya's Njukini  
Corporative farms.  
©FAO/Fredrik Lerneryd



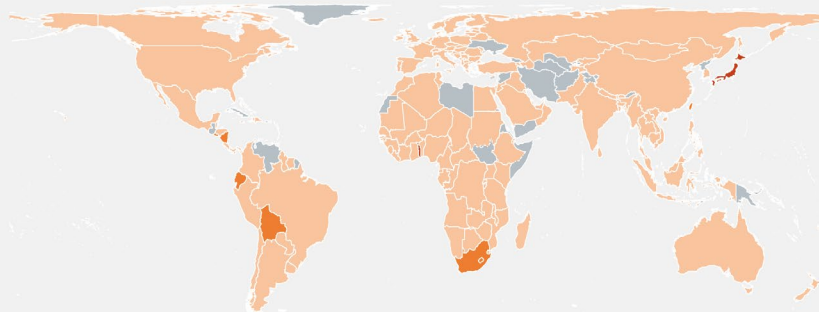
**TABLE 7 THE COST OF A HEALTHY DIET IS 60 PERCENT HIGHER THAN THE COST OF THE NUTRIENT ADEQUATE DIET, AND ALMOST 5 TIMES THE COST OF THE ENERGY SUFFICIENT DIET IN 2017**

Regions	Energy sufficient diet	Nutrient adequate diet	Healthy diet
<b>WORLD</b>	<b>0.79</b>	<b>2.33</b>	<b>3.75</b>
<b>AFRICA</b>	<b>0.73</b>	<b>2.15</b>	<b>3.87</b>
Northern Africa	0.75	2.90	4.12
Sub-Saharan Africa	0.73	2.06	3.84
Eastern Africa	0.61	1.98	3.67
Middle Africa	0.73	2.09	3.73
Southern Africa	0.86	2.29	3.99
Western Africa	0.80	2.05	4.03
<b>ASIA</b>	<b>0.88</b>	<b>2.18</b>	<b>3.97</b>
Central Asia	0.84	2.04	3.39
Eastern Asia	1.27	2.63	4.69
South-eastern Asia	0.92	2.42	4.20
Southern Asia	0.80	2.12	4.07
Western Asia	0.74	1.87	3.58
<b>LATIN AMERICA AND THE CARIBBEAN</b>	<b>1.06</b>	<b>2.83</b>	<b>3.98</b>
Caribbean	1.12	2.89	4.21
Latin America	1.00	2.78	3.75
Central America	1.13	3.04	3.81
South America	0.91	2.61	3.71
<b>OCEANIA</b>	<b>0.55</b>	<b>2.07</b>	<b>3.06</b>
<b>NORTHERN AMERICA AND EUROPE</b>	<b>0.54</b>	<b>2.29</b>	<b>3.21</b>
<b>COUNTRY INCOME GROUPS</b>			
<b>LOW-INCOME COUNTRIES</b>	<b>0.70</b>	<b>1.98</b>	<b>3.82</b>
<b>LOWER-MIDDLE-INCOME COUNTRIES</b>	<b>0.88</b>	<b>2.40</b>	<b>3.98</b>
<b>UPPER-MIDDLE-INCOME COUNTRIES</b>	<b>0.87</b>	<b>2.52</b>	<b>3.95</b>
<b>HIGH-INCOME COUNTRIES</b>	<b>0.71</b>	<b>2.31</b>	<b>3.43</b>

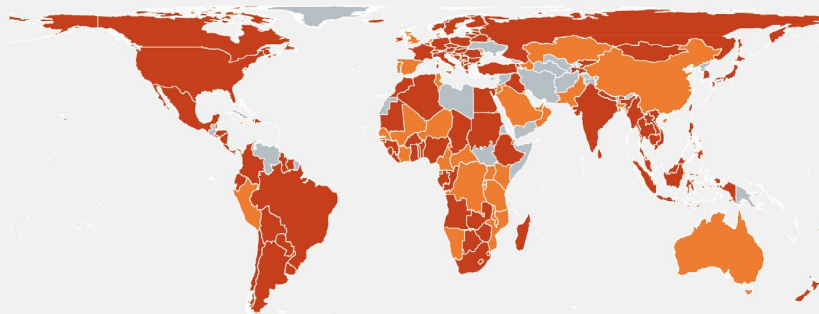
NOTES: The table shows the USD cost per person per day of the three reference diets (energy sufficient, nutrient adequate and healthy diet) by region and country income group in 2017. The analysis is based on a sample of 170 countries for which retail food price data are available in year 2017. Prices are obtained from the World Bank's International Comparison Program (ICP) for internationally standardized items, converted to international dollars using purchasing power parity (PPP). The cost of each diet represents a simple average of the cost incurred by countries belonging to a specific region or country income group. In the report, see Box 10 for the definition of the three diets and Box 11 for a brief description of the cost methodology. For the full methodological notes and data sources, see Annex 3 in the report. SOURCE: Herforth, A., Bai, Y., Venkat, A., Mahr, K., Ebel, A. & Masters, W.A. 2020. *Cost and affordability of healthy diets across and within countries*. Background paper for *The State of Food Security and Nutrition in the World 2020*. Rome, FAO.

