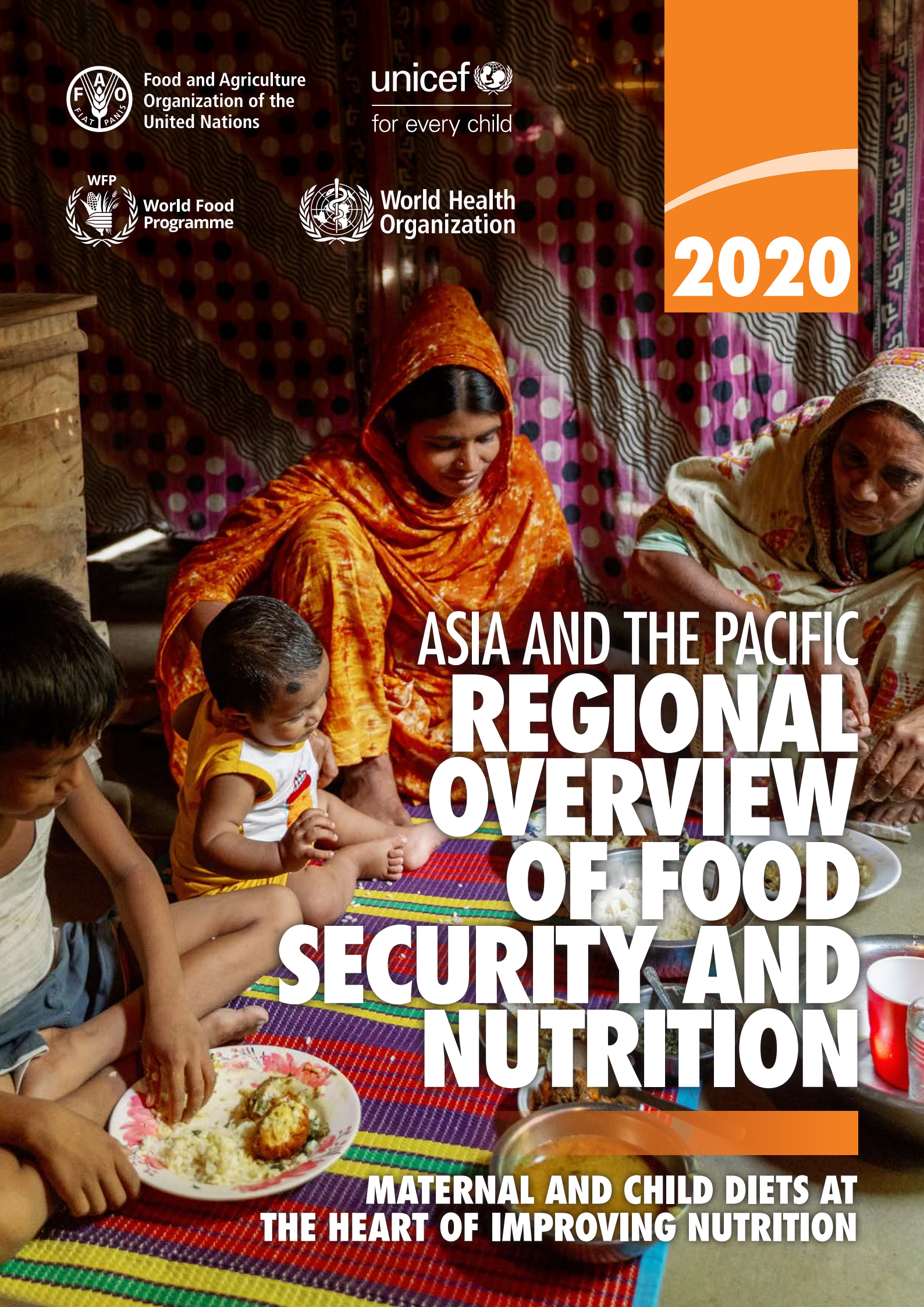

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2020

ASIA AND THE PACIFIC REGIONAL OVERVIEW OF FOOD SECURITY AND NUTRITION

MATERNAL AND CHILD DIETS AT THE HEART OF IMPROVING NUTRITION

Required citation:
FAO, UNICEF, WFP and WHO. 2021. *Asia and the Pacific Regional Overview of Food Security and Nutrition 2020: Maternal and child diets at the heart of improving nutrition*. Bangkok, FAO. https://doi.org/10.4060/cb2895en

ISBN 978-92-5-133853-7 (FAO)

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BANGLADESH. Social protection systems and transfers can promote the affordability of healthy diets for the poor and most vulnerable. Complementary health and nutrition education and other services is an example of using a systems approach to promoting healthy maternal and child diets.

2020

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Food and Agriculture Organization of the United Nations
Bangkok, 2021

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FOREWORD

This is the third annual report jointly written by United Nations agencies on progress towards the Sustainable Development Goals (in particular SDG 2 – Zero Hunger) and the World Health Assembly targets 2030 on nutrition in the Asia and Pacific region.

Five years after the launch of the SDGs, many key indicators still demonstrate slow or no progress. In a region with the largest share of the global population, this is of major concern. There are still 351 million people undernourished in the Asia and Pacific region, more than half of the global total (688 million). This means a large number of people need to escape food insecurity and malnutrition over the next ten years. The COVID-19 pandemic will hinder progress even further.

While trends in the prevalence of stunting and wasting in young children indicate some progress towards the 2030 targets, the levels are still unacceptably high in many countries in the region. At the same time, the increasing prevalence of overweight and obesity in adults and children is extremely worrisome. One key factor driving these nutritional challenges is the high cost of a healthy diet, which is two to nine times the cost of a basic energy sufficient diet in the region. For nearly 1.9 billion people in the Asia and Pacific region, a healthy diet remains unaffordable. The need to improve dietary quality and intake is critical, especially for young children and mothers, and the most vulnerable community members. Given that unhealthy diets for children can have permanent effects on their physical and cognitive development, interventions to improve the diets of mothers and children under five years of age are paramount. Ultimately, a healthy population is essential for economic development and achieving zero hunger.

The first part of this report tracks progress on key SDG 2 indicators and World Health Assembly targets up to 2019. There is growing concern, however, that the COVID-19 pandemic will erase many of the gains made in earlier years, although the impact of the pandemic is not yet fully understood. Some scenarios present figures of up to 130 million additional people at risk of becoming acutely food insecure, with up to 24 million in the Asia and Pacific region. Globally, an additional 6.7 million children under five years of age are expected to become wasted. More than 3.8 million of these are estimated to live in Southern Asia. This deterioration comes on top of the pre-existing gaps in food security and nutrition and needs to be addressed urgently in a comprehensive manner by bringing together a wide range of stakeholders.

The second part of the report focuses on challenges and possible solutions to improve maternal and child diets in the Asia and Pacific region. Consumption of energy sufficient diets is not enough, as such diets lack vital macro and micronutrients and dietary diversity. Hence, promoting healthy diets, and implementing policies that allow the poor and vulnerable to afford these diets, is critical for the future productivity of their societies. To achieve healthy diets for all mothers and children in the Asia and Pacific region, the report recommends an integrated systems approach, bringing together food, water and sanitation, health, social protection and education systems to address the underlying and contributing factors of diets sustainably. The report describes promising experiences from the region and shows how, through multi-sectoral and systems analysis, these experiences can be woven into policy and

practice. Additionally, the impacts of COVID-19 on the five interlocking systems noted above are highlighted to help mitigate the impacts on food security and nutrition.

We trust this report raises awareness of the importance of maternal and child diets for the health and wellbeing of everyone and supports the conversation of shaping policies and practices across the Asia and Pacific region to achieve food security and nutrition for all.

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ACKNOWLEDGEMENTS

This report was prepared jointly by the Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific (FAORAP); the United Nations Children's Fund East Asia and Pacific Regional Office (UNICEF EAPRO); the UNICEF Regional Office for South Asia (UNICEF ROSA); the World Food Programme Regional Bureau for Asia and the Pacific in Bangkok (WFP RBB); the World Health Organization South East Asia Regional Office (WHO SEARO); and the WHO Western Pacific Regional Office (WHO WPRO).

Under the overall leadership of Jong-Jin Kim (FAORAP), Jean Gough (UNICEF ROSA), Karin Hulshof (UNICEF EAPRO), John Aylieff (WFP RBB), Takeshi Kasai (WHO WPRO) and Poonam Khetrapal Singh (WHO SEARO), the publication's technical coordination was led by David Dawe and Silke Pietzsch (FAORAP) in collaboration with Jessica Blankenship and Elizabeth Drummond (UNICEF EAPRO), Zivai Murira (UNICEF ROSA), Britta Schumacher (WFP RBB), Angela de Silva (WHO SEARO) and Juliawati Untoro (WHO WPRO).

In addition to the people mentioned above, Rosemary Kafa and Warren Lee (FAO RAP), and Anusara Singhkumarwong (WFP RBB) contributed to the report as part of the core writing team. Additional contributions to the report were provided by Anthony Bennett, Katinka DeBalogh, Sridhar Dharmapuri and Eva Galvez Nogales (FAO RAP), Rachel Pickel (UNICEF EAPRO), Prosper Dakurah (UNICEF Lao PDR), and Noor Aboobacker, Arvind Betigeri, Nicolas Bidault, Nadya Frank, James Kingori, Aphitchaya Nguanbanchong and Yingci Sun (all WFP RBB). Tianyi Liu (FAORAP) provided a range of inputs, including preparation of the graphs and management of the references.

Valuable comments and inputs on the report were provided by Giovanni Carrasco Azzini, Carlo Cafiero, Marco Sánchez Cantillo, Valentina Conti, Cristina Coslet, Máximo Torero Cullen, Juan Feng, Alejandro Grinsprun, Jim Hancock, Cindy Holleman, Elizabeth Koechlein, Maria Antonia Tuazon (all FAO headquarters), and Janosch Klemm, Frances Knight and Pierre Momcilovic (all WFP headquarters).

At FAORAP, Kanokporn Chansomritkul, Allan Dow, Tianyi Liu and Rachel Oriente coordinated the publishing process, with the valuable support of Jessica Matthewson and other colleagues at FAO headquarters. Robert Horn edited the publication for clarity and to make it more reader-friendly.

Copyediting, proofreading and layout were provided by QUO Global in Bangkok.

ACRONYMS AND ABBREVIATIONS

ADS	Agricultural Development Strategy
AEZ	Agro-ecological zone
AKU	Agha Khan University
ANC	Antenatal Care
ASF	Animal Source Foods
BCC	Behaviour Change Communication
BDT	Bangladesh Thaka
BISP	Benazir Income Support Programme
BMI	Body Mass Index
BMS	Breastmilk Substitutes
CCT	conditional cash transfer
CCT	Child Cash Transfer
CDR	Centre for Development Research (CDR) in Lao PDR
CM	Child Money
CODEX	Codex Alimentarius
COVID-19	Coronavirus Disease of 2019
CPI	Consumer price index
DHS	District Health Survey
DPR	Democratic People's Republic (of Korea)
EA	East Asia
EAP	East Asia and the Pacific
EBF	Exclusive breastfeeding
ECHO	Ending Childhood Obesity
EE	Environmental Enteropathy
FAO	Food and Agriculture Organization of the United Nations
FBDG	Food-based Dietary Guidelines
FBF	Fortified Blended Food
FCHV	Female community health volunteers
FFR	Fortified rice
FIES	Food Insecurity Experience Scale
FNG	Fill the Nutrient Gap
GDP	Gross Domestic Product
GHG	Green House Gas
HB	Haemoglobin
HFSS	High in Fats, Salts and Sugars
HMIS	Health Management Information Systems
IBFAN	International Baby Foods Action Network
ICDDR,B	International Centre for Diarrhoeal Disease Research, Bangladesh
ICP	International Comparison Programme of the World Bank
IFA	Iron Folic Acid
IFPRI	International Food Policy Research Institute
IQR	Interquartile range
IYCF	Infant and Young Children Feeding
LANSA	Leveraging agriculture for nutrition in South Asia
LKR	Sri Lankan Rupee
LMA	Lactating Mother Allowance
LNS	Lipid-based nutrient supplements
MA	Maternal Allowance
MAD	Minimum Acceptable Diet
MCBP	Mother and Child Benefit Programme
MCCT	Maternal and child cash transfer
MDD	Minimum Dietary Diversity
MDGs	Millennium Development Goals
MICS	Multi Indicator Cluster Survey
MM	Multiple Micronutrients
MMF	Minimum Meal Frequency
MMK	Burmese Kyat
MNP	Micronutrient powder

MNT	Mongolian Tögrög
MoALI	Ministry of Agriculture, Livestock and Irrigation
MoWCA	Ministry of Women and Children Affairs
MS-NPAN	Multi-Sectorial National Plan of Action for Nutrition
NCDs	non-communicable diseases
NGO	Non -Governmental Organization
NFHS	National Family and Health Survey
NHPSP	National Health Promotion Strategic Plan
NIPN	National Information Platforms for Nutrition
NSFSSPA	National Strategic Framework for School Sports and Physical Activity
PDS	Public Distribution System
PDR	(Lao) People's Democratic Republic
PKH	Programme Keluarga Harapan
PKR	Pakistani Rupee
PLW	Pregnant and Lactating Women
PNC	Post-natal Care
POU	Prevalence of Undernourishment
PPP	Purchasing power parity
REFANI	Research on Food Assistance for Nutritional Impact
SA	South Asia
SBCC	Social Behaviour Change Communication
SEA	South East Asia
SEAR	South-East Asia Region
SDGs	Sustainable Development Goals
SHN	School-health and nutrition
SNF	Specialize Nutritious Food
SOFI	State of Food Security and Nutrition
SP	Social Protection
SSB	Sugar-Sweetened Beverage
TFAs	Trans-Fatty Acids
THB	Thai Bhat
UHC	Universal health coverage
UN	United Nations
UNICEF	United Nations Children's Fund
USD	Unites States Dollar
VGD	Vulnerable Group Development
WASH	Water, Sanitation and Hygiene
WB	World Bank
WFP	World Food Programme
WHA	World Health Assembly
WHO	World Health Organization
WRA	Women of Reproductive Age
WPR	Western Pacific Region

KEY MESSAGES

➔ **Achieving the SDGs – Progress on food security and nutrition has slowed, and the Asia and Pacific region is not on track to achieving 2030 targets.** About 350.6 million people in the Asia and Pacific region are estimated to have been undernourished in 2019, about 51 percent of the global total. An estimated 74.5 million children under five years of age were stunted and a total of 31.5 million were wasted in the Asia and Pacific region. The majority of these children in the region live in Southern Asia with 55.9 million stunted and 25.2 million wasted children. Governments and partners need to intensify commitments with coordinated efforts to implement evidence-based policy and programmes to accelerate the achievement of the SDGs.

➔ **COVID-19 – True impacts on food security and nutrition are yet to be established, however, the region needs to better prepare for and build resilience to future disasters and pandemics.** While the extent of the impact of COVID-19 remains to be evaluated, estimates predict a 14.3 percent increase in the prevalence of moderate or severe wasting among children under 5 years of age, equal to an additional 6.7 million children. More than half (57.6 percent) of these children are estimated to live in Southern Asia. Global estimates predict that due to the pandemic an additional 140 million people will drop into living in extreme poverty in 2020, and the number of people facing acute food insecurity will nearly double to 265 million by the end of 2020. Joint and comprehensive actions are needed to enhance food production, protect incomes, ensure access to health services, and increase social transfers. To build resilience to future disasters and epidemics, governments need to invest into stronger disaster preparedness, early warning and response systems, learning from the COVID-19 pandemic.

➔ **Affordability – the cost of healthy diets is critical when ensuring food security and nutrition for all, and mothers and children in particular.** Basic food prices and disposable incomes govern household decisions on food and dietary intake. The cost of a healthy diet is significantly higher than an energy sufficient diet, showing significant gaps in the food system to deliver nutritious foods to all at an affordable price. In the region, 1.9 billion people are unable to afford a healthy diet, driven by high prices of fruits, vegetables and dairy products, making it impossible for the poor to achieve healthy diets. Integrated approaches and policies to address food availability and accessibility, with an aim to reduce cost of healthy diets, are necessary to overcome unaffordability issues, and ensure healthy maternal and child diets.

➔ **Data – Availability and timeliness of data remain key constraints to measure achievements and document evidence.** Differences in primary data availability and quality across countries in the region limit the best understanding of achievements towards the SDGs. Governments need to invest in regular household-based primary data collection, data quality, timeliness of data and the precision of the "right" indicators being collected, to support measurement of progress and inform policies and interventions. Joint data management across different ministries can improve efficiency and effectiveness of data and information management systems. Also, investment into primary data collection especially for the measurement of COVID-19 impact on food security and nutrition in the Asia and Pacific region is critical.

➔ **Maternal and Child diets – there is global consensus on the importance of addressing maternal and child diets through an integrated and coordinated system approach.** Mothers and young children are the most vulnerable members of a population due to their high nutritional needs and increased vulnerability to malnutrition. Optimal diets and feeding practices are essential during the critical life stages of pre-conception, pregnancy, postpartum, and early childhood (6–23 months) to ensure the nutritional requirements for growth and development are fully met. Improving maternal and child diets needs a multi-system response, involving and coordinating institutions and actors in the Food, Water and Sanitation, Health, Social Protection and Education systems, to collectively create the enabling environment for healthy diets. Integration of healthy diets and nutrition focused Social Behavior Change Communication (SBCC) mainstreamed throughout

these systems will lead to greater uptake and sustainability of healthy behaviors and caregiver's knowledge.

➔ **Food System – sustainable and efficient value chains and diversification of the food system are critical for healthy maternal and child diets.** Food systems play a critical role in achieving food and nutrition security for all. A sustainable and nutrition-sensitive food system is essential to produce diverse and nutritious foods for healthy diets. Improved efficiency and productivity of value chains can reduce the costs of essential foods to make them more affordable. The private sector has an important role to play in supporting the transformation of the food system and its value chains for achieving healthy diets. Governments need to invest in nutrition and food safety in fresh and street food markets to promote healthy diets. Regulation of sales and marketing of food for consumers, especially children, is important to curb overweight, obesity and NCDs in Asia and the Pacific.

➔ **WASH System – creating hygienic environments at home and in the community, and promoting hygienic practices and safe food preparation, storage and feeding are critical**. Policies must target the most vulnerable households – rural poor and urban slum dwellers to ensure access to clean drinking water and sanitation facilities. Integration of nutrition and WASH, and social behaviour change communication (SBCC) activities are key to promoting healthy diets for mothers and young children, with a particular focus on environmental hygiene, hand washing, food safety and safe infant and young child feeding practices.

➔ **Health System – supporting enabling environments are essential to improve maternal and child diets but are not sufficient to ensure effective delivery of interventions at scale.** Greater attention is needed to operationalize national policies and plans to improve the delivery of health services for maternal and child diets and nutrition outcomes. Services to improve maternal and young child diets should be prioritized as part of the essential package of health services needed to address undernutrition and overnutrition concerns and to achieve Universal Health Coverage (UHC). A health system strengthening approach is needed for sustained improvements in delivery, quality, coverage of services, enhanced accountability and tracking progress towards improving maternal and young child diets according to country context.

➔ **Social protection system – is imperative to mitigate poverty and hunger, subsidize household incomes and contribute to better food security and nutrition.** Countries in the Asia and Pacific region continue to underinvest in social protection and shock-responsive social protection in particular, despite growing evidence of its impact on food and nutrition security. Social protection can protect and stabilize incomes to access healthy diets during disasters and crisis. At least nine governments in the Asia and Pacific region have established a targeted mother and child COVID-19 component in their social protection system. Further learning and evidence is needed to document social protections' effectiveness to improve maternal and child diets in the Asia and Pacific region.