**FIGURE 28 A HEALTHY DIET IS UNAFFORDABLE FOR THE POOR IN EVERY REGION OF THE WORLD IN 2017**

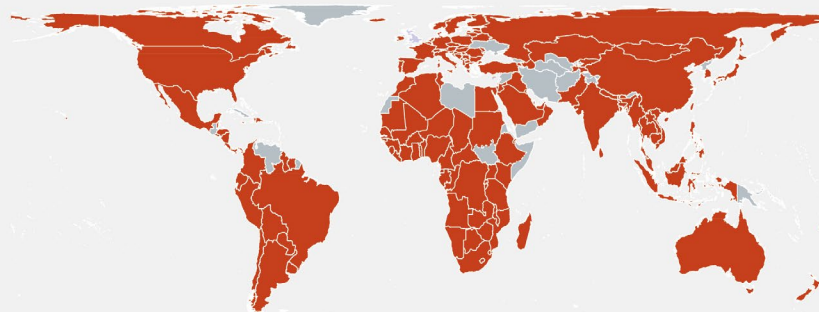
**A) COST OF AN ENERGY SUFFICIENT DIET COMPARED WITH THE INTERNATIONAL POVERTY LINE**



**B) COST OF A NUTRIENT ADEQUATE DIET COMPARED WITH THE INTERNATIONAL POVERTY LINE**



**C) COST OF A HEALTHY DIET COMPARED WITH THE INTERNATIONAL POVERTY LINE**



■ No data   ■ < USD 1.20   ■ USD 1.20–USD 1.90   ■ > USD 1.90

**NOTES:** The maps show the cost of the three reference diets (energy sufficient, nutrient adequate and healthy diet) compared with the international poverty line (USD 1.90 purchasing power parity (PPP) per day) for 170 countries in year 2017. A diet is considered unaffordable when its cost exceeds USD 1.20, i.e. 63 percent of USD 1.90 PPP per day. The 63 percent accounts for a portion of the poverty line that can be credibly reserved for food. In the report, see Box 10 for the definition of the three diets and Boxes 11 and 12 for a brief description of the cost and affordability methodology. For the full methodological notes and data sources, see Annex 3 in the report. For disclaimers on map boundary lines, see Annex 5 in the report.

**SOURCE:** Herforth, A., Bai, Y., Venkat, A., Mahr, K., Ebel, A. & Masters, W.A. 2020. *Cost and affordability of healthy diets across and within countries*. Background paper for *The State of Food Security and Nutrition in the World 2020*. Rome, FAO.



### Costs and affordability within countries

The cost and affordability of diets varies around the world, across regions and in different development contexts. They may also vary within countries due to temporal and geographical factors, as well as variations in the nutritional needs of individuals across the life cycle. These within-country variations in cost are not captured in the above global and regional analysis – but evidence from case studies makes it clear such variations can be substantial. ■

## 2.2 THE HIDDEN HEALTH AND ENVIRONMENTAL COSTS OF WHAT WE EAT

### KEY MESSAGES

- All diets around the world, from those that meet only dietary energy needs to those that are considered nutrient adequate and healthy diets, have hidden costs whose understanding is critical to identify trade-offs and synergies that affect the achievement of other SDGs.
- Two hidden costs of our dietary choices and food systems that support these that are most critical relate to the healthcare cost for many people in the world (SDG 3) and the climate-related costs that the world as a whole incurs (SDG 13).
- The first hidden cost: If current food consumption patterns continue, diet-related health costs linked to mortality and non-communicable diseases are projected to exceed USD 1.3 trillion per year by 2030. On the other hand, shifting to healthy diets is estimated to lead to a reduction of up to 97 percent in direct and indirect health costs,

respectively, thus creating significant savings that could be invested now to lower the cost of nutritious foods.

- The second hidden cost: The diet-related social cost of greenhouse gas (GHG) emissions associated with current dietary patterns is projected to exceed USD 1.7 trillion per year by 2030. The adoption of healthy diets that include sustainability considerations would reduce the social cost of GHG emissions by an estimated 41–74 percent in 2030.
- Shifting to healthy diets that include sustainability considerations could help to reduce health and climate-change costs by 2030, as their hidden costs are lower compared with those of current food consumption patterns.
- Assessing the context-specific barriers, managing short-term and long-term trade-offs and exploiting synergies will be critical to achieve such transformations.

Valuing the hidden costs (or negative externalities) associated with the different diets could also modify significantly our assessment of what is “affordable” from a broader societal perspective and reveal how dietary choices affect other SDGs. Two hidden costs that are most critical relate to the health (SDG 3) and climate-related (SDG 13) consequences of our dietary choices and the food systems that support these.