➔ **Education system – supporting healthy dietary practices and attitudes for individuals, growing a healthy and productive society.** The education system provides a platform for teaching healthy food choices and healthy eating to children and adolescents. Consuming nutritious meals at schools and studying in a healthy school environment provides an invaluable learning experience for students to establish lifelong prudent dietary habits and healthy lifestyles.

PAKISTAN
Inclusion of all family members in nutrition education and social behavior change communication is critical for the promotion of improved maternal and child diets and wellbeing.

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INTRODUCTION

The world and the Asia and Pacific region continue to work towards ending all forms of malnutrition and achieving Zero Hunger, as stipulated in the Sustainable Development Goals (SDGs) 2030 and the World Health Assembly (WHA) Targets 2025. This report, a joint effort by the regional offices of four United Nations (UN) agencies, discusses selected recent developments in Asia and the Pacific relevant to attaining the hunger, food security and nutrition objectives of SDG 2 and the WHA nutrition targets.

Part 1 of the Asia and the Pacific Regional Overview of Food Security and Nutrition (FSN) 2020 provides an estimate on the potential to achieve the 2030 targets at the regional and country level. Overall, the selected indicators look at undernourishment, food insecurity, childhood stunting, wasting and overweight, adult overweight, child minimum acceptable diet, exclusive and continued breastfeeding, and anaemia in women and children. Data are presented at regional/subregional and national levels where and when available. Where available, the report uses data to analyze and compare urban and rural settings and by gender, demonstrating the differences in the complexity of achieving the SDG targets.

Part 2 focuses on maternal and child diets through the lens of a systems approach. It elaborates on the various systems that are critical for healthy and nutritious diets, through a focus on food, health, water sanitation and hygiene (WASH), education and social protection systems. Selected case studies and examples from the Asia–Pacific region are presented to illustrate the importance of a systems approach to maternal and child diets, and share successful experiences by governments and countries in addressing Zero Hunger and malnutrition.

MYANMAR
Safe food and hygiene practices at household level and improved dietary diversity are key components in a systems approach to improving maternal and child diets.

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PART 1
MONITORING PROGRESS TOWARDS SDG 2 AND HEALTHY DIETS IN THE ASIA–PACIFIC REGION

PART 1

MONITORING PROGRESS TOWARDS SDG 2 AND HEALTHY DIETS IN THE ASIA–PACIFIC

1.1 INTRODUCTION

In 2015, as the implementation of the Millennium Development Goals (MDGs) was coming to a close, member countries of the United Nations (UN) chose to continue the quest for a better world. They committed themselves to a new and ambitious set of Sustainable Development Goals (SDGs). These goals were developed to hold country governments and their public and private development partners accountable for their actions towards creating a more sustainable, equal and safe world for their populations. SDG 2 – Zero Hunger – is fundamental to that new and better world. Its targets focus on ending hunger, ensuring access to safe and nutritious foods for all by 2030 (2.1), and eliminating all forms of malnutrition by 2025 (2.2).[1] Additionally, the World Health Assembly targets 2025 hold countries accountable in reducing their levels of malnutrition too[2] (Box 1).

BOX 1
SELECTED TARGETS OF SDG2 AND THE WORLD HEALTH ASSEMBLY

Sustainable Development Goals Targets 2030:

- Target 2.1: By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.
- Target 2.2: By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.

World Health Assembly Targets 2025:

- Stunting: 40 percent reduction in the number of children under 5 years of age who are stunted
- Wasting: Reduce and maintain childhood wasting to less than 5 percent
- Breast Feeding: Increase the rate of exclusive breastfeeding in the first 6 months up to at least 50 percent
- Anemia: 50 percent reduction of anemia in women of reproductive age
- Low birthweight: 30 percent reduction in low birth weight
- Childhood Overweight: No increase in childhood overweight

BOX 2
EQUITY IN LIGHT OF COVID-19[3]

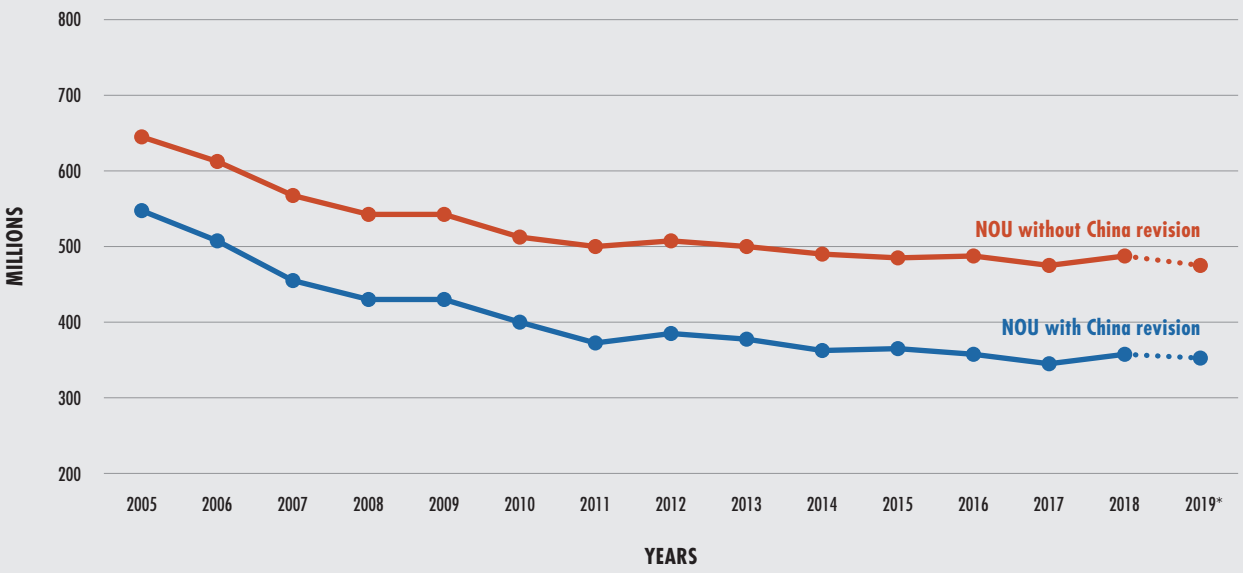
The virus does not treat everybody equal. Undernourished people have weaker immune systems, and may be at higher risk of severe illness from COVID-19. Poor health, including being overweight and NCDs, are strongly linked to more severe COVID-19 outcomes. Both the COVID-19 and the effects of lockdowns particularly expose the most vulnerable populations, already affected by consequences of inequality, to risks. These vulnerable populations include the poor, women and children, the chronically sick and old, those living in fragile or conflict-affected states, minorities, refugees and the unsheltered. Good nutrition, individual and community nutrition, and food security are critical for a defense against the virus. It is essential COVID-19 responses actively include the most vulnerable populations for their protection.

The UN uses ten indicators to measure and track global progress on SDG 2. Five of these indicators are part of the SDG monitoring framework and contribute to annual reporting and evaluation of progress. Of those five indicators, two gauge advancement toward SDG2 Target 2.1 – the prevalence of undernourishment (indicator 2.1.1) and the prevalence of food insecurity (indicator 2.1.2). Another three indicators measure the furtherance of SDG2 Target 2.2 – the prevalence of stunting (indicator 2.2.1), the prevalence of wasting and overweight (both included under indicator 2.2.2) in children under five years of age, and the prevalence of anaemia in women aged 15 to 49 years, by pregnancy status (indicator 2.2.3). The remaining five indicators evaluate progress towards World Health Assembly (WHA) 2030 nutrition targets on the prevalence of anaemia in women of reproductive age, the prevalence of low birth weight, the prevalence of exclusive breastfeeding and the prevalence of obesity in adults.[4]

In addition to these indicators, Part 1 provides additional analysis related to the quality of diets, and, whenever possible, also analyzes the indicators to compare nutrition in urban and rural settings. Not all countries collect annual data on these indicators, and the data that are collected are not always of high quality. Many countries collect data on nutrition every three years using a Multi-Indicator Cluster Survey (MICS) or Demographic Health Survey (DHS). Others only collect nutrition data as part of the national census taken every ten years. Seasonality during data collection processes are rarely considered, and often existing primary data are used for modeling new estimates over and over again. Data collection methods, timeframes and regularity differ from country to country, and even from one to the next data collection round within the same country. These data issues remain fundamental limitations to accurately evaluate the progress towards this the SDG and WHA targets (see as well Box 8).

The data presented in Part 1 of this report deal with 2019 at the latest, i.e. before the era of COVID-19. The virus has made the food security and nutrition situation worse by leading to economic slowdowns and downturns in countries around the world,[5] which historically have led to increased food insecurity and malnutrition.[6] The loss of jobs reduces incomes and access to food, especially nutritious food, for many people, especially the poor and vulnerable (Box 2).

FIGURE 1
NUMBER OF UNDERNOURISHED PEOPLE IN ASIA AND THE PACIFIC WITH AND WITHOUT CHINA DATA REVISION



NOTE: * Indicates projected value.
SOURCE: FAO.

1.2 UNDERNOURISHMENT

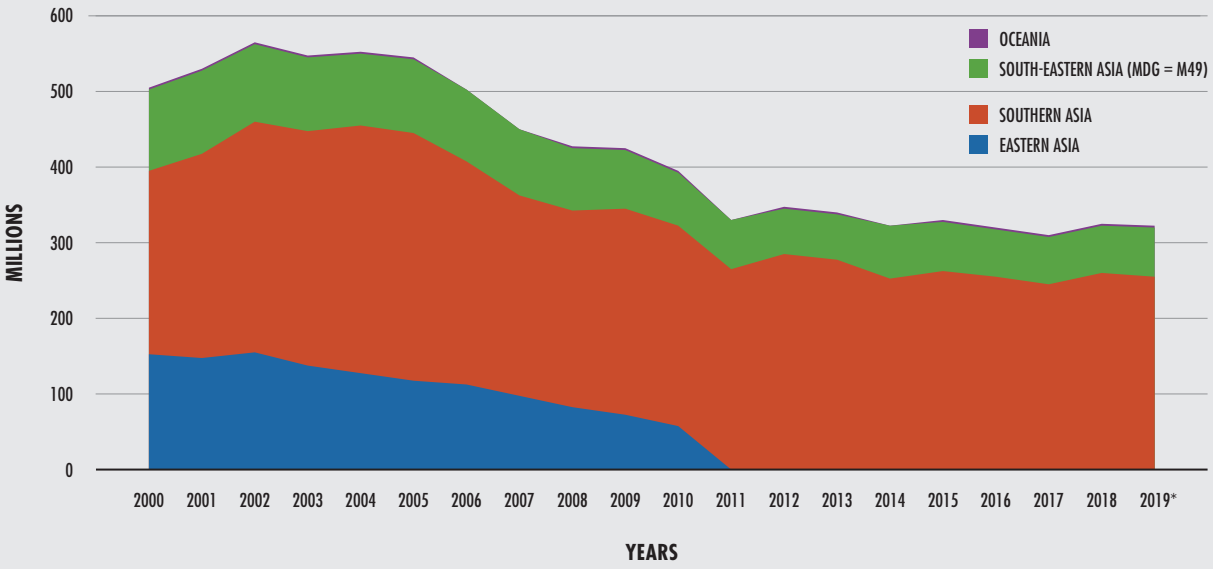
FAO's most recent estimates put the number of undernourished people in the Asia–Pacific region at 350.6 million. The number is very high, amounting to about 51 percent of the global total of 687.8 million. In 2019, Southern Asia[7] had the highest number of undernourished people (257.3 million), followed by South-Eastern Asia[8] (64.7 million), Oceania[9] (2.4 million) and Eastern Asia[10] (insignificant). China, home to about 20 percent of the global population, reported a significant reduction in its number of undernourished people from 2011–2019 (Box 3 and Figure 1). The undernourishment estimates for China have been revised going back to the year 2000, resulting in a significant drop in the number of undernourished in Eastern Asia. Nonetheless, the trend reported in past editions of this report still stands – the Asia-Pacific region has made significant progress in terms of reducing the total number of undernourished people: an 18 percent fall between 2009 and 2019, and a 30.7 percent decrease between 2000 and 2019 (Figure 2).

BOX 3
UPDATED ESTIMATES FOR CHINA IMPROVE THE ACCURACY OF THE REGIONAL HUNGER ESTIMATES[11]

Revising parameters to estimate the Prevalence of Undernourishment (PoU) is standard procedure, conducted annually as more data become available. As highlighted in previous editions of the global report, access to recent data to revise the parameter of inequality in food consumption for China has been problematic. This year, however, has been rich in updates, including new data sources to calculate that crucial parameter for various countries, including China and including revision of the whole data series back to 2000 for consistency (see the global SOFI report 2020, Box 1, for more details). Given that the country hosts one-fifth of the world's population, any update of Chinese parameters is expected to make a significant difference to regional and even global estimates.

With these revisions, the estimated PoU for China from 2011 to 2019 is below 2.5 percent of the population, which is the lowest value that can be reliably reported using the PoU methodology. Without the revision, the 2019 estimate would be close to 9 percent. The revisions to the China data series have resulted in a new data series of estimates of PoU and the number of undernourished in the region and in the world, which are now more accurate than in the past. As a result, a substantial downward shift of the entire data series of regional hunger occurred, as depicted in Figure 1 (see the global report for a similar graph of global estimates). Despite this shift, the revision confirms the trend reported in past editions of this report: the number of people affected by hunger in the region has declined only slowly since 2011, in contrast to the more rapid decline from 2005 to 2011.

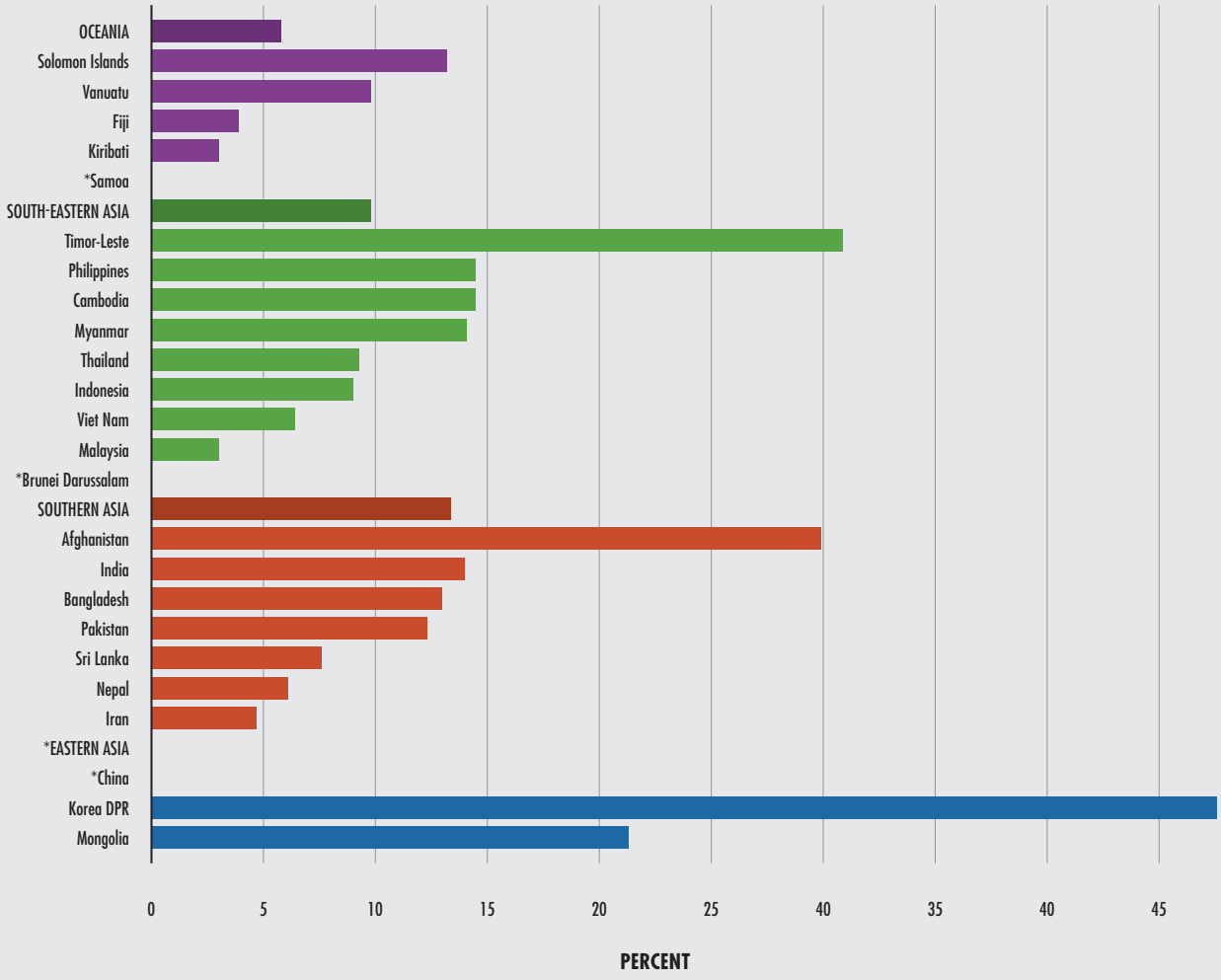
FIGURE 2
NUMBER OF UNDERNOURISHED IN ASIA AND THE PACIFIC, BY SUBREGION, 2000–2019



NOTE: * Indicates projected value. "Asia and Oceania" refers to the sum of Eastern Asia, Southern Asia, South-eastern Asia and Oceania. It excludes Central Asia and Western Asia. The estimated PoU for Eastern Asia after 2010 is below 2.5 percent of the population, which is the lowest value that can be reliably reported using the PoU methodology. Left hand axis pertains to all series except Oceania.

SOURCE: FAO.

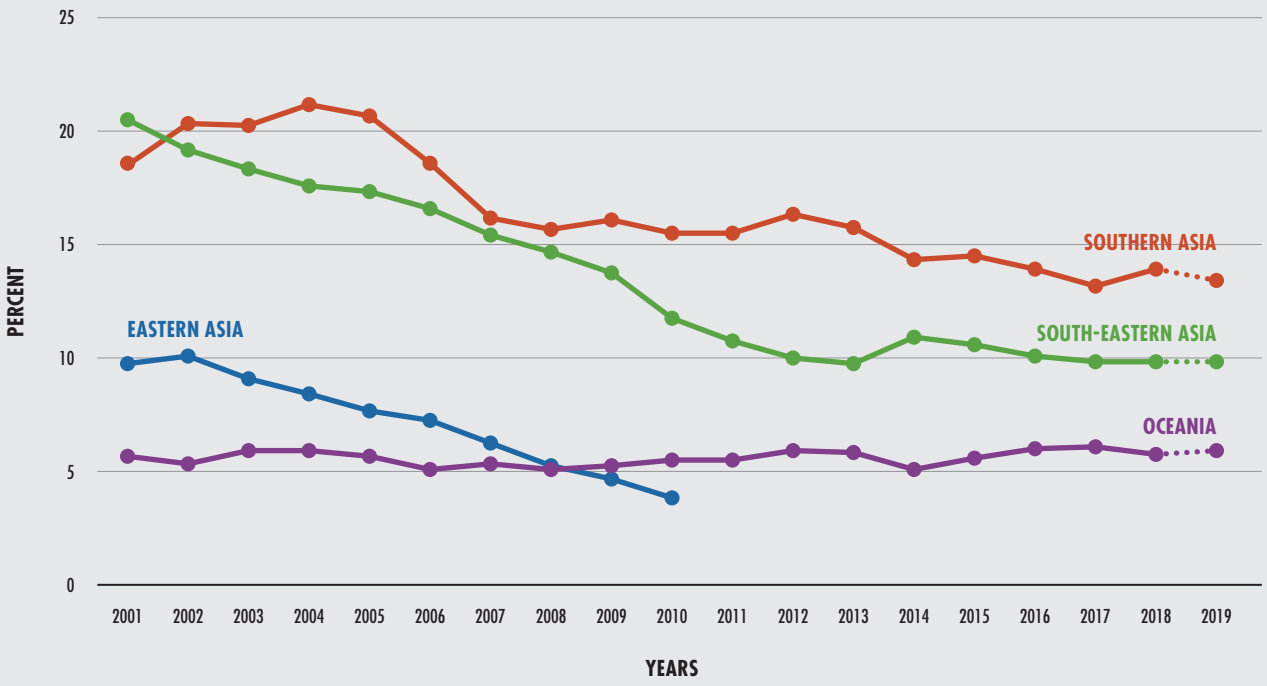
FIGURE 3
PREVALENCE OF UNDERNOURISHMENT IN ASIA AND THE PACIFIC, BY COUNTRY AND SUBREGION, 2017–2019



NOTE: * The prevalence of undernourishment in Brunei Darussalam, China, Samoa and Eastern Asia is less than 2.5 percent.
SOURCE: FAO.