### A valuation of hidden costs to dietary patterns

New analysis for this report estimates the health and climate-change costs of five different dietary patterns: one benchmark diet (BMK), representing

current food consumption patterns, and four alternative healthy diet patterns that include sustainability considerations.

Four alternative healthy diet patterns are analysed: a predominantly plant-based flexitarian diet which contains small to moderate amounts of animal source foods (FLX); a pescatarian diet based on sustainable aquaculture which contains moderate amounts of fish but no other meat (PSC); a vegetarian diet which contains moderate amounts of dairy and eggs, but no fish or other meat (VEG); and a completely plant-based, vegan diet that is based on a variety of fruits and vegetables, whole grains and plant-based protein sources, such as legumes and nuts (VGN).

The purpose of identifying the four alternative diet patterns is to examine the hidden costs for different healthy diets that include aspects of environmental sustainability, rather than to endorse any particular dietary pattern. The four alternative diet scenarios are only examples, and other variations could be developed for a similar analysis of hidden costs. While there is a range of healthy diets, based on global guidelines, that can be designed to include sustainability considerations, not all are the most healthy and appropriate diets for all population groups. The purely plant-based diets in particular can carry large risks of nutrient inadequacies. This can be the case in settings where overall diet quality is low: e.g. where micronutrients cannot easily be supplied or managed through an abundance of nutrient-rich

plant-based foods; in the case of young children and pregnant or lactating women who have higher nutrient requirements; or where populations are already suffering nutrient deficiencies.

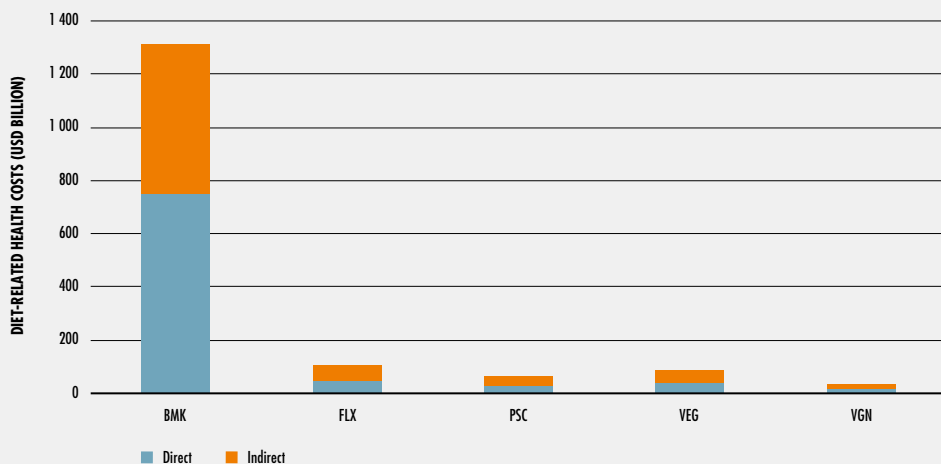
### Hidden health costs

Assuming that current food consumption patterns accommodate expected changes in income and population, as per in the benchmark scenario (BMK), health costs are projected to amount to an average of USD 1.3 trillion in 2030. More than half (57 percent) of these are direct healthcare costs as they are associated with expenses related to treating the different diet-related diseases. The other part (43 percent) accounts for indirect costs, including losses in labour productivity (11 percent) and informal care (32 percent).

If, instead, any of the four alternative diet patterns used for the analyses are adopted (FLX, PSC, VEG, VGN), diet-related health costs dramatically decrease by USD 1.2–1.3 trillion, representing an average reduction of 95 percent of the diet-related health expenditures worldwide compared to the benchmark diet in 2030 (Figure 34).

### Hidden climate-change costs

What people eat, and how that food is produced, not only affects their health, but also has major ramifications for the state of the environment and for climate change. The food system underpinning the world's current food consumption patterns

**FIGURE 34** ADOPTION OF ANY OF THE FOUR ALTERNATIVE HEALTHY DIET PATTERNS WOULD DRAMATICALLY DECREASE DIET-RELATED HEALTH COSTS BY 2030

NOTES: The figure shows diet-related health costs in 2030 (USD billion) by direct and indirect cost component, under current consumption patterns (BMK) and four alternative healthy diet patterns: flexitarian (FLX), pescatarian (PSC), vegetarian (VEG) and vegan (VGN) (see footnote y in the report for more information). Costs are shown for 157 countries. Direct costs include direct medical and healthcare costs associated with treating a specific disease. Indirect costs include loss of productivity per working days and the costs of informal care associated with a specific disease. Health costs refer to four diet-related diseases included in the analysis: coronary heart disease, stroke, cancer and type-2 diabetes mellitus. See Box 14 in the report for the definition of the five diets and a summary of the methods and data sources. For the full methodological notes, see Annex 7 in the report.

SOURCE: Springmann, M. 2020. *Valuation of the health and climate-change benefits of healthy diets*. Background paper for *The State of Food Security and Nutrition in the World 2020*. Rome, FAO.