The prevalence of undernourishment in Asia and the Pacific was 8.2 percent in 2019. Among the subregions, Southern Asia had the highest prevalence, followed by South-Eastern Asia, Oceania, and Eastern Asia, in that order (the numbers for Eastern Asia were revised down due to new data that have recently become available for China, see Box 3). The countries with the highest prevalence of undernourishment are scattered throughout the region (Figure 3).

FIGURE 4
TRENDS IN THE PREVALENCE OF UNDERNOURISHMENT IN ASIA AND THE PACIFIC, BY SUBREGION, 2001–2019



NOTE: By 2011, estimates of undernourishment in Eastern Asia had fallen to levels below 2.5 percent and are thus not shown.
SOURCE: FAO.

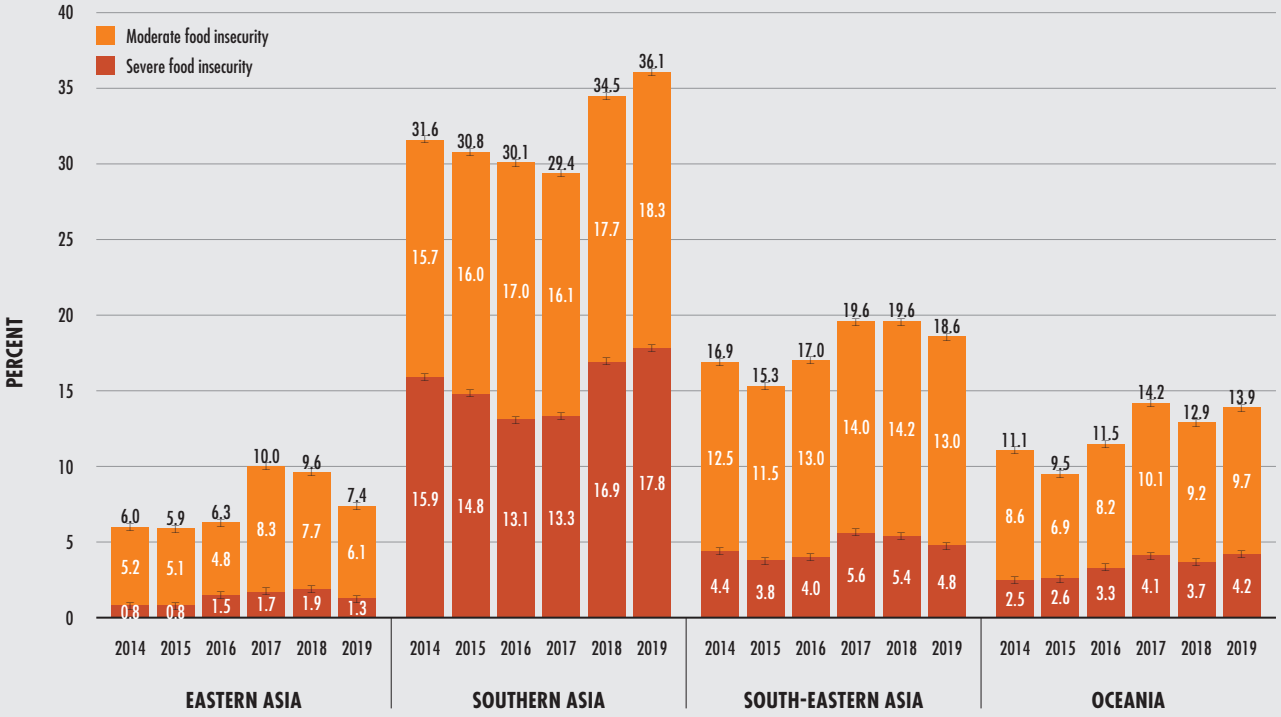
Between 2002 and 2017, prevalence fell by more than 7 percentage points in each of the three Asian subregions, although it rose slightly in Oceania during that time. However, over the last three years, the prevalence of undernourishment has been essentially flat in all subregions (Figure 4).

1.3 FOOD INSECURITY

The Food Insecurity Experience Scale (FIES) was used to assess the prevalence of food insecurity at moderate or severe levels in the total population. People experiencing severe food insecurity have likely run out of food, leading to hunger and, in extreme situations, having gone without food for days. People experiencing moderate food insecurity face uncertainties in access to, and availability of food, and at times during the year have been forced to reduce the quality and quantity of food that they consume.

FAO estimates that 9.2 percent of the region's[12] population experienced severe food insecurity and 22 percent experienced moderate or severe food insecurity in 2019. These figures are similar to those of 2018. At the regional level, Asia-Pacific's prevalence rates are lower than those in Africa, the Near East and North Africa, and Latin America and the Caribbean. Among the Asia–Pacific subregions Southern Asia has the highest percentages of severe and moderate or severe food insecurity. Owing to its large

FIGURE 5
PREVALENCE OF FOOD INSECURITY IN ASIA AND THE PACIFIC, BY SUBREGION, 2014–2019



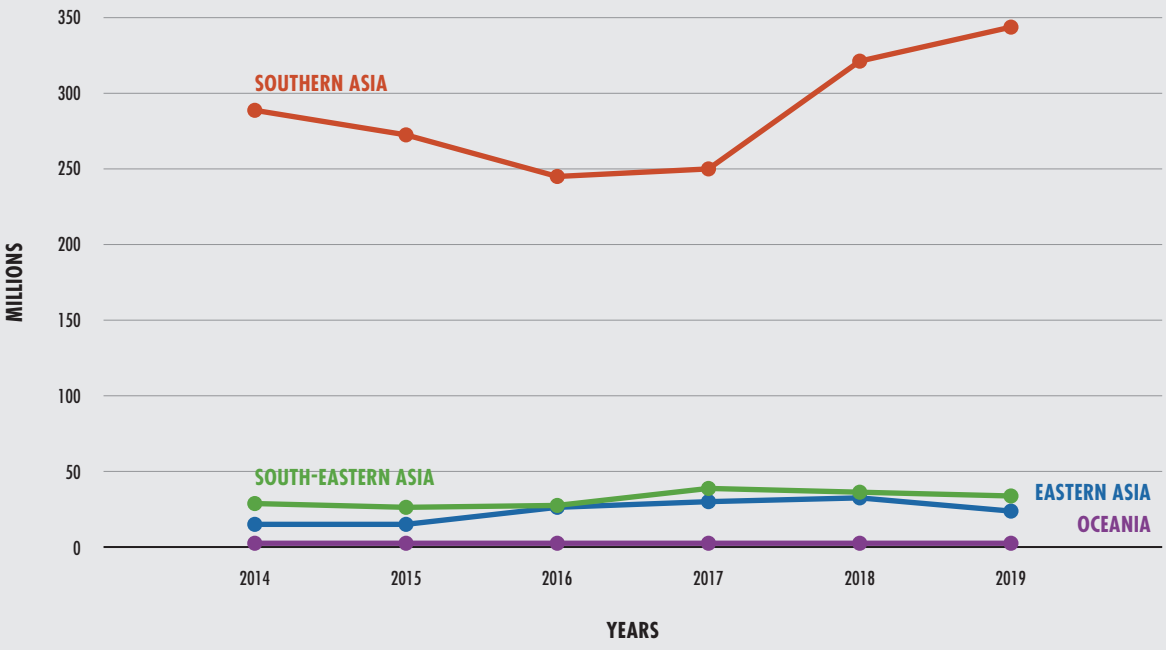
SOURCE: FAO.

population base, Southern Asia is home to 692 million moderately or severely food insecure people. Southern Asia and Oceania (Australia and New Zealand are the two only countries in Oceania with FIES data), are the two subregions showing an upward trend in food insecurity over the previous two years (Figure 5).

An estimated 945 million people in the Asia and Pacific region are experiencing moderate or severe food insecurity, of whom 397 million people face severe food insecurity. The vast majority of severe food insecure people (86 percent) live in Southern Asia, and the trend continues to rise since 2016 (Figure 6). Over 53 percent of the severe food-insecure people of the world live in Asia and the Pacific, making it the region with the largest numbers of severe and moderate or severe food-insecure people. Because these estimates were collated before COVID-19, the figures could be even higher now as a result of the pandemic.

FIES data disaggregated by gender for analysis show differing patterns in the four subregions of Asia and the Pacific. The prevalence of severe food insecurity was substantially higher in female than male adult individuals in Southern Asia. The reverse was true for East and South-Eastern Asia where severe food insecurity was slightly higher for males than females. Oceania displayed little difference in severe food insecurity by gender. The magnitude of gender difference in severe food insecurity was larger in Southern Asia than in the other two subregions (Figure 7).

FIGURE 6
TREND OF SEVERE FOOD INSECURITY IN ASIA AND THE PACIFIC, BY SUBREGION, 2014–2019

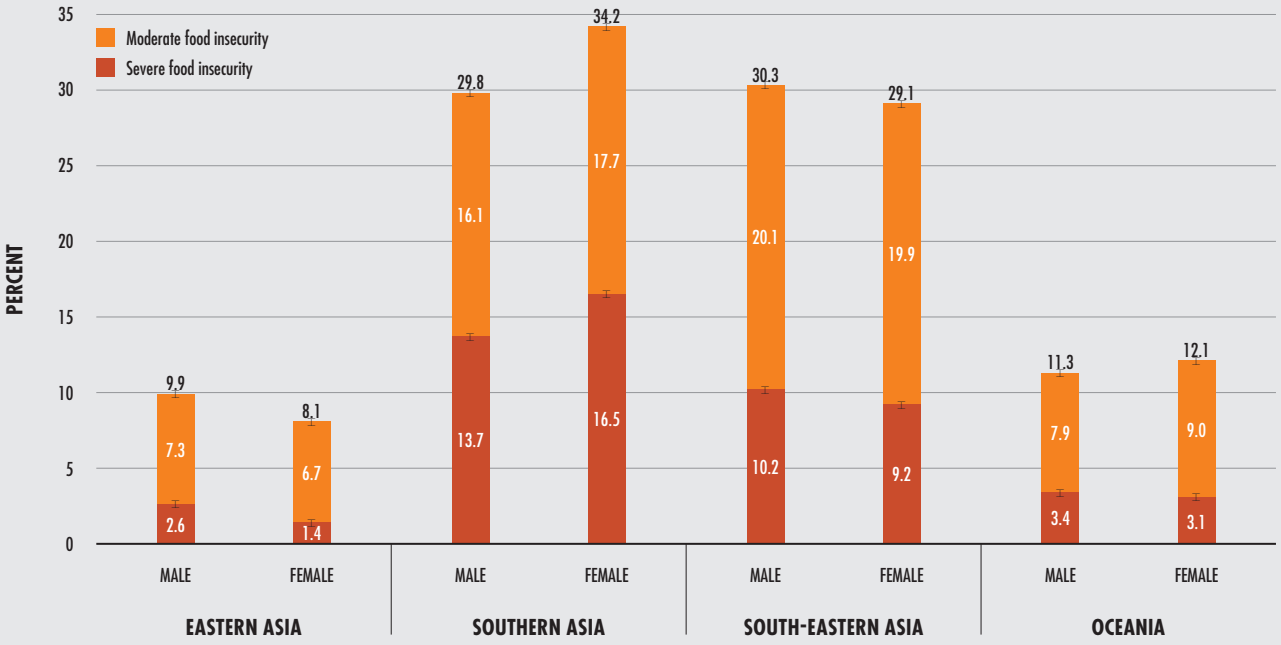


SOURCE: FAO.

BOX 4
ESTIMATED COVID-19 IMPACTS ON FOOD SECURITY AND NUTRITION[13]

Disruptions in the economic, food, and health systems resulting from the COVID-19 pandemic are expected to have impacts on all forms of malnutrition. Estimates from the International Food Policy Research Institute (IFPRI) suggest that due to the pandemic an additional 140 million people will drop into extreme poverty[14] in 2020. FAO estimates that the number of undernourished people globally could increase by 132 million, assuming a decline of global GDP of 10 percent attributable to the impact of the economic recession associated with COVID-19.[15] According to the World Food Programme, the number of people in Asia and the Pacific region who are facing acute food insecurity will nearly double to 265 million by the end of 2020. At the beginning of the COVID-19 pandemic, UNICEF estimated a 30 percent overall reduction in essential nutrition services coverage, reaching 75–100 percent in lockdown contexts. Further estimates translate to an additional estimated 6.7 million children with wasting in, with an estimated 57.6 percent of these children living in Southern Asia. Lack of action in response to COVID-19, will leave deep impacts on early life nutrition with possible intergenerational consequences for child growth and development, life-long impacts on education, chronic disease risks, and overall human capital formation.

FIGURE 7
PREVALENCE OF "SEVERE" AND "MODERATE OR SEVERE" FOOD INSECURITY IN ASIA AND THE PACIFIC, BY SUBREGIONS AND GENDER, AVERAGE FOR 2017–2019



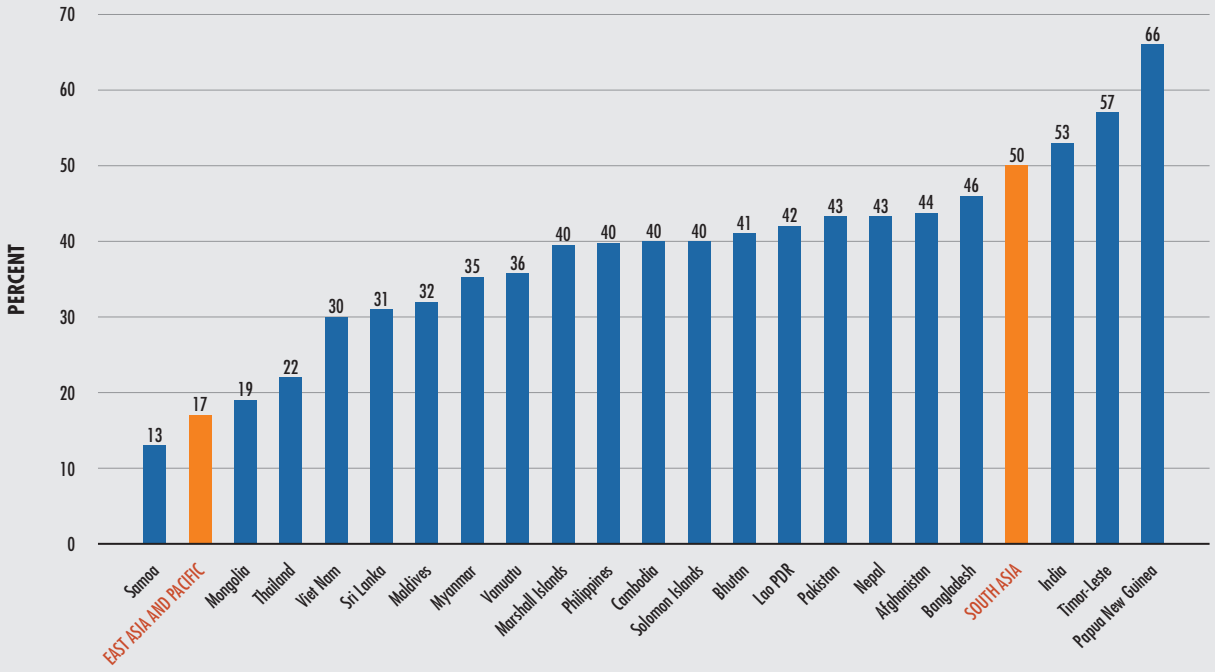
SOURCE: FAO.

1.4 CHILDREN UNDER FIVE YEARS OF AGE NOT GROWING WELL

Half of all children in Southern Asia and one in five children in Eastern Asia and the Pacific (which includes South-eastern Asia) are not growing well (i.e. they are stunted, wasted or overweight, or some combination of those three; Figure 8). This means they suffer from stunting, wasting or overweight, and in some instances from an overlapping burden of malnutrition. Children who do not grow well fail to reach their developmental potential. They have a higher risk of disease and reduced cognitive and physical development that can affect their learning, future economic productivity, income earning potential and social skills. These children are at increased risk of developing diet-related non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, chronic respiratory diseases and cancer later in life. The consequences of individuals not growing well can be dramatic for a country's human and economic development. For example, the benefit to cost ratio of nutrition interventions designed to minimize stunting has been estimated at USD 16 in economic return for every USD 1 invested.[16]

Evidence shows that many more children today are surviving than ever before due to gains in access to health services and food due to overall economic growth. However, too many children across Asia and the Pacific are failing to thrive,

FIGURE 8
PERCENTAGE OF CHILDREN UNDER FIVE YEARS OF AGE NOT GROWING WELL IN ASIA AND THE PACIFIC (STUNTED, WASTED OR OVERWEIGHT)



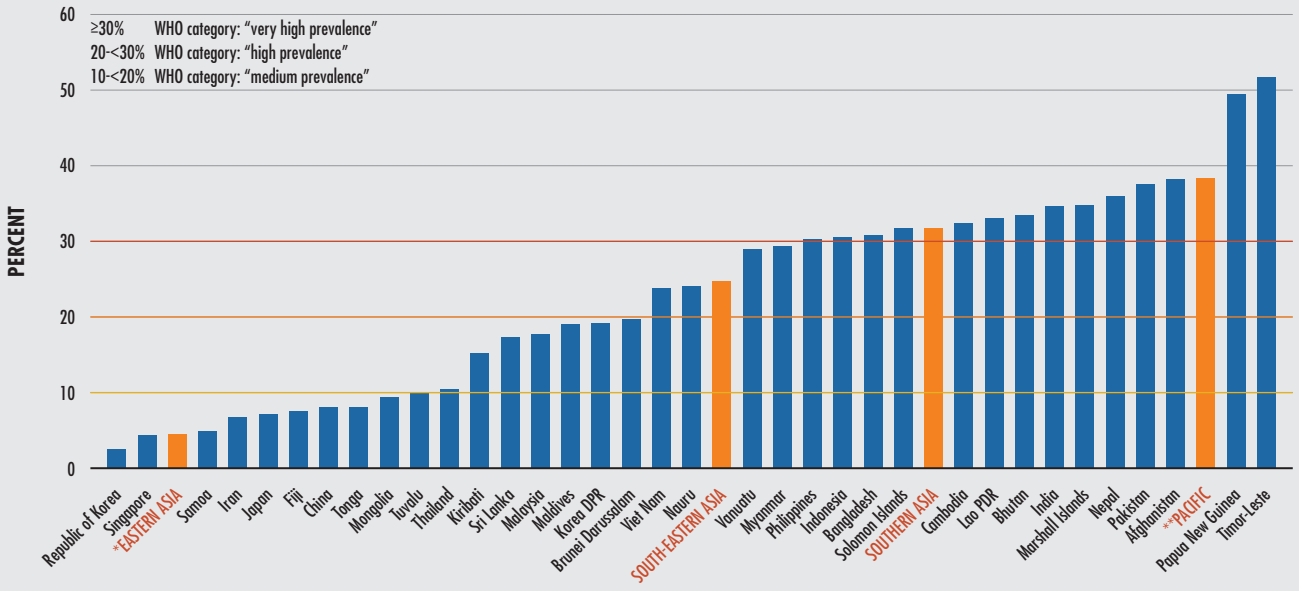
SOURCE: United Nations Children's Fund (UNICEF). 2019. *The State of the World's Children 2019, Children, food and Nutrition Growing well in a changing world* [online]. New York. [Cited 09 November 2020]. https://www.unicef.org/media/60826/file/SOWC-2019-EAP.pdf; UNICEF. 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/

and continue to suffer from multiple forms of malnutrition. The triple burden of malnutrition – undernutrition, micronutrient deficiencies, overweight and their associated NCDs – has multiple drivers. These drivers include inadequate maternal nutrition during pregnancy and lactation, consumption of nutrient-poor diets in infancy and early childhood, and changing food systems. These new food systems bring about increasing exposure to cheap and convenient sugary beverages and foods high in salt, sugar, and trans fats, but poor in essential nutrients.[17] Underlying factors include poor sanitation and hygiene practices, water quality, and inappropriate care practices, combined with socio-cultural factors, inequity and poverty.[18]

1.5 STUNTING AMONG CHILDREN UNDER FIVE YEARS OF AGE

Stunting is a nutritional disorder of children failing to achieve their genetic potential for height. Stunted children, therefore, are shorter than their potential for their age. Stunting is the cumulative effect of the irreversible physical and cognitive damage caused by chronic undernutrition, repeated infections, and inadequate childcare and feeding practices. Improving nutrition for women and children in the first 1 000 days

FIGURE 9
PREVALENCE OF STUNTING IN CHILDREN UNDER FIVE YEARS OF AGE IN ASIA AND THE PACIFIC, BY COUNTRY, LATEST AVAILABLE DATA



NOTE: * Stunting under 5 years of age regional aggregates exclude Japan. ** Oceania excluding Australia and New Zealand.

SOURCE: United Nations Children's Fund (UNICEF), World Health Organization (WHO) and World Bank Group. 2020. *Joint Child Malnutrition Estimates Expanded Database: Stunting.* New York.

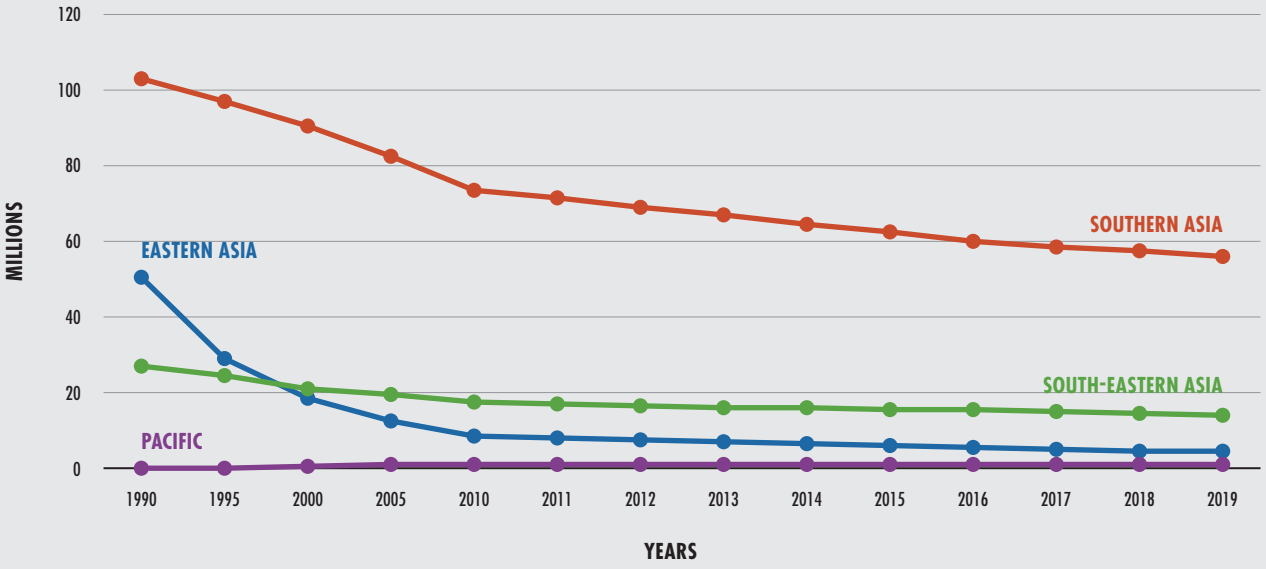
(from conception through the first two years after birth) can contribute to stunting prevention.

An estimated 74.5 million children under five years of age were stunted in Asia and the Pacific in 2019,[19] or over half of the 144 million stunted children globally. Southern Asia has more stunted children than any other subregion in the world with 55.9 million stunted children, or over one in three stunted children globally. Fourteen countries have very high prevalence with over 30 percent of all children stunted, while only seven countries are considered to have low prevalence (<10 percent) by WHO cut-offs (Figure 9).

The Asia and Pacific region has achieved a 43 percent reduction in the number of stunted children since 2000, with the most significant decrease in Southern Asia. However, of the 37 countries in the region monitored by the Global Nutrition Report, only five countries are on track to meet the targets for stunting (Figure 10).[20]

Across Asia and the Pacific, stunting prevalence is highest among the poorest wealth quintiles and lowest amongst the wealthiest quintiles. Inequity in stunting prevalence reflects disproportionate access to health care and essential services. Inequity also highlights gaps in access, affordability and availability of nutritious foods, knowledge, attitude and practices, and intergenerational effects of child malnutrition. Previously malnourished mothers are more likely to have stunted children compared to their well-nourished peers. In Bangladesh, Cambodia, Lao PDR, Vanuatu and Myanmar the poorest

FIGURE 10
TREND OF NUMBER OF STUNTED CHILDREN UNDER FIVE YEARS OF AGE IN ASIA AND THE PACIFIC, BY SUBREGION, 2000–2019



NOTE: Easten Asia excluding Japan. Pacific refers to Oceania excluding Australia and New Zealand.

SOURCE: United Nations Children's Fund (UNICEF), World Health Organization (WHO) and World Bank Group. 2020. *Joint Child Malnutrition Estimates-Levels and trends* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/resources/jme-report-2020/

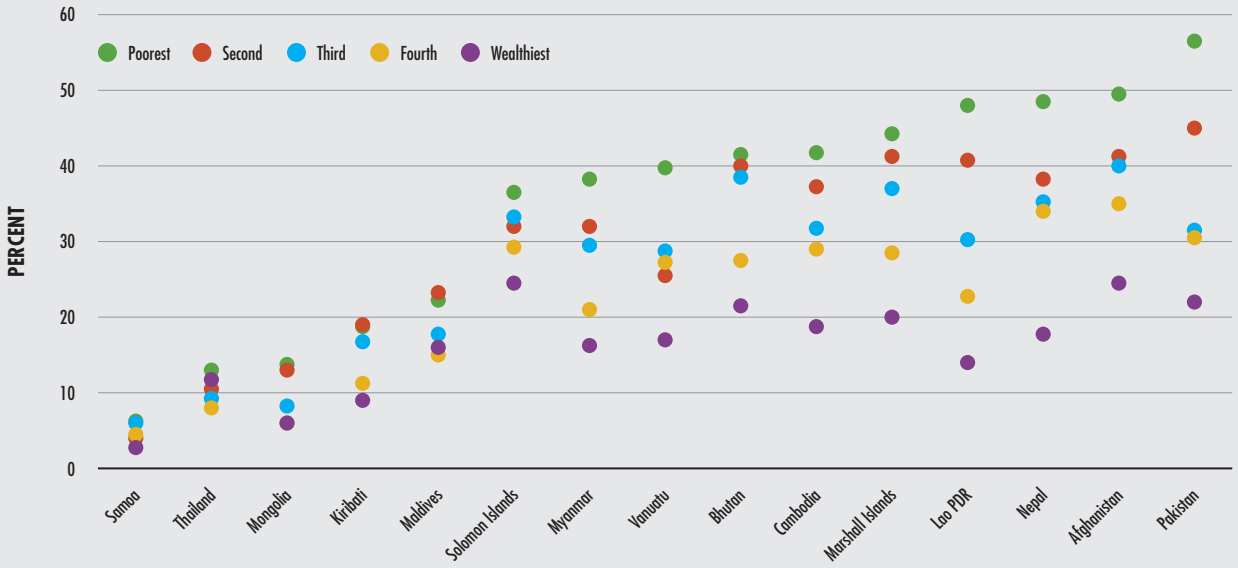
BOX 5
INEQUALITIES IN NUTRITIONAL STATUS IN ASIA AND THE PACIFIC[21]

There are substantial inequities in the prevalence of malnutrition among young children. Stunting, wasting and overweight all vary by wealth status, location (rural versus urban), and by maternal education. There is also variation by sex of the child, with boys tending to be more malnourished than girls, but that difference is much less than for the other factors.

The prevalence of stunting and wasting is higher for children who live in poor families, for those who live in rural areas and for those whose mothers have less education. The trends in overweight among developing countries in the region are the reverse: children who live in wealthier families, in urban areas and those whose mother are more educated are more likely to be overweight.

The proportion of children who meet standards of minimum dietary diversity, minimum meal frequency and a minimum acceptable diet also vary substantially by wealth quintile, location and maternal education (see Box 7). These inequities likely have an impact on the inequities in nutritional status noted above.

FIGURE 11
PREVALENCE OF STUNTING IN CHILDREN UNDER FIVE YEARS OF AGE, BY WEALTH INDEX QUINTILE



SOURCE: United Nations Children's Fund (UNICEF), World Health Organization (WHO) and World Bank Group. 2020. *Joint Child Malnutrition Estimates-Levels and trends* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/resources/jme-report-2020/.

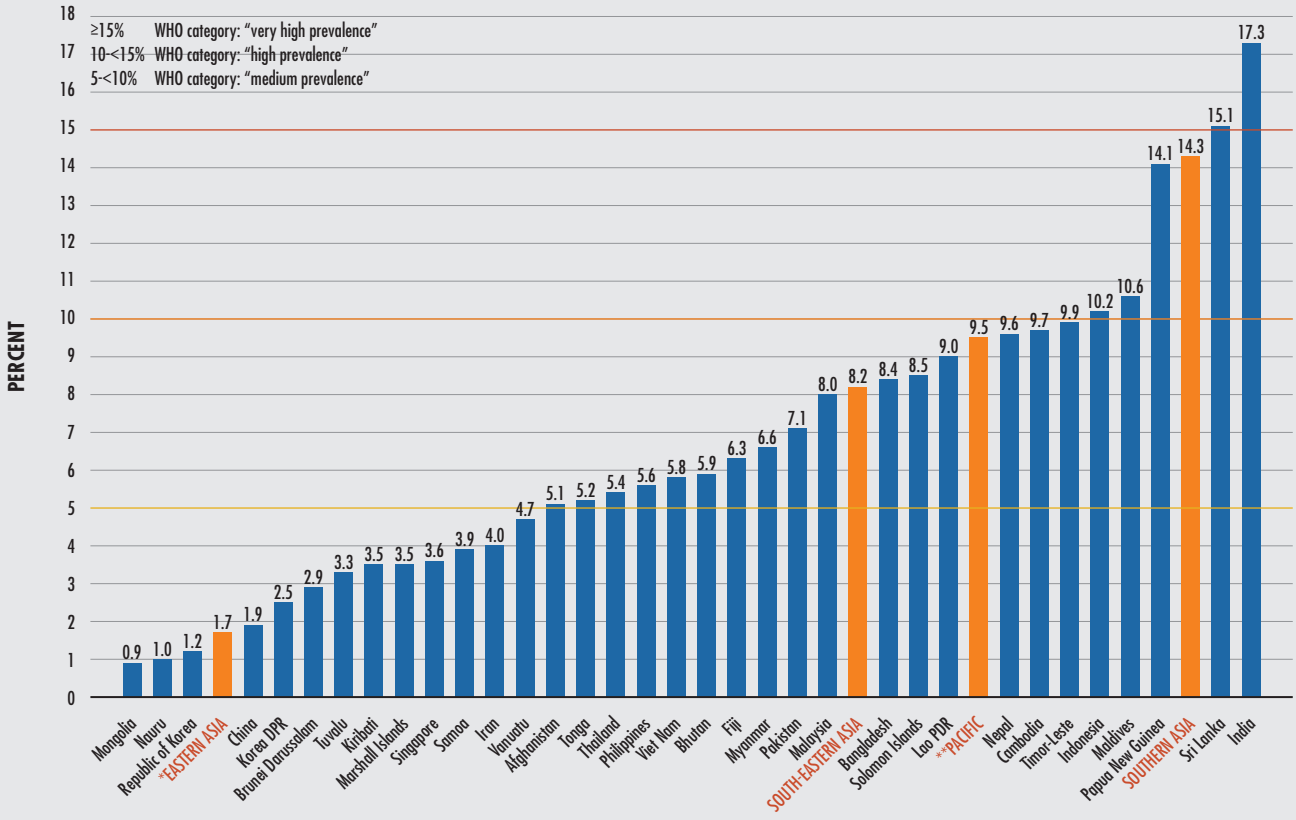
quintile exceeds the WHO "very high" threshold for child stunting, while the wealthiest quintile falls under the "medium" threshold. The poorest and most vulnerable populations still carry the highest burden of child stunting (Figure 11).

1.6 WASTING AMONG CHILDREN UNDER FIVE YEARS OF AGE

Wasting occurs when the weight of children are too low for their height. Wasting can be a result of rapid weight loss in young children caused by illness, inadequate food intake or feeding practices, poor hygiene and sanitation, such that dietary intake does not meet their nutritional needs. Severe wasting – when a child is more than three standard deviations below the median weight for height – is a life-threatening condition. Severely wasted children are at increased risk of illness and death. Moderately or severely wasted children also take longer to recover from illness compared to well-nourished children. While the prevalence of wasting has dramatically declined in Southern America, Eastern Asia and Southern Africa, it remains a serious public health problem globally with little to no progress in the past decade in Southern Asia, South-eastern Asia and Oceania.

A total of 31.5 million children in the Asia–Pacific region are wasted, accounting for more than two in three wasted children in the world. The majority of wasted children in the region live in Southern Asia with a staggering half of all wasted children globally (25.2 million). Wasting is most prevalent in Southern Asia, with 14.3 percent of children under five years of age wasted. However, wasting also surpasses the

FIGURE 12
PERCENTAGE OF CHILDREN UNDER FIVE YEARS OF AGE SUFFERING FROM WASTING IN ASIA AND THE PACIFIC, BY COUNTRY, LATEST AVAILABLE DATA



NOTE: * Wasting under 5 years of age regional aggregates exclude Japan. ** Oceania excluding Australia and New Zealand.

SOURCE: United Nations Children's Fund (UNICEF), World Health Organization (WHO) and World Bank Group. 2020. Joint Child Malnutrition Estimates-Levels and trends [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/resources/jme-report-2020/; Kiribati National Statistics Office. 2019. Kiribati Social Development Indicator Survey 2018-19, Snapshot of Key Finding. South Tarawa, Kiribati. (available at https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Kiribati/2018-2019/Snapshots/Kiribati%20MICS%20KSDIS%202018-19%20Statistical%20Snapshots_English.pdf)

WHO's "medium" threshold in South-eastern Asia (8.2 percent) and Oceania (9.5 percent). Only in Eastern Asia is the prevalence of child wasting (1.7 percent) considered "low." Only four countries in the region are on track to meet the WHA target for wasting (China, Mongolia, Democratic People's Republic of Korea, and Vanuatu), and the status is worsening in several countries (Figure 12).

Severe wasting is a serious disease requiring treatment for child survival. Of the 31.5 million wasted children in Asia and the Pacific, 10.3 million are severely wasted. Severe wasting causes the deaths of an estimated 1-2 million children per year in the region.

BOX 6

THE UN GLOBAL ACTION PLAN ON CHILD WASTING: ACCELERATING PROGRESS IN CHILD WASTING PREVENTION AND TREATMENT IN ASIA AND PACIFIC

The global progress to achieve the SDG and WHA targets on wasting reduction has been slow. Currently, 66 percent of the world's wasted children (about 30.8 million) reside in the Asia and Pacific region, mainly concentrated in South Asia (25.1 million).[22] The prevalence of wasting exceeds 5 percent, the threshold for a public health concern in 70 percent of countries in the region.[23]

In Asia and the Pacific, coherent and coordinated efforts to addressing wasting reduction is inadequate, more focus is on treatment than prevention, often under the context of humanitarian responses. The coverage of treatment also remains unacceptably low in countries where wasting is a public health concern. Amidst the COVID-19 pandemic, it is more crucial now than ever to control the increased number of wasted children and mitigate the impacts of the pandemic on the access to nutritious foods and on the delivery, access and utilization of health and nutrition services to prevent and treat wasting.

In March 2020, FAO, UNHCR, UNICEF, WFP and WHO released the Framework for Action for the UN Global Action Plan on Child Wasting (GAP Framework) to accelerate progress in preventing and managing child wasting for achieving the SDG and WHA targets on wasting.[24] The GAP Framework includes four main outcomes: (1) reduced low birthweight, (2) improved child health, (3) improved infant and young child feeding, and (4) improved treatment of wasting. It supports countries in prioritizing and coordinating the delivery of preventive and treatment actions across four key systems: food, health, social protection, and water, sanitation and hygiene (WASH).

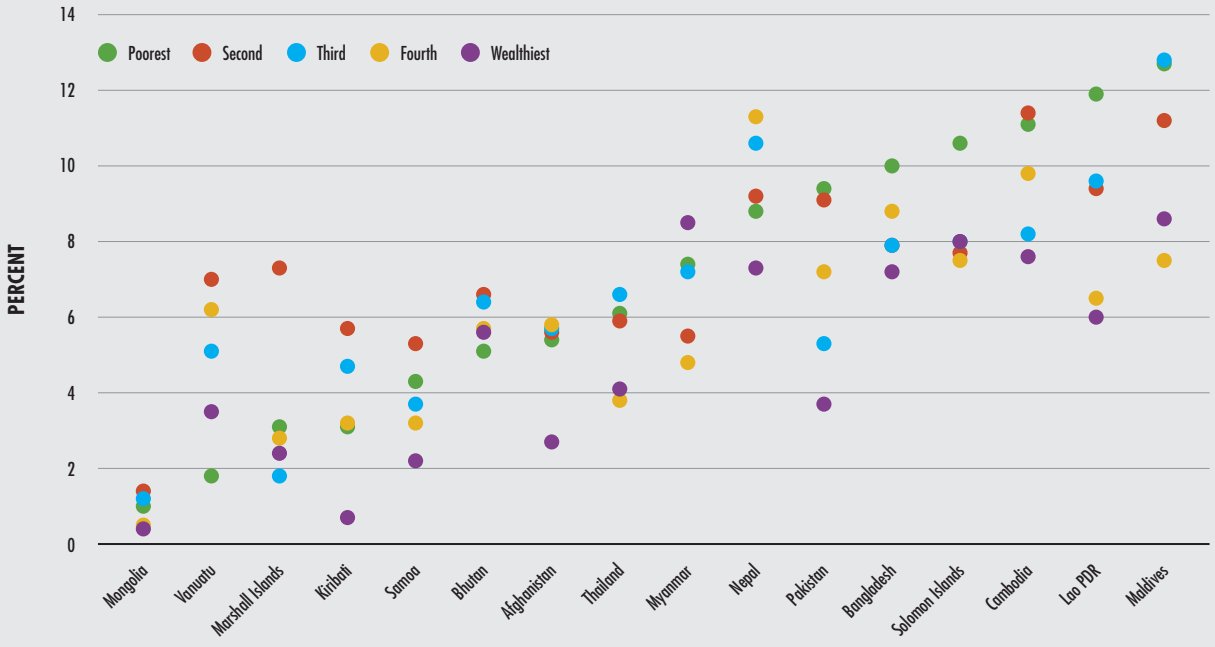
The regional offices of FAO, WFP, WHO and UNICEF provide coordinated guidance and support to the region and countries to operationalize the GAP Framework – through the Asia United Nations Network on Nutrition for the Scaling Up Nutrition Movement (AUNNS). Currently, AUNNS is formulating an Asia Regional Action Plan on Child Wasting to reflect policy and programming priorities for wasting prevention and treatment in AP. With the regional UN coordination mechanism already in place in AP, such regional plan, once finalized, will help ensure that the AUNNS focuses its efforts on a suite of catalytic actions, with clear agency accountabilities, to support countries in accelerating national efforts to prevent and treat wasting.