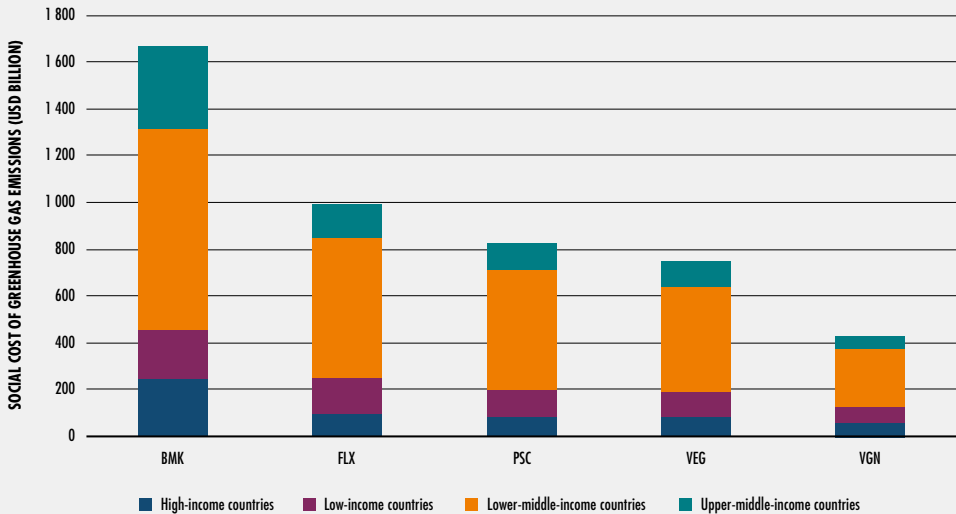
is responsible for 21–37 percent of total anthropogenic greenhouse gas (GHG) emissions, meaning originating in human activity, which reveals it to be a major driver of climate change, even without considering other environmental effects.

The diet-related social cost of GHG emissions related to current food consumption patterns (Figure 37) is estimated to be around USD 1.7 trillion

in 2030 for an emissions-stabilization scenario that keeps global temperature limited to a 2.5 degree increase (averaged over 100 years). Adoption of any of the four alternative healthy diet patterns (FLX, PSC, VEG and VGN) could potentially contribute to significant reductions of the social cost of GHG emissions, ranging from USD 0.7 to USD 1.3 trillion (41–74 percent) in 2030 (Figure 37).



**FIGURE 37** ADOPTION OF PLANT-BASED DIETARY PATTERNS WOULD REDUCE THE SOCIAL COST OF GHG EMISSIONS BY 41–74 PERCENT IN 2030



NOTES: The figure shows diet-related social cost of GHG emissions in 2030 (USD billion) under current food consumption patterns (BMK) and four alternative healthy diet patterns: flexitarian (FLX), pescatarian (PSC), vegetarian (VEG) and vegan (VGN) (see footnote y in the report for more information). Costs are shown for 157 countries. See Box 14 in the report for the definition of the five diets and a summary of the methods and data sources. For the full methodological notes, see Annex 7 in the report.

SOURCE: Springmann, M. 2020. *Valuation of the health and climate-change benefits of healthy diets*. Background paper for *The State of Food Security and Nutrition in the World 2020*. Rome, FAO.

## Health and climate-change costs: putting them into context

To put the health and climate-change costs into context, it is useful to compare the hidden costs with the wholesale costs of the diets, estimated at the consumption level and valued based on estimates of commodity prices by region.

If the diet-related health and climate-change costs were added to the total wholesale cost of the benchmark diet representing the current consumption pattern, then the full cost of this benchmark diet would increase by 50 percent globally, from USD 6.0 to USD 8.9 trillion by 2030. On the other hand, the full cost of these diets globally would only increase between 8 and

19 percent as a result of the adoption of any of the four alternative diet patterns (FLX, PSC, VEG or VGN). Overall, this translates into a significant cost savings, compared with the benchmark diet.

### **Managing trade-offs and exploiting synergies in the transition towards healthy diets**

To achieve the dietary patterns for healthy diets that include sustainability considerations, large transformative changes in food systems will be needed at all levels. Given the large diversity of current food systems and wide discrepancies in food security and nutrition status across and within countries, there is no one-size-fits-all solution for countries to shift towards healthy diets and create synergies to reduce their environmental footprints.

There is also no one healthy diet, let alone one that includes sustainability considerations for every context. Furthermore, there could be other technological and productivity advancements that may be more cost effective in addressing sustainability concerns and mitigating climate change. Assessing the context-specific barriers, managing short-term and long-term trade-offs and exploiting synergies will be critical to achieve such transformations.

While the cost of the healthy diet is lower than current food consumption patterns when one considers health and climate-related externalities, in some

contexts, there are other important indirect costs and trade-offs. For countries where the food system not only provides food, but also drives the rural economy, it will be important to consider the impact of shifting to healthy diet patterns in terms of the livelihoods of small farmers and the rural poor as well. In these cases, care must be taken to mitigate the negative impact on incomes and livelihoods as food systems transform to deliver affordable healthy diets.