The causes of child wasting are complex and vary highly with seasonality, environment, health and care practices and behaviours. There is significant variation in the prevalence of wasting by wealth-index quintiles and by geographic area. Unlike stunting, the prevalence of wasting is not always highest in the poorest households. The high variability in wasting prevalence reflects the importance of appropriate feeding practices and sanitation. While children from the wealthiest households are still less likely to be wasted, even the wealthiest households are at risk despite better access to food, health care, hygiene and sanitation (Figure 13).

1.7 LOW BIRTH WEIGHT

Low birth weight is defined as a baby who weighs less than 2.5 kilograms at birth – and can refer to babies who are born at term or pre-term. Low birth weight is a risk factor for neonatal mortality and illness, with more than 80 percent of neonatal deaths occurring in low-birth-weight infants. Low-birth-weight infants have low levels of fat, iron and vitamin A, can have difficulty feeding, and are at higher risk of becoming stunted and wasted. Low-birth weight also exposes children to a greater risk of NCDs and obesity later in life.[25] Low birth weight is often a result of poor maternal nutrition before and during pregnancy. Mothers who are themselves stunted are also more likely to have low-birth-weight children who in turn are

FIGURE 13
PREVALENCE OF WASTING IN CHILDREN UNDER FIVE YEARS OF AGE, BY WEALTH INDEX QUINTILE



NOTE: Country estimate was updated for Kiribati (Kiribati Social Development Indicator Survey 2018-19).

SOURCE: United Nations Children's Fund (UNICEF), World Health Organization (WHO) and World Bank Group. 2020. *Joint Child Malnutrition Estimates-Levels and trends* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/resources/jme-report-2020/

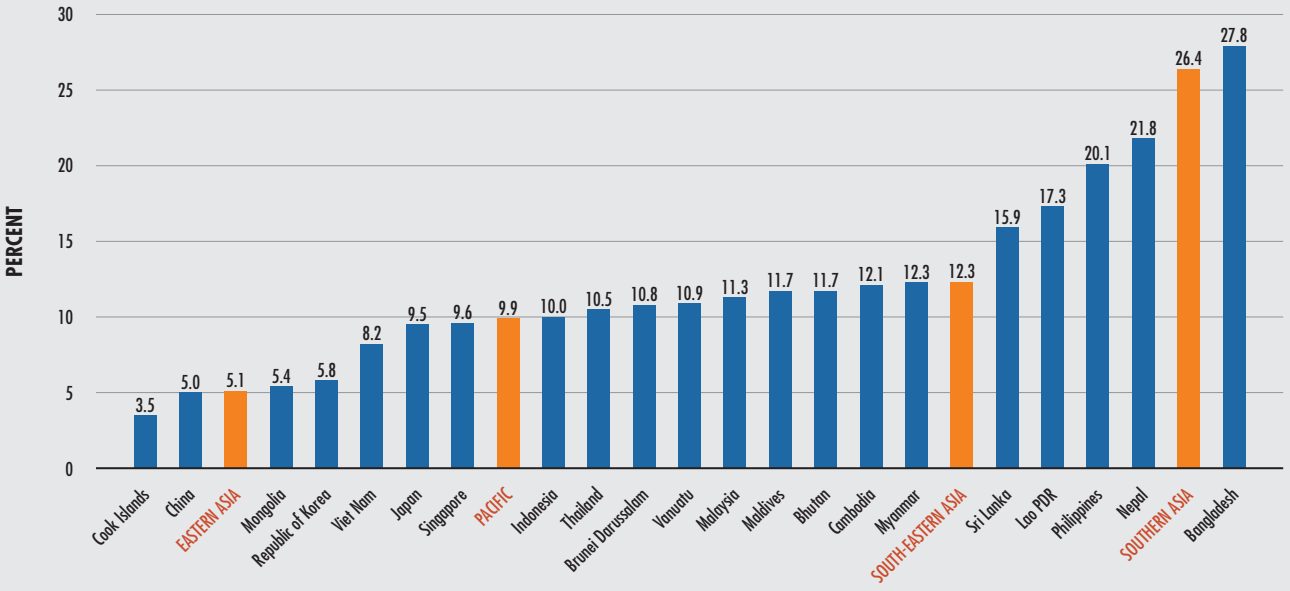
stunted and subsequently have low-birth-weight children. This continuing intergenerational cycle of malnutrition leads to high risk-exposure to NCDs in later life.

Globally, 14.6 percent of infants are born with low birth weight, accounting for 20.5 million newborns. Over half of these infants are in Asia and the Pacific, with 12.2 million babies born with low birth weight. Most are born in Southern Asia (9.8 million). The prevalence varies considerably across countries in Asia and the Pacific, from 28 percent in Bangladesh to 4 percent in the Cook Islands. Progress has been limited in reducing rates of low birth weight since 2000, with no region in the world and no country in Asia and the Pacific achieving a significant decrease in low-birth-weight prevalence (Figure 14). If the current trend continues, the WHA target of a 30 percent reduction in low birth weight will not be met. Failure to meet the WHA target for low birth weight also affects countries' ability to meet their stunting and wasting targets.

1.8 OVERWEIGHT AMONG CHILDREN UNDER FIVE YEARS OF AGE

Overweight and obesity in children, as measured by being too heavy for one's height, are usually the result of unhealthy diets and limited physical activity. The prevalence of overweight in children under five years of age is defined according to

FIGURE 14
PREVALENCE OF LOW BIRTH WEIGHT IN COUNTRIES AND SUBREGIONS IN ASIA AND THE PACIFIC, BY COUNTRY, 2015



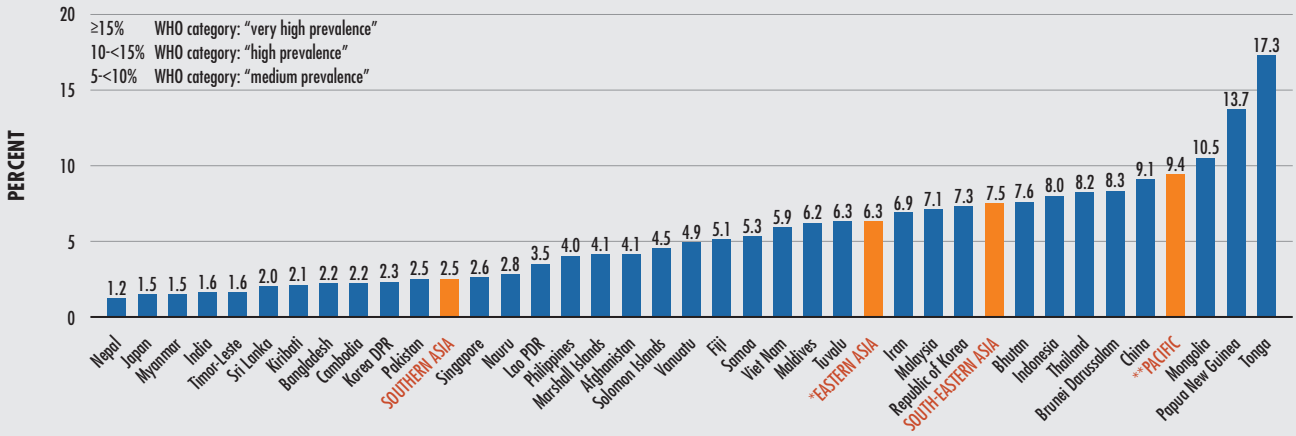
SOURCE: United Nations Children's Fund (UNICEF), World Health Organization (WHO). 2020. *UNICEF/WHO Low birthweight (LBW) estimates, 2019 Edition* [online]. New York. [Cited 10 November 2020]. https://data.unicef.org/topic/nutrition/low-birthweight/

WHO Growth Standards. Overweight and obese children often remain overweight through childhood and adolescence and are at a higher risk of developing health problems later in life.[26]

The latest available data shows that 14.5 million children under five years of age in the Asia–Pacific region were overweight in 2019, lower than 15.7 million reported in 2018.[27] However, there is considerable variation across countries and subregions. The prevalence of overweight among children in Southern Asia is very low, while it is much higher in the Pacific, where nearly one in ten children are overweight. The number of overweight children in Southern Asia and Eastern Asia has changed little over time, but since 1990 there has been a rapid increase in the rates of childhood overweight in South-Eastern Asia and Oceania (Figure 16).

The burden of overweight in children under five years of age is generally highest among wealthiest households. However, in countries with nearly universal access to inexpensive, highly processed convenience foods, this is not always the case. Middle-income countries, such as the Maldives, Marshall Islands, Mongolia and Thailand have the highest child overweight prevalence among lower-wealth-index quintiles. This reflects the changing food environment and feeding practices resulting from rapid urbanization, increased workforce participation of women and economic growth in these countries (Figure 17).

FIGURE 15
PREVALENCE OF OVERWEIGHT AMONG CHILDREN UNDER FIVE YEARS OF AGE IN ASIA AND THE PACIFIC, BY COUNTRY, LATEST AVAILABLE DATA



NOTE: * Overweight under 5 years of age regional aggregates exclude Japan. ** Oceania excluding Australia and New Zealand.

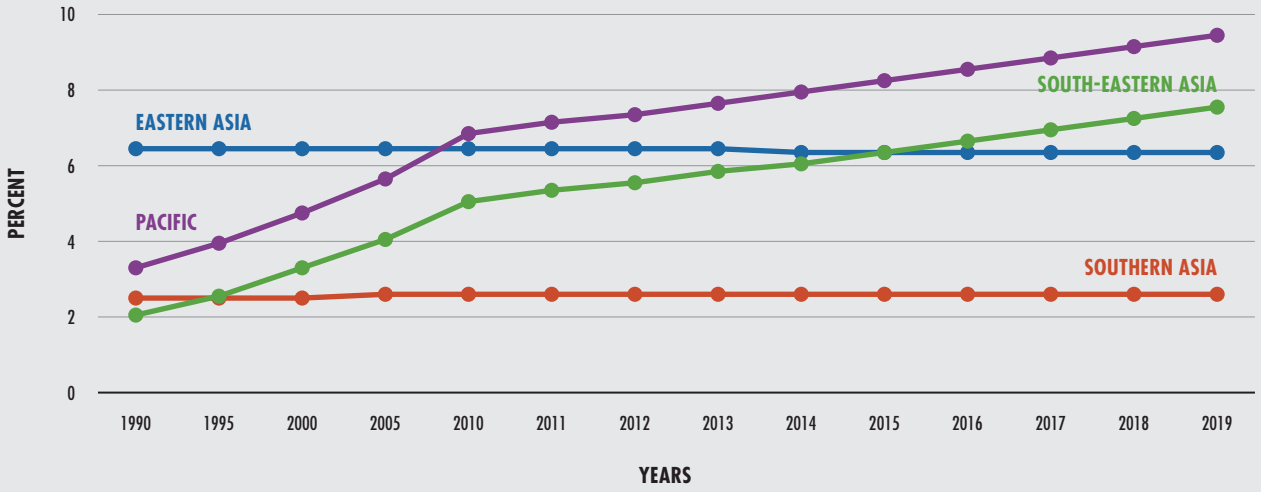
SOURCE: United Nations Children's Fund (UNICEF), World Health Organization (WHO) and World Bank Group. 2020. *Joint Child Malnutrition Estimates Expanded Database: Overweight.* New York; Kiribati National Statistics Office. 2019. *Kiribati Social Development Indicator Survey 2018-19, Snapshot of Key Finding.* South Tarawa, Kiribati. (available at https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Kiribati/2018-2019/Snapshots/Kiribati%20MICS%20KSDIS%202018-19%20Statistical%20Snapshots_English.pdf)

1.9 ADULT OVERWEIGHT AND OBESITY

Obesity is an epidemic of the 21st century and increases the risk of non-communicable diseases, such as diabetes, cardiovascular heart diseases, strokes and certain cancers. The link between obesity, poor health outcomes and all-cause mortality is well established.[28] Overweight and obesity also impact SDG 3 target 3.4 – to reduce by one-third premature mortality from NCDs. To achieve optimal health, individuals should maintain a body mass index[29] (BMI) in the range 18.5–24.9 kg/m^2. The risk of comorbidities increases with a BMI in the range of 25.0–29.9 kg/m^2, and the risk is moderate to severe with a BMI greater than 30 kg/m2.[30] Having a BMI of 25 or over accounted for 4 million deaths globally, nearly 40 percent of which occurred in persons who were not obese. More than two-thirds of deaths related to high BMI were caused by cardiovascular disease. The disease burden related to high BMI has increased since 1990, but decreases in underlying rates of death from cardiovascular disease have attenuated the rate of this increase.[31] The Global Action Plan for the Prevention and Control of NCDs 2013–2020 has set a voluntary target on adult obesity to be achieved by 2025 – halt the rise in obesity and diabetes.

The prevalence of adult overweight and obesity has been increasing in almost all countries in Asia and the Pacific (Figure 18). The Asia–Pacific region is home to the largest absolute number of overweight and obese people, about 1 billion, or about 40 percent of the global total.[32] The region has enjoyed impressive economic progress over the past three decades. This economic growth and rapid urbanization is associated with more sedentary lifestyles, a shift in eating patterns, and a "nutrition transition" towards increased

FIGURE 16
TREND IN PREVALENCE OF OVERWEIGHT IN CHILDREN UNDER FIVE YEARS OF AGE IN ASIA AND THE PACIFIC SINCE 1990



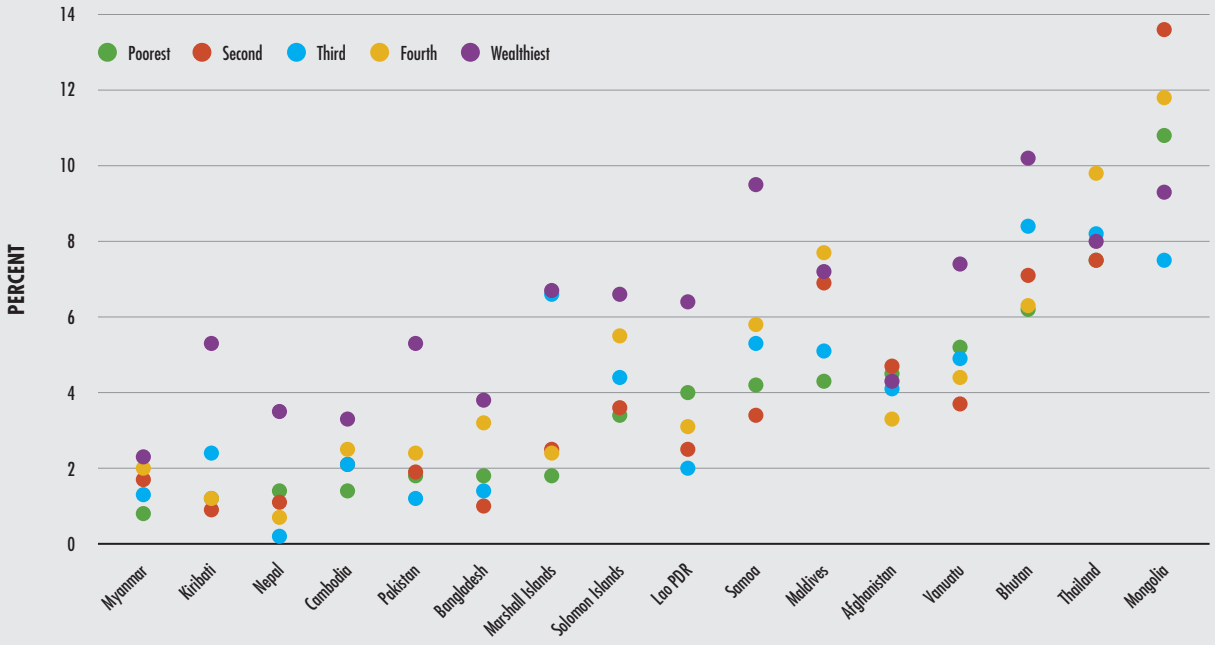
SOURCE: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/

reliance upon highly processed foods, increased away-from-home food intake, and increased use of fats, salt, sugars and sugar-sweetened beverages.[33] Thus, the prevalence of overweight and obesity increases with the income level of countries. For example, the prevalence of obesity in high-income and upper-middle-income countries is more than double that of low-income countries. On the other hand, the epidemic has been growing most rapidly in low- and middle-income countries, particularly in the Pacific Islands. Although most countries are still off-track to meet the 2025 targets, many are taking actions, and some have achieved a levelling-off in childhood obesity rates.

Evidence suggests that in low- and middle-income countries, the prevalence of overweight or obesity is higher among women in the Western Pacific region.[34] In contrast, in high-income countries, men are more often overweight or obese.