Many lower-income countries, where populations already suffer nutrient deficiencies, may need to increase their carbon footprint in order to first meet recommended dietary needs and meet nutrition targets, including those on undernutrition. On the other hand, other countries, especially upper-middle-income and high-income countries, where diet patterns exceed optimal energy requirements, and where people consume more animal source foods than required, will need major changes in dietary practices and system-wide changes in food production, food environments and trade. ■

## 2.3 WHAT IS DRIVING THE COST OF NUTRITIOUS FOOD?

### KEY MESSAGES

- Factors driving the cost of nutritious foods are found throughout food systems, in the realms of food production, food supply chains, food environments, as well as consumer demand and the political economy of food.
- Food production: Low levels of productivity, high production risks and insufficient diversification towards the production of more nutritious foods are key drivers of the cost of healthy diets, especially in low-income countries.
- Food supply chains: Inadequate food storage, poor road infrastructure and limited food preservation capacity, especially for highly perishable foods, lead to food losses and inefficiencies along the food supply chain that drive up the cost of nutritious foods.
- Consumer demand: Rapid rates of urbanization have resulted in more work-away and eat-away-from-home habits, with a direct impact on the demand for easy-to-prepare, highly processed foods or convenience foods that are often energy dense and high in fats, sugars and/or salt and do not necessarily contribute to healthy diets.
- Political economy: Trade policies, mainly protectionary trade measures and input subsidy programmes, tend to protect and incentivize the domestic production of staple foods, such as rice and maize, often at the detriment of nutritious foods, like fruits and vegetables. Non-tariff trade measures can help improve food safety, quality standards and the nutritional value of food, but they can also drive up the costs of trade and hence food prices, negatively affecting affordability of healthy diets.

→ Addressing some of these drivers to reduce the cost of nutritious foods implies the need to also tackle environmental externalities associated with current food systems and the hidden cost they create, particularly at the food production level, but also at the consumption level.

To increase the affordability of healthy diets, the cost of nutritious foods must come down. Many factors determine the consumer price of nutritious food, from the point of production throughout the food supply chain, and also within the food environment when consumers engage with the food system to make decisions about acquiring, preparing and consuming foods.

This section focuses on four main sets of drivers determining the cost of food. The cost drivers specifically covered include those that relate to 1) the production of diverse nutritious foods that contribute to healthy diets; 2) the food supply chain beyond food production; 3) the food environment as well as consumer demand and behaviour; and 4) the political economy of food.

### Cost drivers in the production of diverse nutritious food

#### Low levels of technology, innovation and investment in food production

Addressing low productivity in nutritious food production can be an effective way of raising the overall supply of nutritious foods, reducing food prices and raising incomes, especially for the poorer family farmers and smallholder producers in

low-income and lower-middle-income countries, like farmers, pastoralists and fisherfolk. Sustained productivity growth, without unsustainably depleting natural resources, depends on food producers having the capacities to innovate (enabling them to raise yields), manage inputs more efficiently, adopt new crops or breeds and improve quality, while also conserving natural resources.

Insufficient diversification towards the production of horticultural products, legumes, small-scale fisheries, aquaculture, livestock and other nutritious food products also limits the supply of diverse and nutritious foods in markets, resulting in higher food prices. Diversified and well-integrated production systems not only increase the availability of nutritious foods, but also help vulnerable populations to increase their resilience to climate and price shocks and reduce seasonal variation in food production.

### **Managing risks in food and agricultural production**

Engaging in the food and agriculture sector can be an intrinsically risky endeavour, be it in crop or livestock production, fisheries and aquaculture or forestry. This is particularly the case for poorer family farmers and smallholder producers on marginal lands or those with limited access to technology, capital or other productive resources.

In crop production, traditional staple foods generally carry a lower risk

compared to the production of higher value and more nutritious foods. In the absence of access to knowledge, information and credit, all of the above are risks that influence food producers' decisions on whether to invest in crop production, livestock or aquaculture, which ultimately influences the overall availability of nutritious foods and their prices.

### **Seasonality and climate factors**

Climate change is expected to further aggravate seasonality through increased drought frequency, disruption of food production by floods and tropical storms, increasing and more variable temperatures and more erratic rainfall. This will lead to a general decline in agricultural production over the next two to three decades, turning into a major cost driver for food in the near future.

Current food consumption patterns and the food systems that support them are both major drivers of negative environmental impacts and climate change, creating a vicious circle. Climate variability and extremes and unpredictable seasonality are exacerbated because these hidden environmental and climate-change costs are left unaddressed. This, in turn, negatively impacts productivity in the food and agricultural sectors, ultimately increasing the cost of nutritious foods and healthy diets.

## Cost drivers along the food supply chain

### Food losses and waste

Reducing pre-harvest and post-harvest losses in quantity and quality at the production level in the agriculture, fisheries and forestry sectors is an important starting point to reduce the cost of nutritious foods along the food supply chain. This is because losses decrease the overall availability of these foods, while also possibly undermining environmental sustainability.