The differences between men and women may be partly attributable to some biological differences between sexes, but more importantly, to differing expectations, roles and opportunities between genders. This includes differential socio-economic position and differential exposure and vulnerabilities to obesogenic environments.[35] Overweight or obesity is considerably more common in urban than in rural households. In most low- and middle-income countries, children and adults from lower-income households are less likely to be overweight than those from higher-income households. The opposite is true in high-income countries, where socio-economically disadvantaged populations are significantly more likely to be overweight.[36]

FIGURE 17
OVERWEIGHT IN CHILDREN UNDER FIVE YEARS OF AGE BY WEALTH QUINTILE IN SELECTED COUNTRIES IN ASIA AND THE PACIFIC, LATEST AVAILABLE DATA

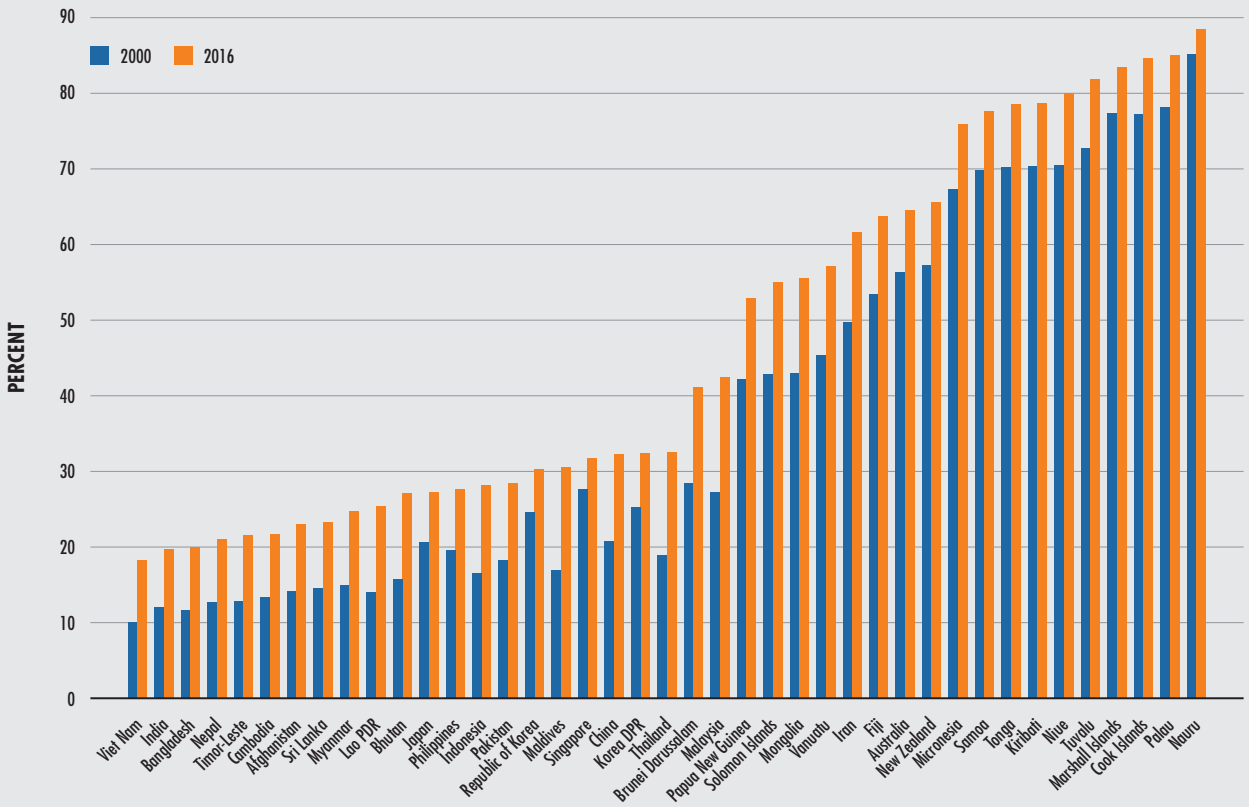


SOURCE: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/

1.10 DIETS OF CHILDREN 6–23 MONTHS OF AGE – MINIMUM DIETARY DIVERSITY (MDD), MINIMUM MEAL FREQUENCY (MMF), MINIMUM ACCEPTABLE DIET (MAD)

A range of factors contributes to childhood malnutrition. In addition to poor feeding practices, poor hygiene and ill health, diets that are inadequate in quality and quantity are often important underlying causes. Minimum dietary diversity (MDD), minimum meal frequency (MMF) and minimum acceptable diet (MAD) are key indicators measuring the quality and quantity of children's diets. A child meets minimum dietary diversity if they have consumed five of eight food groups in the previous 24 hours.[37] Globally, 29 percent of children aged 6–23 months consume a minimum dietary diversity with the highest prevalence among developing country groups in Central America at 60 percent, and the lowest in Middle Africa[38] at 19 percent.[39] Prevalence of MDD in Asia and the Pacific shows significant variation with Southern Asia matching Middle Africa for poor MDD at 20 percent, while South-Eastern Asia at 51 percent is near the prevalence of Central America. Oceania had insufficient data to develop

FIGURE 18
PREVALENCE OF OVERWEIGHT AND OBESITY AMONG ADULTS IN ASIA AND THE PACIFIC, 2000 AND 2016

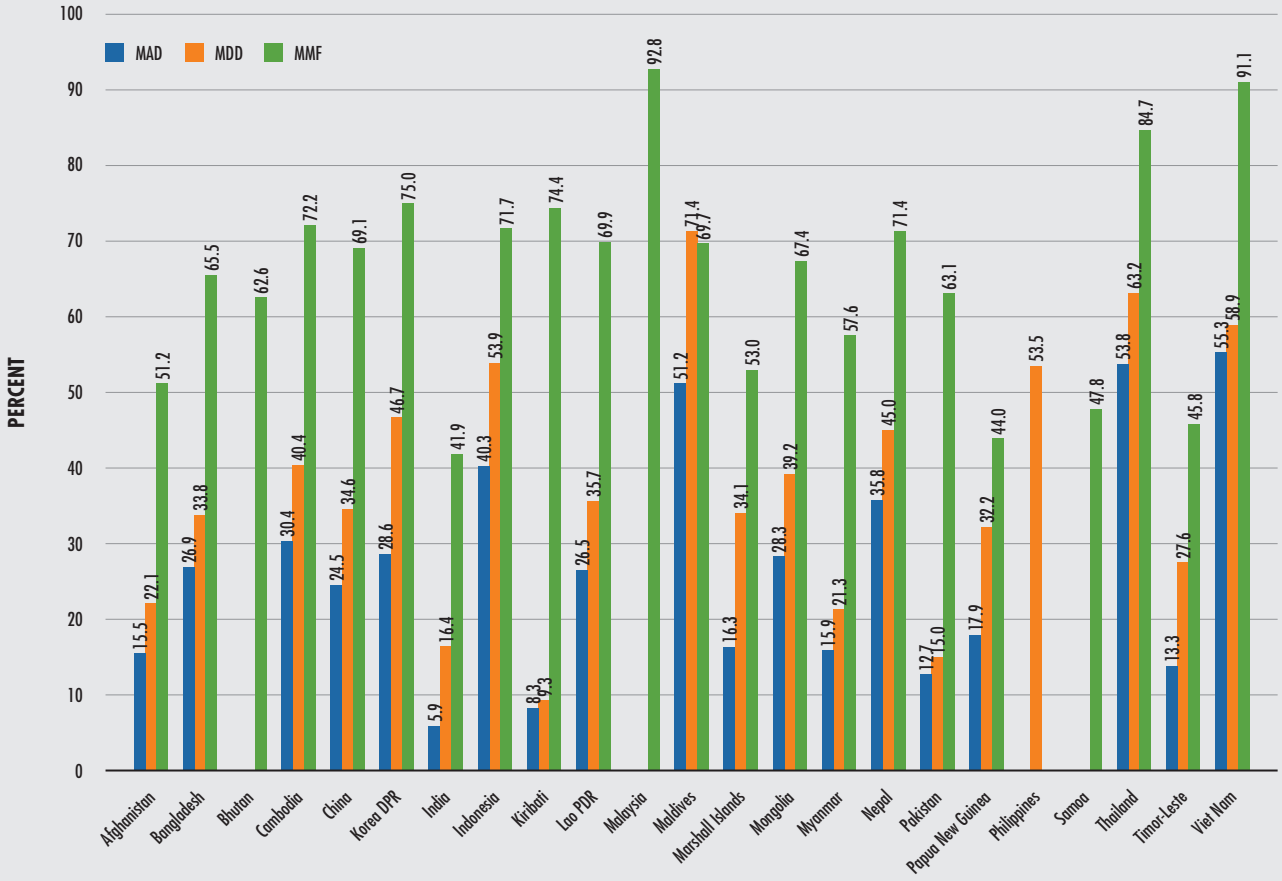


SOURCE: World Health Organization (WHO). 2020. *Global Health Observatory data repository* [online]. Geneva. [Cited 10 November 2020]. https://apps.who.int/gho/data/node.main.NCDMBMIOVERWEIGHTA?lang=en

a regional estimate; however, data from Kiribati and the Marshall Islands indicate that MDD is poor. Only five countries in the region (Viet Nam, Thailand, the Philippines, Indonesia and the Maldives) have more than half of their children consuming diverse diets, with high variability throughout the subregions. In South-Eastern Asia it ranges from 21 percent in Myanmar to 63 percent in Thailand, while in Southern Asia it ranges from 15 percent in Pakistan to 71 percent in the Maldives.

Minimum Meal Frequency (MMF) measures the adequacy of a child's diet in terms of quantity. The required number of minimum meals depends on a child's age and breastfeeding status.[40] The proportion of children meeting recommended MMF is higher than the proportion of children achieving MDD. However, in many countries, feeding frequency is still sub-optimal with high variability throughout the region. Globally, 53 percent of children meet MMF with the highest prevalence in Central America at 81 percent and the lowest in Middle Africa at 38 percent. In Asia and the Pacific, Southern Asia has the lowest

FIGURE 19
PERCENT OF CHILDREN AGED 6–23 MONTHS OF AGE ACHIEVING MINIMUM DIETARY DIVERSITY (MDD), MINIMUM MEAL FREQUENCY (MMF), MINIMUM ACCEPTABLE DIET (MAD) IN ASIA AND THE PACIFIC, BY COUNTRY, LATEST AVAILABLE DATA



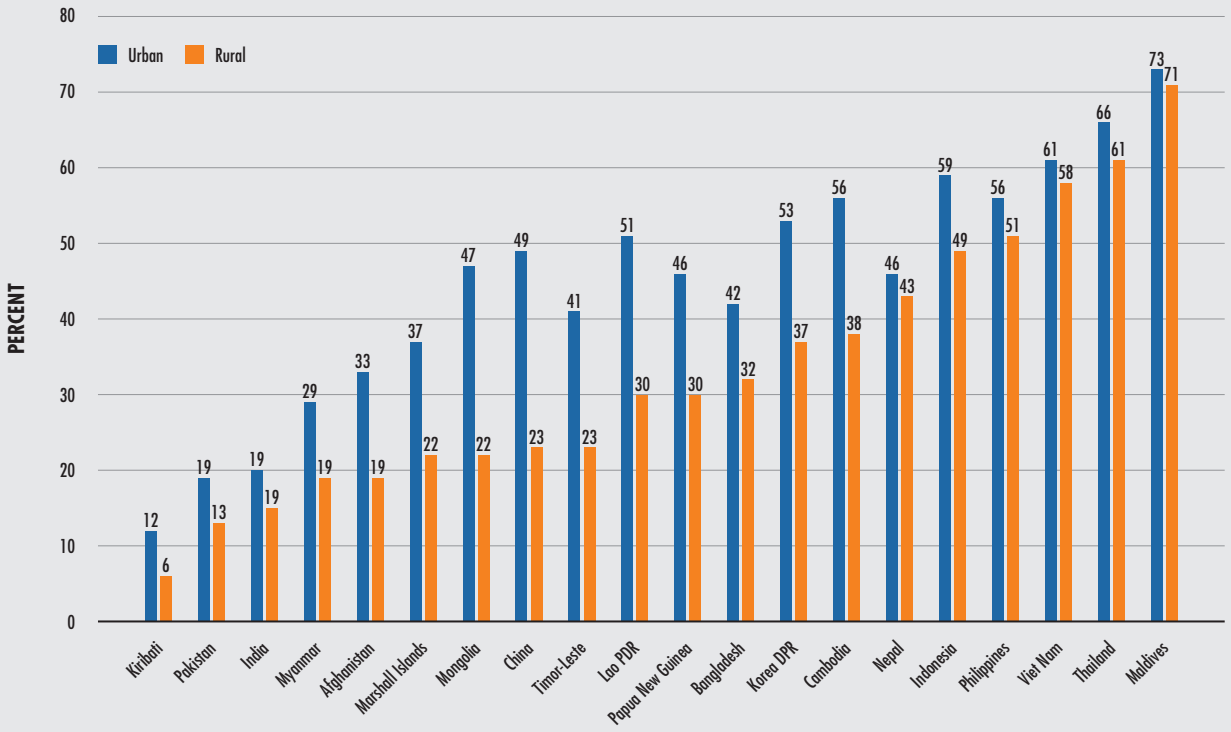
NOTE: Data are missing for MAD and MDD for Bhutan, Malaysia and Samoa. Data are missing for MAD and MMF for Philippines.

SOURCE: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/; Kiribati National Statistics Office. 2019. *Kiribati Social Development Indicator Survey 2018-19, Snapshot of Key Finding*. South Tarawa, Kiribati. (available at https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Kiribati/2018-2019/Snapshots/Kiribati%20MICS%20KSDIS%202018-19%20Statistical%20Snapshots_English.pdf); Mongolia National Statistical Office. 2019. *Social Indicator Sample Survey-2018, Survey Findings Report*. Ulaanbaatar, Mongolia. (available at https://www.washdata.org/sites/default/files/documents/reports/2019-10/Mongolia-2018-MICS-report.pdf)

rate of meeting MMF at 44 percent compared to 69 percent in Eastern Asia and 75 percent in South-Eastern Asia. In India, just 42 percent of children 6–23 months of age are fed the required number of times per day, compared to 91 percent in Viet Nam.

The Minimum Acceptable Diet (MAD) measures both the MMF and MDD among children 6–23 months of age as appropriate for their age groups. If a child meets the MMF and MDD for their age group and breastfeeding status, then they are considered to receive a MAD. Globally,

FIGURE 20
PREVALENCE OF MINIMUM DIETARY DIVERSITY (MDD) IN CHILDREN 6–23 MONTHS OF AGE IN ASIA AND THE PACIFIC, BY LOCATION (RURAL/URBAN)



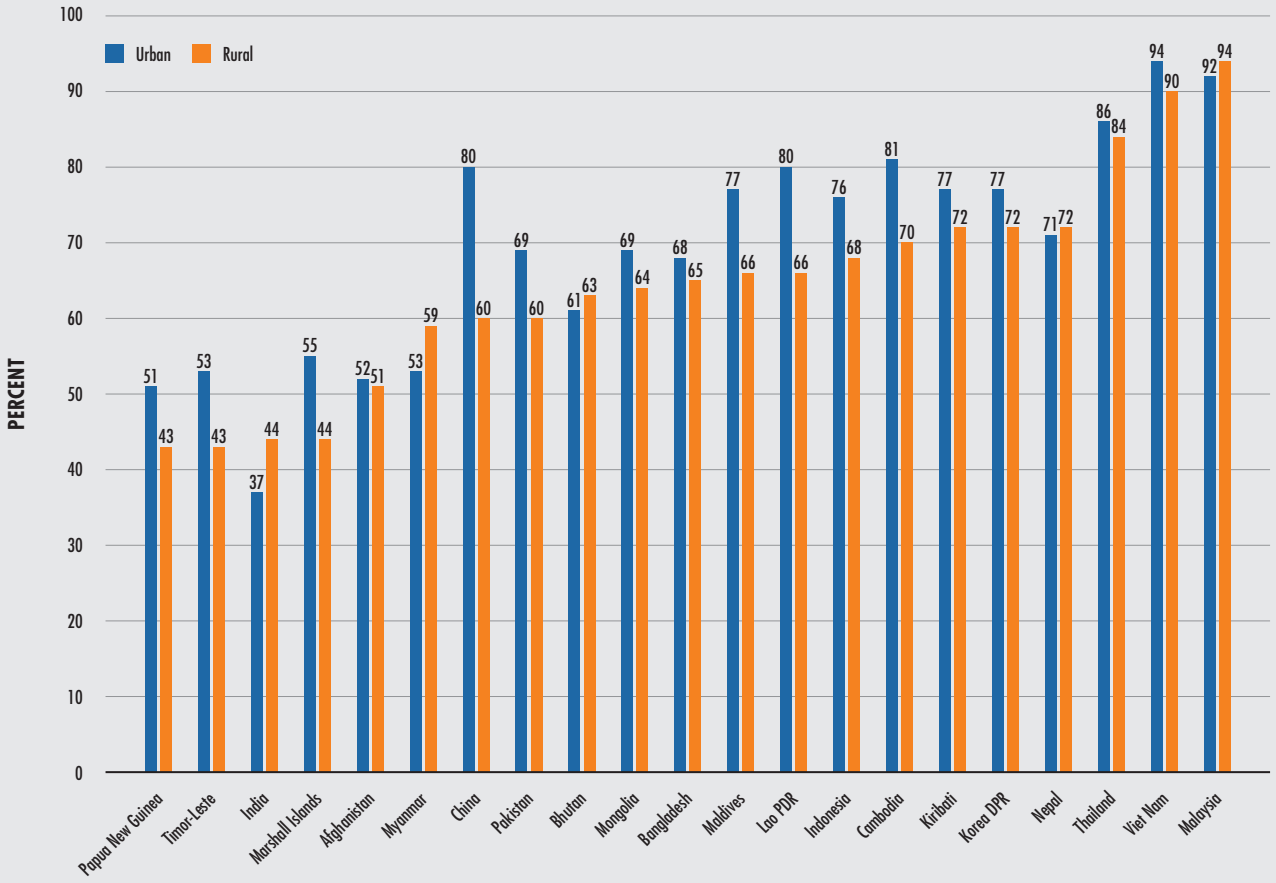
SOURCE: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/; Kiribati National Statistics Office. 2019. *Kiribati Social Development Indicator Survey 2018-19, Snapshot of Key Finding.* South Tarawa, Kiribati. (available at https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Kiribati/2018-2019/Snapshots/Kiribati%20MICS%20KSDIS%202018-19%20Statistical%20Snapshots_English.pdf); Mongolia National Statistical Office. 2019. *Social Indicator Sample Survey-2018, Survey Findings Report.* Ulaanbaatar, Mongolia. (available at https://www.washdata.org/sites/default/files/documents/reports/2019-10/Mongolia-2018-MICS-report.pdf)

19 percent of children receive a MAD with the lowest prevalence in Middle Africa at 19 percent and the highest in Central America at 50 percent. Very few children in Asia and the Pacific receive a MAD, with only three countries (the Maldives, Thailand and Viet Nam) exceeding 50 percent for MAD. Following the trends for MMF and MDD, MAD is lowest in Southern Asia at 12 percent and highest in South-Eastern Asia at 41 percent.

Disaggregation of MDD, MMF and MAD indicators by location indicates that children in urban areas tend to have more diverse diets compared to children in rural areas.

The urban-rural gap in MDD is largest in China, Mongolia and Lao PDR, while the Maldives, Viet Nam and Nepal have the smallest rural-urban dietary gap. Factors affecting MDD include the availability and affordability of diverse foods, caregiver knowledge and feeding practices, as well as higher incomes in urban areas. Poorer MDD in rural areas is likely the result of a combination of lower availability and higher cost of diverse foods year-round as well as poorer knowledge and feeding practices. Minimum feeding frequency (MFF), on the other hand, shows little variation between urban and rural areas (Figure 20 and Figure 21).

FIGURE 21
PREVALENCE OF MINIMUM MEAL FREQUENCY (MMF) IN CHILDREN 6–23 MONTHS OF AGE IN ASIA AND THE PACIFIC, BY LOCATION (RURAL/URBAN)



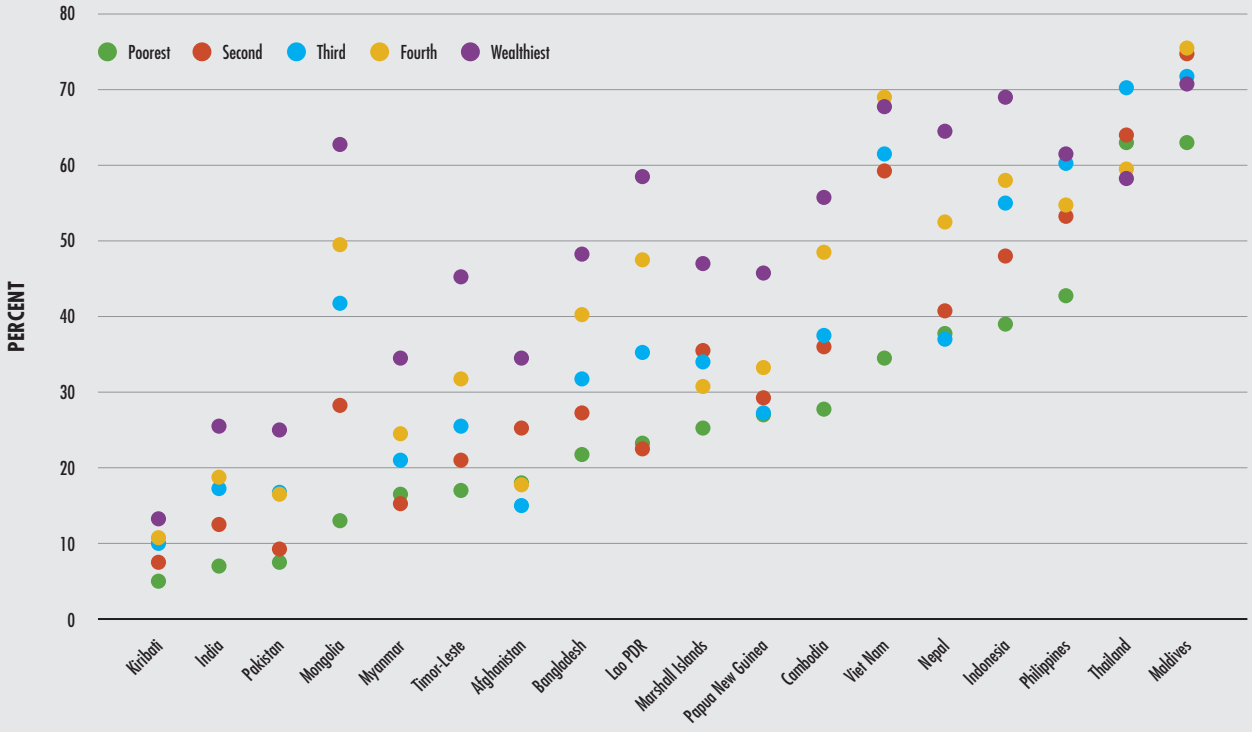
SOURCE: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/; Kiribati National Statistics Office. 2019. *Kiribati Social Development Indicator Survey 2018-19, Snapshot of Key Finding*. South Tarawa, Kiribati. (available at https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Kiribati/2018-2019/Snapshots/Kiribati%20MICS%20KSDIS%202018-19%20Statistical%20Snapshots_English.pdf); Mongolia National Statistical Office. 2019. *Social Indicator Sample Survey-2018, Survey Findings Report*. Ulaanbaatar, Mongolia. (available at https://www.washdata.org/sites/default/files/documents/reports/2019-10/Mongolia-2018-MICS-report.pdf)

Achieving MDD, MMF and MAD requires access to affordable, nutritious foods and appropriate caregiver knowledge on feeding practices. There is a strong correlation between higher MDD, MMF and MAD with higher income, with the wealthiest households achieving the highest prevalence of dietary quality and quantity. Variation by wealth-index quintile can be dramatic, with 63 percent of the most affluent households in Mongolia meeting MDD compared to only 13 percent of the poorest households. In Thailand and the Maldives, there is less variation in the prevalence of MDD across wealth quintiles. In these two countries, the wealthiest households do not have the highest dietary quality. The lack of correlation between wealth quintile and MDD in these upper middle-income countries may be due to the fact that the poorest households in upper middle-income countries are better off than those in the poorest quintile of low and lower

BOX 7
INEQUALITIES IN INFANT AND YOUNG CHILD FEEDING PRACTICES[41]

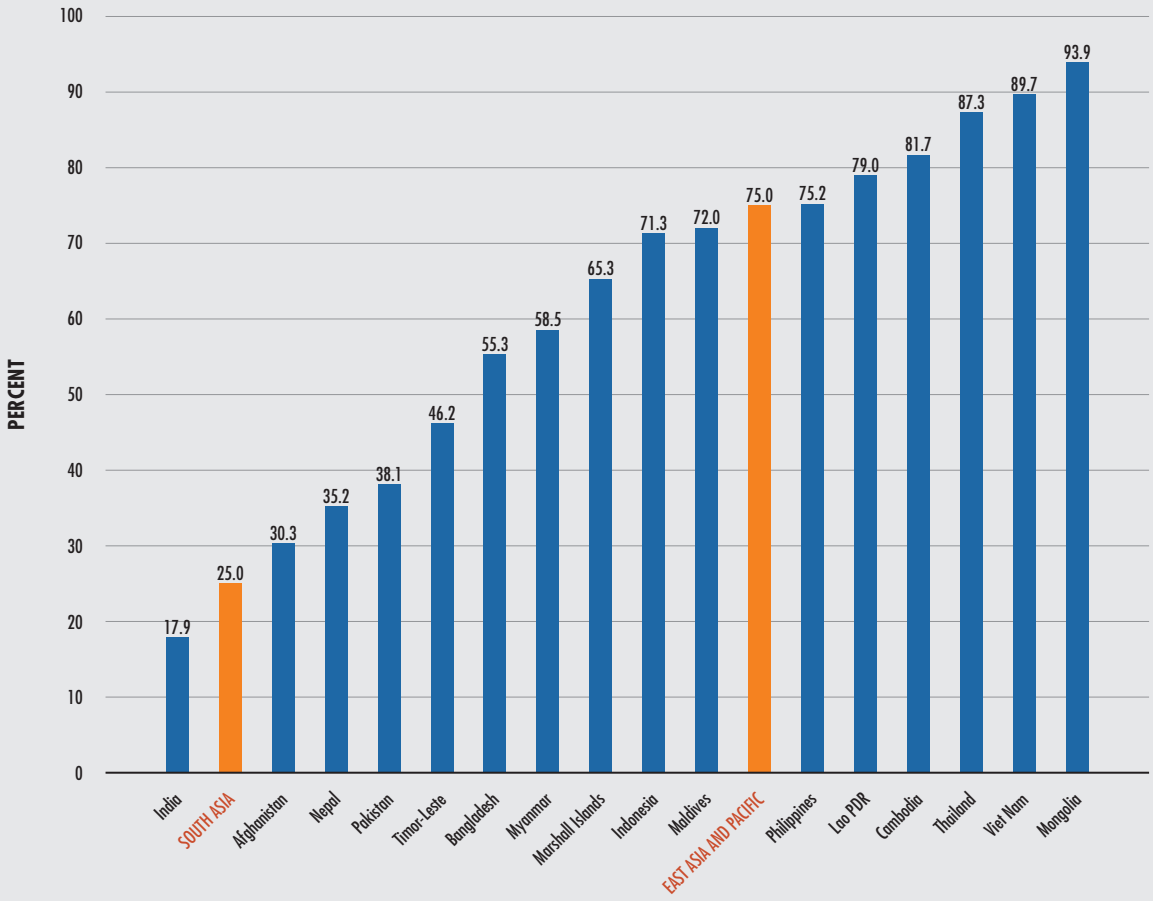
There are significant inequalities in solid food introduction, meal frequency, dietary diversity and minimum acceptable diet. Children under five years of age from the wealthiest households do far better, as do those in urban areas, or those with a more educated mother. For the minimum acceptable diet (MAD) specifically, the wealth gap (between top and bottom quintile) is 11 percentage points, the location (urban versus rural) gap is 15 percentage points, and the maternal education gap is 8 percentage points. The difference by sex of the child is zero.

FIGURE 22
PREVALENCE OF MINIMUM DIETARY DIVERSITY (MDD) IN CHILDREN 6–23 MONTHS OF AGE IN ASIA AND THE PACIFIC, BY HOUSEHOLD WEALTH-INDEX QUINTILE



SOURCE: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/; Kiribati National Statistics Office. 2019. *Kiribati Social Development Indicator Survey 2018-19, Snapshot of Key Finding.* South Tarawa, Kiribati. (available at https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Kiribati/2018-2019/Snapshots/Kiribati%20MICS%20KSDIS%202018-19%20Statistical%20Snapshots_English.pdf); Mongolia National Statistical Office. 2019. *Social Indicator Sample Survey-2018, Survey Findings Report.* Ulaanbaatar, Mongolia. (available at https://www.washdata.org/sites/default/files/documents/reports/2019-10/Mongolia-2018-MICS-report.pdf)

FIGURE 23
PERCENTAGE OF CHILDREN 6–23 MONTHS OF AGE WHO CONSUMED EGG OR FLESH FOOD IN ASIA AND THE PACIFIC



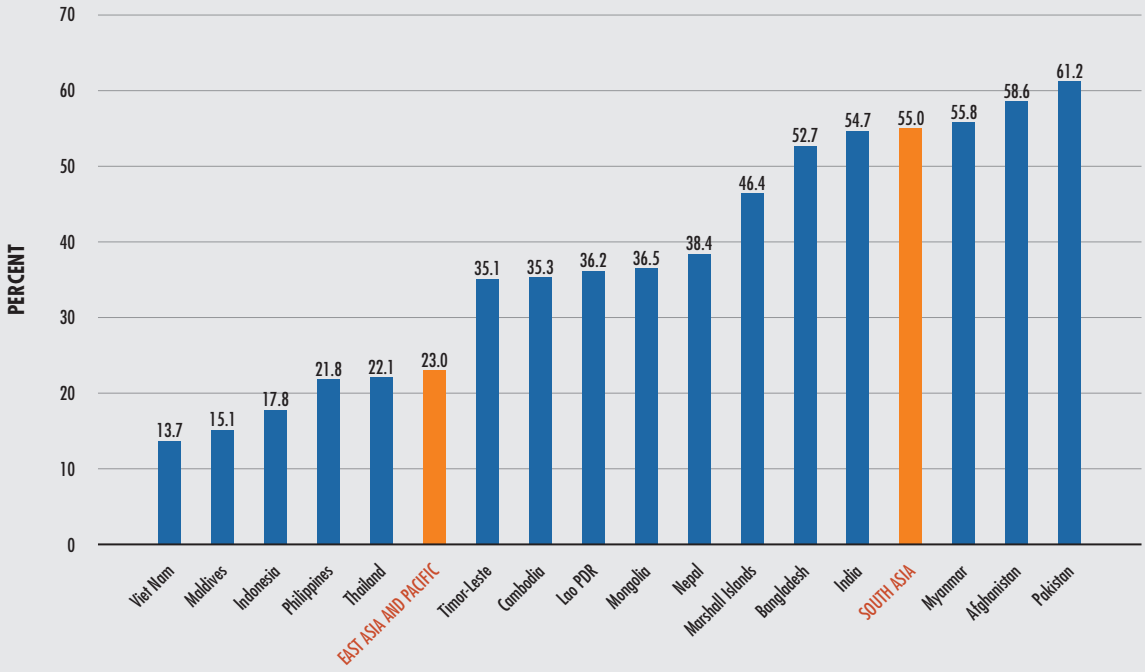
NOTES: East Asia and Pacific includes South-eastern Asia and Oceania. South Asia excludes Iran.

SOURCES: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/; UNICEF. 2019. *The State of the World's Children 2019, Children, food and Nutrition Growing well in a changing world* [online]. New York. [Cited 09 November 2020]. https://www.unicef.org/media/60826/file/SOWC-2019-EAP.pdf

middle-income countries, and thus tend to have fewer constraints in being able to afford a diverse diet. It may also be indicative of wealthier households being more exposed to food environments that emphasize convenience foods, rather than healthy foods, for children.

Animal-source foods are an important component of dietary diversity because they are dense in protein and micronutrients, and consumption of a variety of animal-source foods is associated with child growth.[42] Globally, 40 percent of children are reported to consume animal-source foods

FIGURE 24
PERCENTAGE OF CHILDREN 6–23 MONTHS OF AGE THAT CONSUMED ZERO FRUITS AND VEGETABLES IN ASIA AND THE PACIFIC



NOTES: East Asia and Pacific includes South-eastern Asia and Oceania. South Asia excludes Iran.

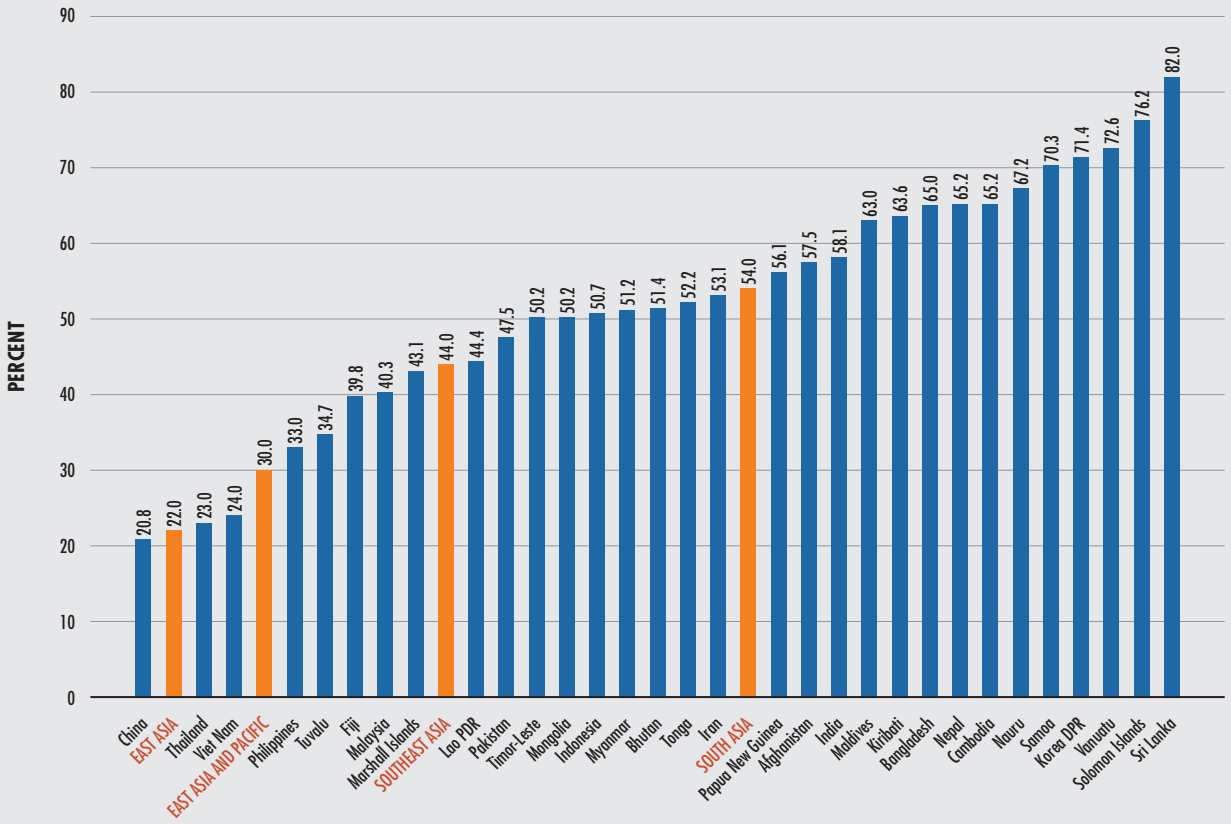
SOURCES: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/; UNICEF. 2019. *The State of the World's Children 2019, Children, food and Nutrition Growing well in a changing world* [online]. New York. [Cited 09 November 2020]. https://www.unicef.org/media/60826/file/SOWC-2019-EAP.pdf

(egg, flesh foods) within the last 24 hours.[43] There is a wide variation in this figure across the region: just 18 percent of children in India consumed any egg or flesh food compared to 94 percent of children in Mongolia (Figure 23).

Similar to the consumption of animal-source foods, consumption of fruits and vegetables is an essential component of a healthy diet. It contributes to a diverse diet containing essential vitamins and minerals. Consumption of zero fruits or vegetables is an indicator[44] used to measure unhealthy diets in children and is associated with increased risk of stunting. Globally, 44 percent of children reported zero consumption of fruits and vegetables in the previous 24 hours. Within the region, the highest prevalence is in Southern Asia, where 55 percent of children had not eaten a fruit or vegetable in the previous 24 hours. Consumption of fruits and vegetables is significantly higher in Eastern Asia and the Pacific, with only 23 percent of children having zero fruit and vegetable consumption. Oceania lacks data, but nearly half of all children in the Marshall Islands had not consumed any fruits or vegetables in the past 24 hours.

Consumption of fruits and vegetables is dependent on availability, affordability and caregiver knowledge, practices and behaviours.

FIGURE 25
PREVALENCE OF EXCLUSIVE BREASTFEEDING IN INFANTS YOUNGER THAN SIX MONTHS OF AGE IN ASIA AND THE PACIFIC, BY COUNTRY AND SUBREGION, LATEST AVAILABLE DATA



NOTE: * Oceania excluding Australia and New Zealand.

SOURCES: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/; Kiribati National Statistics Office. 2019. *Kiribati Social Development Indicator Survey 2018-19, Snapshot of Key Finding.* South Tarawa, Kiribati. (available at https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Kiribati/2018-2019/Snapshots/Kiribati%20MICS%20KSDIS%202018-19%20Statistical%20Snapshots_English.pdf); Mongolia National Statistical Office. 2019. *Social Indicator Sample Survey-2018, Survey Findings Report.* Ulaanbaatar, Mongolia. (available at https://www.washdata.org/sites/default/files/documents/reports/2019-10/Mongolia-2018-MICS-report.pdf)

Animal-source foods, and fruits and vegetables are often significantly more expensive than staple foods traditionally fed to young children (such as rice porridge) and highly processed convenience foods, which are nearly universally available in the region. Fruits and vegetables are seasonally available. However, availability and affordability depend upon geographic location, market linkages and seasonality. Even when animal-source foods, and fruits and vegetables are available and affordable, caregivers require appropriate knowledge, practices and behaviours to purchase, prepare and feed these foods to their young children in an adequate manner.

BOX 8
ADDRESSING GAPS IN THE NUTRITION DATA LANDSCAPE IN LAO PDR – NATIONAL INFORMATION PLATFORMS FOR NUTRITION (NIPN)[45]

The quality and reliability of data are critical for nutrition policy, planning, and financial decisions. The National Information Platform for Nutrition (NIPN) strengthens the capacity of key institutions in Lao PDR to collect and manage quality nutrition data to influence policy and decision-making in the country. A data mapping exercise conducted by the Centre for Development Research (CDR) in partnership with UNICEF and the European Union in Lao PDR in 2019 revealed challenges with nutrition data in the information systems of the health, education and agricultural sub-sectors. The results showed a lack of indicator definitions, irregular frequency of data collection, and incoherent geographic levels of reporting, among others. Critical nutrition indicators are not routinely collected, impacting the monitoring of the nutrition situation in the country. The findings of the NIPN mapping exercise contribute to ongoing discussions on improving nutrition monitoring in the various sectors under the National Nutrition Committee. They are also guiding the development of the next National Plan of Action on Nutrition (2021–2025) and the revision of the nutrition indicators in the health management information system (DHIS2). The technical support provided by NIPN and other partners to the Government has helped to develop data collection capacity and tools and encouraged the use of nutrition data in primary documents, which are critical steps for improving nutrition information management in Lao PDR.

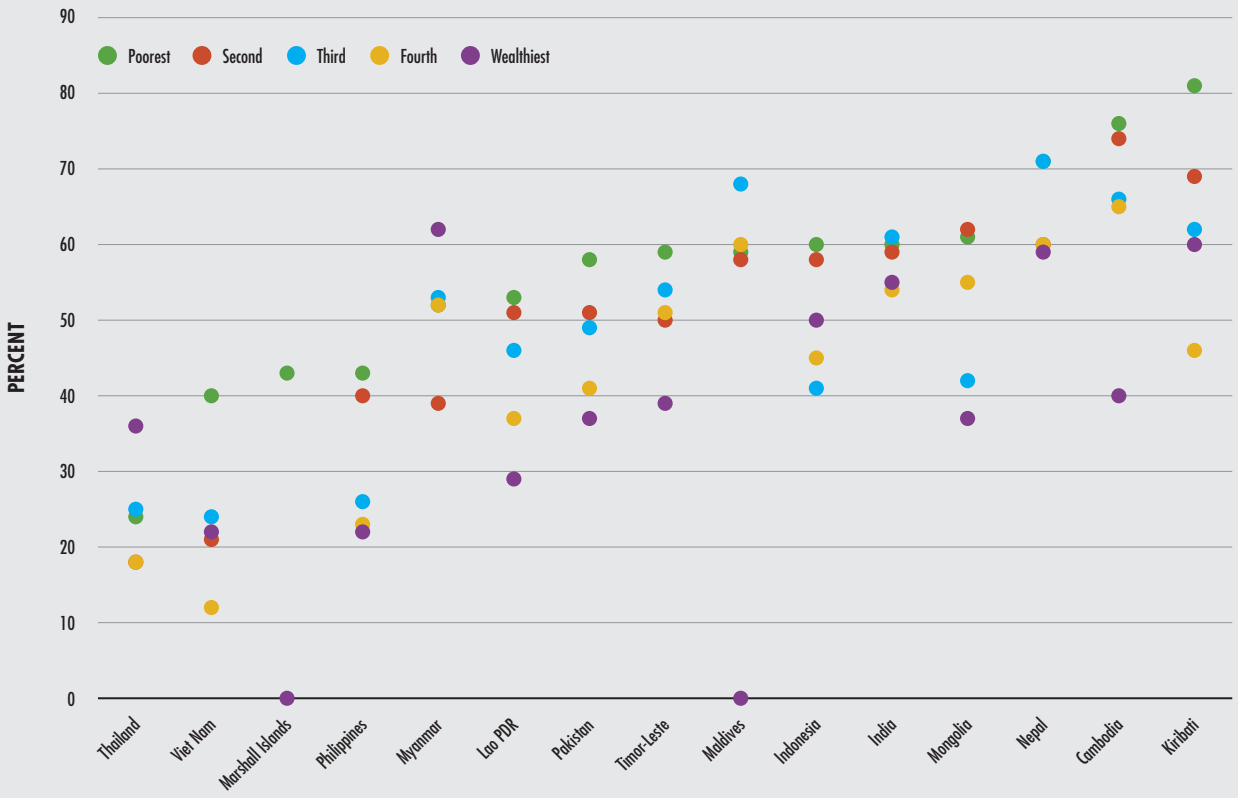
1.11 EXCLUSIVE BREASTFEEDING FOR INFANTS UP TO SIX MONTHS OF AGE

Exclusive breastfeeding is an essential part of optimal infant and young child feeding practices and gives children the best start in life. Exclusive breastfeeding is when a child receives nothing but breastmilk from birth until six months of age. Only eight countries are actually on track to meeting or exceed the target in 2025: Sri Lanka, Myanmar, Pakistan, Democratic People's Republic of Korea, Solomon Islands, Viet Nam, Vanuatu and Samoa.[46] Exclusive breastfeeding is highest in countries in Southern Asia compared to South-Eastern and Eastern Asia where breastfeeding rates are lower and in some cases declining.[47] Across the Asia–Pacific region, exclusive breastfeeding rates range from 21 percent in China to 82 percent in Sri Lanka.