Important causes of losses at the production level include exposure to adverse weather conditions, harvest and handling practices, as well as marketing challenges. Inadequate storage conditions and decisions made at earlier stages of the supply chain lead to products with a shorter shelf life. Adequate cold storage, in particular, can be crucial to prevent quantitative and qualitative food losses of perishable commodities. During transportation, good physical infrastructure and efficient trade logistics are of key importance to prevent food losses.

### Technology and infrastructure

Fruits and vegetables and many animal source foods are highly perishable, especially fish, fresh milk, meat and eggs. Lack of adequate market infrastructure and limited processing technology result in food losses and higher food prices. Improved technology and infrastructure in handling, storage and processing (cool storage systems, cold chains, drying

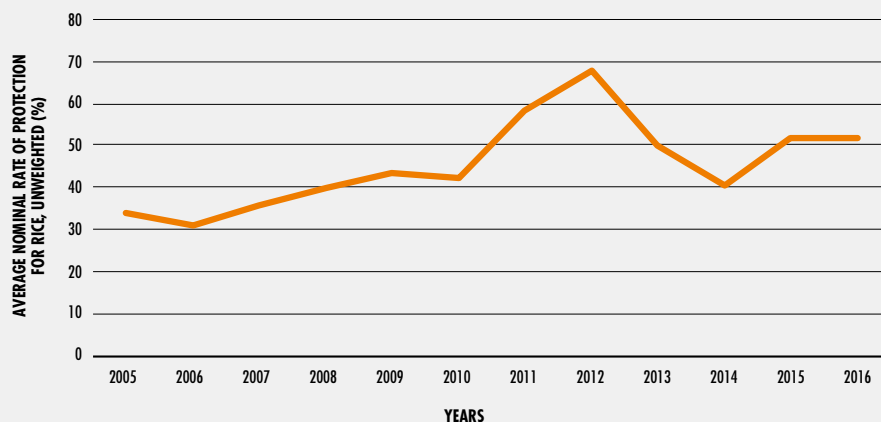
techniques, improved packaging) offers opportunities to reduce losses and lower consumer food prices.

Another important component of market infrastructure is the overall quality and efficiency of the national road and transportation network, which is critical in getting produce from the farm gate to markets at reasonable cost. Investment in all-weather rural roads is particularly important. This reduces the time it takes to reach rural and urban markets, thus helping to reduce pre-harvest and post-harvest losses, including of perishable fruits and vegetables.

### The food environment and consumer demand as a cost driver

The distance to food marketplaces and the time required to prepare a healthy meal are among the key barriers that prevent many consumers from having access to, and hence deciding to pay a higher cost for healthy diets. These barriers can be seen as cost drivers because people who try to overcome them would have to accept an additional cost on top of the cost of food itself.

The rapid rate of urbanization, combined with changing lifestyles and increasing involvement of women in economic activities, is leading to structural changes in consumer behaviour and food culture. As such consumer demand is also an important cost driver to consider. These changes

**FIGURE 39** PROTECTIONARY TRADE POLICIES PROTECT AND INCENTIVIZE DOMESTIC PRODUCTION OF STAPLE FOODS, SUCH AS RICE, BUT OFTEN TO THE DETRIMENT OF NUTRITIOUS FOODS IN LOW-INCOME COUNTRIES

NOTES: The figure shows the average nominal rate of protection (NRP) for rice in low-income countries, between 2005 and 2016. NRP for rice is the ratio of the price gap (difference between observed and reference prices of rice at farm gate) and the reference price of rice at farm gate.

SOURCE: Ag-Incentives. 2020. Nominal rate of protection. In: *Ag-Incentives* [online]. Washington, DC. [Cited 26 April 2020].

<http://ag-incentives.org/indicator/nominal-rate-protection>

are making it more difficult, especially for women with jobs, to be able to afford the time that it takes to prepare a healthy meal, and prior to that, to buy the needed nutritious ingredients. The opportunity cost of eating healthy in the face of these changes is too high, because of the availability of cheap energy-dense fast foods of minimal nutritional value and easy-to-prepare, highly processed foods, already half cooked to reduce the time spent on preparation.

### The political economy as a cost driver

Food and agricultural policies have the power, either directly or indirectly, to affect the cost of food. In particular, the food and agriculture policy framework encapsulates the difficult balancing act required when choosing between actions in agriculture versus other sectors; among different government objectives and fiscal policies; between benefits for producers, consumers and intermediaries; and even between different agricultural subsectors.

Trade policies affect the cost and affordability of healthy diets by altering the relative prices between imported and import-competing foods. Protectionary trade measures such as import tariffs, bans and quotas – together with input subsidy programmes – have often been embedded in self-sufficiency and import substitution strategies. In low-income countries, this policy has protected and incentivized the domestic production of energy-dense foods such as rice (Figure 39) and maize, but often at the detriment of vitamin- and micronutrient-rich foods (i.e. fruits and vegetables). ■

## 2.4 POLICIES TO REDUCE THE COST OF NUTRITIOUS FOODS AND ENSURE AFFORDABILITY OF HEALTHY DIETS

### KEY MESSAGES

- Reducing the costs of nutritious foods and ensuring the affordability of healthy diets for everyone requires significant transformations of existing food systems worldwide, including strengthening their resilience in the face of shocks from the COVID-19 pandemic.
- Given the diversity and complexity of food systems, countries will need to implement a set of context-specific policies and strategies, and step up public and private sector investments with significant policy coherence, improved planning and coordination across sectors and actors.
- This starts with an urgent rebalancing of agricultural policies and incentives towards more nutrition-sensitive investment in food and agricultural production, especially fruits and vegetables, protein-rich plant-based and animal source foods, such as legumes, poultry, fish and dairy products.
- Policy actions along food supply chains are critical in reducing the costs of nutritious foods. Such actions should enhance efficiencies in food storage, processing, packaging, distribution and marketing, thereby reducing food losses.
- The efficiency of internal trade and marketing mechanisms are key to reducing the cost of nutritious foods and determining the affordability of healthy diets for both urban and rural consumers.

→ Raising the affordability of healthy diets requires policies that enhance employment and income-generating activities, reduce income inequality and ensure that no one is left behind. Nutrition-sensitive social protection programmes will be particularly necessary to support the poor and those living through humanitarian crises, without basic access to sufficient nutritious food to meet dietary requirements.

→ Additional policy measures that are beyond the scope of this report, but are designed to promote healthy diets, need to be put in place as well. These include the promotion of healthy food environments, taxation of energy-dense foods, food industry and marketing regulation, and policies supporting nutrition education, sustainable food consumption and food waste reduction.

### Setting the stage for effective food systems transformation

Ten years remain to achieve the ambitious SDG targets within the current economic, social and political environment – an environment vulnerable to climate shocks and unexpected consequences of the COVID-19 pandemic. With this short timeline, countries must identify and implement critical policy and investment changes that will transform their current food systems to ensure everybody can afford healthy diets that include sustainability considerations.

### Policy options to reduce the cost and enhance affordability of healthy diets

A summary of policy options and investments to be considered to transform food systems worldwide

towards greater affordability of healthy diets, and in line with various policy recommendations made below, is presented in [Figure 41](#).

### Policies and investments to reduce the cost of nutritious foods

Reducing the cost of nutritious foods and increasing the affordability of healthy diets must start with a reorientation of agricultural priorities towards more nutrition-sensitive food and agricultural production. Public expenditures will need to be stepped up to raise productivity, encourage diversification in food production and ensure that nutritious foods are made abundantly available.

Policies that penalize food and agricultural production (through direct or indirect taxation) should be avoided, as they tend to have adverse effects on the production of nutritious foods. Subsidy levels in the food and agriculture sectors should also be revisited, especially in low-income countries, to avoid taxation of nutritious foods.

Policies should promote investment in irrigation infrastructure specifically targeting strengthened capacity for all-season vegetable production, and other high-value commodities to increase availability of nutritious foods. More investments are needed in research and development to raise productivity of nutritious foods and help reduce their cost, while enhancing access to improved technologies, especially for family farmers and smallholders, to maintain adequate levels of profitability.



**FIGURE 41** POLICY OPTIONS TO REDUCE THE COST OF NUTRITIOUS FOODS AND ENHANCE AFFORDABILITY OF HEALTHY DIETS WITH COMPLEMENTARY POLICIES TO PROMOTE HEALTHY DIETS



### POLICIES AND INVESTMENTS TO REDUCE THE COST OF NUTRITIOUS FOODS

- ▶ Investment in nutrition-sensitive agricultural productivity increases and diversification
- ▶ Promotion of urban and peri-urban agriculture
- ▶ Avoiding taxation of nutritious foods
- ▶ Investment in research, innovation and extension
- ▶ Policies and investment in nutrition-sensitive value chains
- ▶ Policies and investment to reduce food losses
- ▶ Policies and investment in nutrition-sensitive handling and processing
- ▶ Food fortification
- ▶ Investment in road networks, transport, market infrastructure
- ▶ Ensuring trade and marketing policies balance producer and consumer interests
- ▶ Strengthening food supply chains under humanitarian conditions



### CONSUMER-ORIENTED POLICIES TO ENHANCE AFFORDABILITY OF HEALTHY DIETS

- ▶ Policies to reduce poverty and income inequality
- ▶ Strengthening nutrition-sensitive social protection mechanisms, including:
  - cash transfer programmes
  - in-kind transfers/food distribution
  - school feeding programmes
- ▶ Subsidization of nutritious foods



### COMPLEMENTARY POLICIES THAT PROMOTE HEALTHY DIETS

- ▶ Promotion of healthy food environments
- ▶ Taxation of energy-dense foods and beverages of minimal nutritional value
- ▶ Food industry regulations
- ▶ Regulation of food marketing
- ▶ Promote breastfeeding, regulate marketing of breastmilk substitutes, ensure access to nutritious foods by infants
- ▶ Policies supporting nutrition education
- ▶ Policies in support of sustainable food consumption and food waste reduction

SOURCE: FAO.

**Policy options along the food value chain**

There is a need for stronger policies towards more nutrition-sensitive value chains. Key policy actions include investments in improved storage, processing and preservation to retain the nutritional value of food products, rather than investing in highly processed foods. Improving the national road network, as well as transport and market infrastructure, can go a long way to ensuring greater affordability of healthy diets. In addition to food storage, appropriate food handling and processing facilities are central to increasing efficiencies along the value chain for nutritious foods.

Policies and investments to reduce food losses in more nutritious perishable commodities, such as fruits and vegetables, dairy, fish and meat, can increase their affordability in two ways. First, by focusing on the earlier (production) stages of the food supply chain, as this tends to boost supplies and hence reduce food prices at the farm gate. Second, by targeting the parts of the food supply chain where food losses are greatest, as this will more likely have a greater impact on reducing the cost of the targeted food item.

**Consumer-oriented policies to ensure affordability of healthy diets**

Policies aimed at reducing poverty and income inequality, while enhancing employment and income-generating activities, are also key to raising

people's incomes and hence the affordability of healthy diets. While there are important synergies between policies enhancing employment and reducing income inequality for increased food security and better nutrition, including social protection, these have been addressed in depth in the 2019 edition of this report.

Nutrition-sensitive social protection policies are needed to provide better access to nutritious foods to lower-income consumers and thus raise their affordability of healthy diets. They can be particularly important in the face of adversity, as we are seeing today during the COVID-19 pandemic. It is important to strengthen these mechanisms to ensure they can support micronutrient supplementation where needed, as well as create healthy food environments by encouraging consumers to diversify their diets to reduce dependence on starchy staples, reduce consumption of foods high in fats, sugars and/or salt, and include more diverse, nutritious foods.

**Complementary policies that promote healthy diets**

To achieve healthy dietary patterns, large transformative changes in food systems will be needed at all levels. It is important to underscore that, although there are some overlaps, these changes go beyond the policy options and investments that are explicitly designed and implemented to reduce the cost of

and increase the affordability of healthy diets. That is to say, other conditions must also be met, requiring a whole range of other policies that are more explicitly tailored to raise awareness and influence consumer behaviour in favour of healthy diets, possibly with important synergies for environmental sustainability.

These include, for example, promoting healthy food environments that are safe and provide physical access to nutritious foods for healthy diets; implementing tax policies to increase the price of highly

processed, energy-dense foods of minimal nutritional value; food industry regulations to help ensure easier and more affordable access to healthy diets, by reducing the content of fat, sugar and salt in foods; introducing regulations on the marketing of energy-dense foods of minimal nutritional value, while also lowering the exposure of children to marketing techniques; ensuring access to nutritious foods by infants and conditions for households to provide it; and policies supporting nutrition education and the promotion of healthy diets that include sustainability considerations. ■





# 2020

## THE STATE OF

# FOOD SECURITY AND NUTRITION

# IN THE WORLD

## TRANSFORMING FOOD SYSTEMS FOR AFFORDABLE HEALTHY DIETS

Updates for many countries have made it possible to estimate hunger in the world with greater accuracy this year. In particular, newly accessible data enabled the revision of the entire series of undernourishment estimates for China back to 2000, resulting in a substantial downward shift of the series of the number of undernourished in the world. Nevertheless, the revision confirms the trend reported in past editions: the number of people affected by hunger globally has been slowly on the rise since 2014. The report also shows that the burden of malnutrition in all its forms continues to be a challenge. There has been some progress for child stunting, low birthweight and exclusive breastfeeding, but at a pace that is still too slow. Childhood overweight is not improving and adult obesity is on the rise in all regions.

The report complements the usual assessment of food security and nutrition with projections of what the world may look like in 2030, if trends of the last decade continue. Projections show that the world is not on track to achieve Zero Hunger by 2030 and, despite some progress, most indicators are also not on track to meet global nutrition targets. The food security and nutritional status of the most vulnerable population groups is likely to deteriorate further due to the health and socio-economic impacts of the COVID-19 pandemic.

The report puts a spotlight on diet quality as a critical link between food security and nutrition. Meeting SDG 2 targets will only be possible if people have enough food to eat and if what they are eating is nutritious and affordable. The report also introduces new analysis of the cost and affordability of healthy diets around the world, by region and in different development contexts. It presents valuations of the health and climate-change costs associated with current food consumption patterns, as well as the potential cost savings if food consumption patterns were to shift towards healthy diets that include sustainability considerations. The report then concludes with a discussion of the policies and strategies to transform food systems to ensure affordable healthy diets, as part of the required efforts to end both hunger and all forms of malnutrition.



*The State of Food Security and Nutrition in the World 2020* (full text)



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