BOX 9
EXCLUSIVE BREASTFEEDING IN TIMES OF COVID-19[48]

The many benefits of breastfeeding substantially outweigh the potential risks of transmission and illness associated with COVID-19, especially since active SARS-CoV-2 virus has not been detected in the breastmilk of any mother with confirmed/suspected COVID-19 as of the time of writing. Thus, there is no evidence so far that the virus transmits through breastfeeding. Exclusive breastfeeding and skin-to-skin contact significantly reduce the risk of death in newborns and young infants, and provide immediate and lifelong health and development advantages. Therefore, promoting and maintaining exclusive breastfeeding is especially important in the time of COVID-19 for both mothers and infants.

FIGURE 26
PREVALENCE OF EXCLUSIVE BREASTFEEDING IN ASIA AND THE PACIFIC, BY WEALTH INDEX QUINTILE



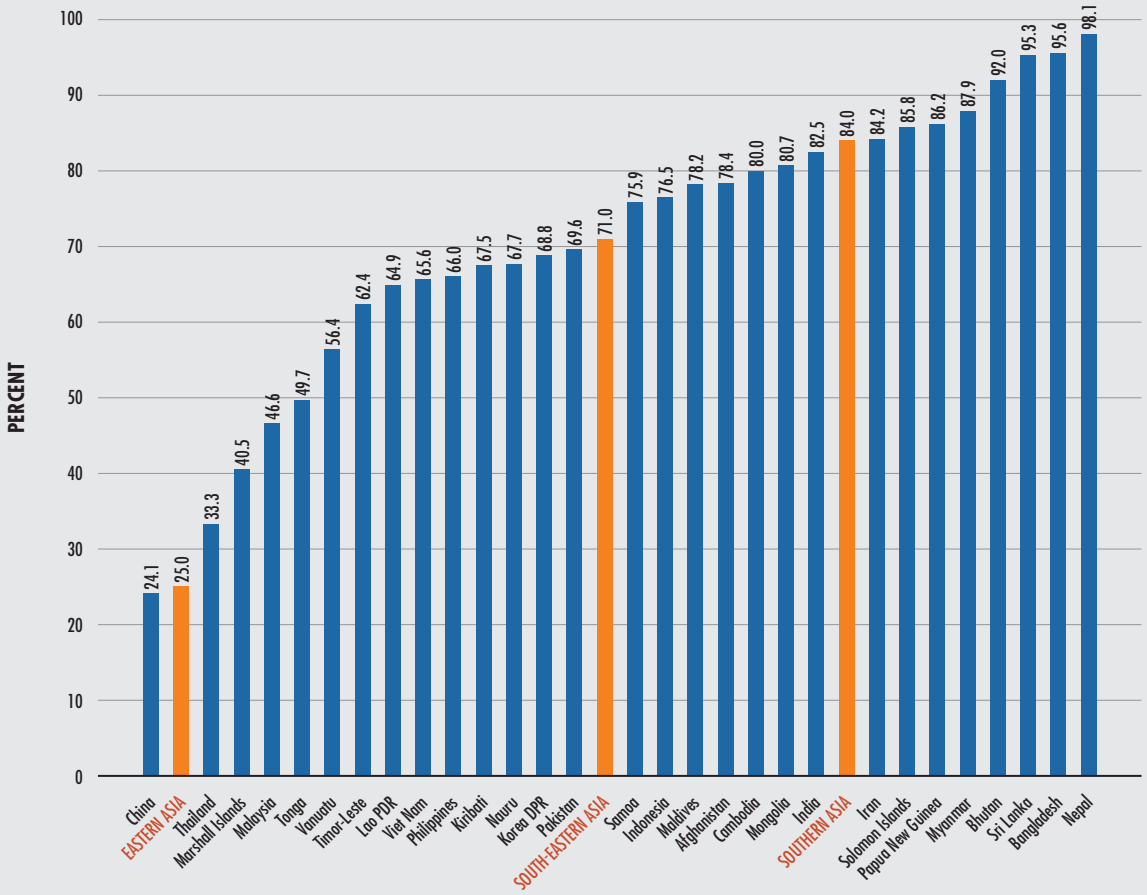
SOURCES: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/; Kiribati National Statistics Office. 2019. *Kiribati Social Development Indicator Survey 2018-19, Snapshot of Key Finding*. South Tarawa, Kiribati. (available at https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Kiribati/2018-2019/Snapshots/Kiribati%20MICS%20KSDIS%202018-19%20Statistical%20Snapshots_English.pdf); Mongolia National Statistical Office. 2019. *Social Indicator Sample Survey-2018, Survey Findings Report*. Ulaanbaatar, Mongolia. (available at https://www.washdata.org/sites/default/files/documents/reports/2019-10/Mongolia-2018-MICS-report.pdf)

Variations by wealth-index quintile are reflective of the marketing, affordability and availability of breastmilk substitutes, maternal employment and time restrictions, and knowledge, cultures and beliefs. The prevalence of exclusive breastfeeding tends to be higher in the poorest households except in Myanmar and Thailand, where it is highest amongst the wealthiest households.

1.12 CONTINUED BREASTFEEDING AT ONE YEAR OF AGE

Following the introduction of appropriate complementary foods at six months of age, breastfeeding continues to be an essential nutritional component of a healthy diet for young children. It is a significant source of energy and vital nutrients for a growing infant. The WHO

FIGURE 27
CONTINUED BREASTFEEDING AT ONE YEAR OF AGE IN ASIA AND THE PACIFIC, BY COUNTRY AND SUBREGION



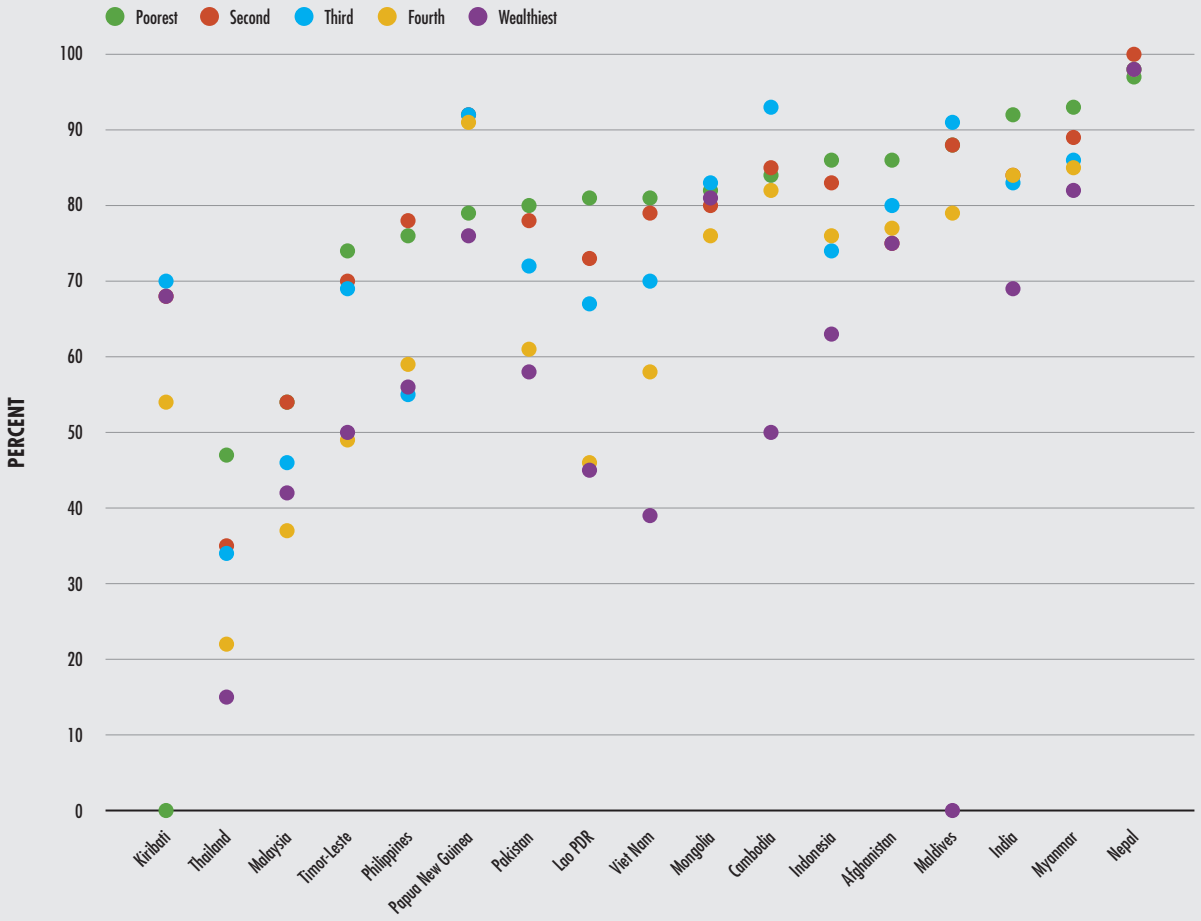
NOTE: Data are insufficient to calculate a regional estimate for Oceania.

SOURCES: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/; Kiribati National Statistics Office. 2019. *Kiribati Social Development Indicator Survey 2018-19, Snapshot of Key Finding*. South Tarawa, Kiribati. (available at https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Kiribati/2018-2019/Snapshots/Kiribati%20MICS%20KSDIS%202018-19%20Statistical%20Snapshots_English.pdf); Mongolia National Statistical Office. 2019. *Social Indicator Sample Survey-2018, Survey Findings Report*. Ulaanbaatar, Mongolia. (available at https://www.washdata.org/sites/default/files/documents/reports/2019-10/Mongolia-2018-MICS-report.pdf)

recommends continuing breastfeeding for up to two years and beyond. Studies in developing countries demonstrate that continued, frequent breastfeeding is associated with greater linear growth and further protects child health through improved birth spacing achieved through delaying maternal fertility postpartum and reducing the child's risk of morbidity and mortality. Continued breastfeeding may also prevent dehydration in those recovering from infections.[49]

Continued breastfeeding in children at one year of age (12-15 months) is high globally, with 70 percent of children continuing to receive

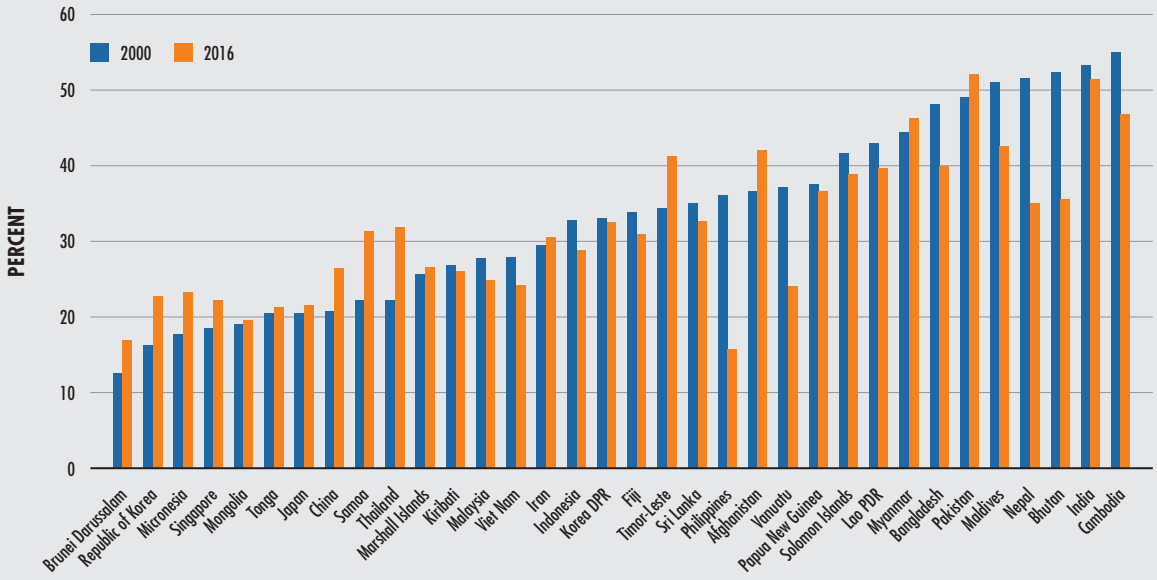
FIGURE 28
CONTINUED BREASTFEEDING OF CHILDREN AT ONE YEAR OF AGE IN ASIA AND THE PACIFIC REGION, BY WEALTH INDEX QUINTILE



SOURCES: United Nations Children's Fund (UNICEF). 2020. *UNICEF Data: Monitoring the situation of children and women* [online]. New York. [Cited 09 November 2020]. https://data.unicef.org/; Kiribati National Statistics Office. 2019. *Kiribati Social Development Indicator Survey 2018-19, Snapshot of Key Finding.* South Tarawa, Kiribati. (available at https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Kiribati/2018-2019/Snapshots/Kiribati%20MICS%20KSDIS%202018-19%20Statistical%20Snapshots_English.pdf); Mongolia National Statistical Office. 2019. *Social Indicator Sample Survey-2018, Survey Findings Report.* Ulaanbaatar, Mongolia. (available at https://www.washdata.org/sites/default/files/documents/reports/2019-10/Mongolia-2018-MICS-report.pdf)

breastmilk. Eastern Africa has the highest prevalence of continued breastfeeding, with 91 percent of children, while Northern America has the lowest at 15 percent. In Asia and the Pacific, there is significant variation with 84 percent of children still breastfed at one year in Southern Asia compared to 71 percent in South-Eastern Asia and 25 percent in Eastern Asia. Lower rates of continued breastfeeding in Eastern Asia may reflect higher rates of formal employment and pervasive marketing of breastmilk substitutes, which influence mothers' decisions to continue breastfeeding and may lead to early weaning.

FIGURE 29
TREND IN PREVALENCE OF ANAEMIA IN WOMEN OF REPRODUCTIVE AGE IN ASIA AND THE PACIFIC, BY COUNTRY, 2000 AND 2016



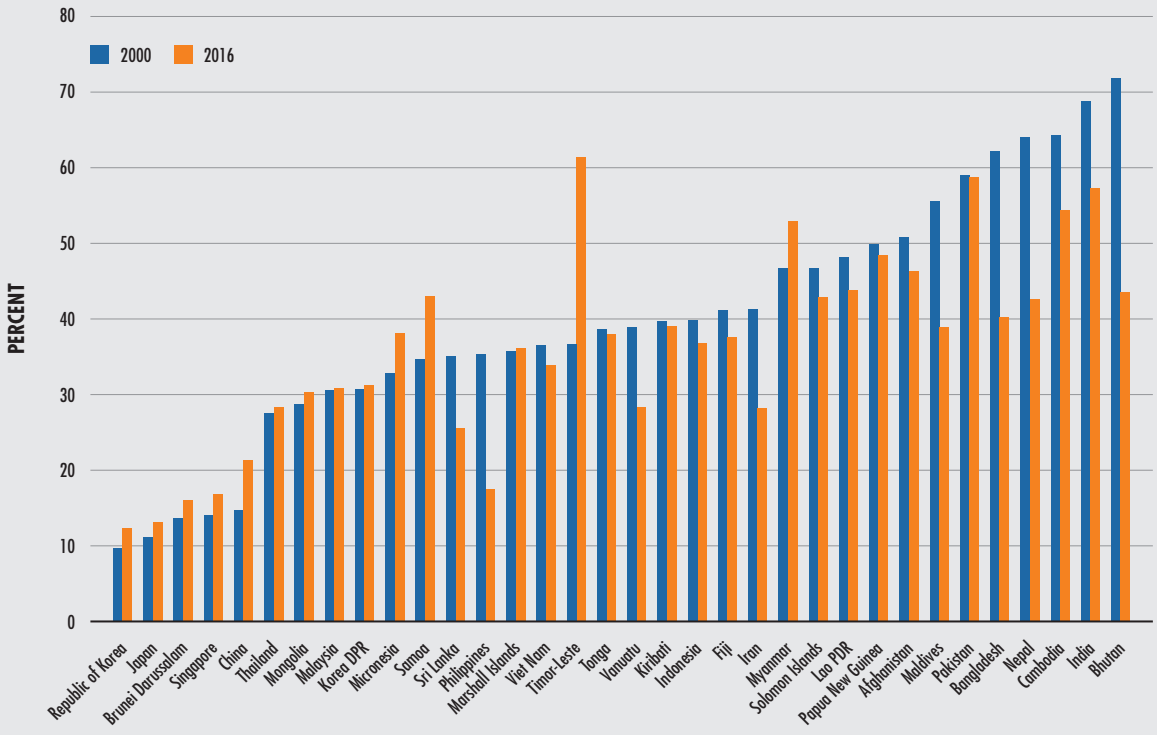
SOURCE: World Health Organization (WHO). 2020. *The Global Health Observatory* [online]. Geneva. [Cited 10 November 2020]. https://www.who.int/data/gho

This is also reflected in variations in continued breastfeeding by wealth-index quintiles. The wealthiest households consistently have the lowest rates of continued breastfeeding. This may be due to work pressures, or social norms[50] that encourage to wean early. Viet Nam has the biggest gap between the poorest and wealthiest quintiles; 81 percent of children in the poorest households are breastfeeding at one year of age compared to 39 percent in the wealthiest households. In Thailand, just 15 percent of children in the most affluent households still receive breastmilk – the lowest among any quintile in countries with available data.

1.13 ANAEMIA IN WOMEN OF REPRODUCTIVE AGE

Anaemia occurs when blood haemoglobin (Hb) concentration falls below an established cut-off value, impairing the capacity to transport oxygen to body tissues. The haemoglobin concentration below which anaemia is diagnosed varies by age, stage of the life cycle (i.e. for women of reproductive age), altitude and smoking status.[51] While symptoms such as fatigue, reduced physical work capacity, and shortness of breath are common in all anaemic individuals, anaemia during pregnancy is further associated with low birth weight, premature birth, cognitive development setbacks[52] and maternal and perinatal mortality.[53] Anaemia accounts for approximately 9 percent of the global total disability burden from all conditions.[54]

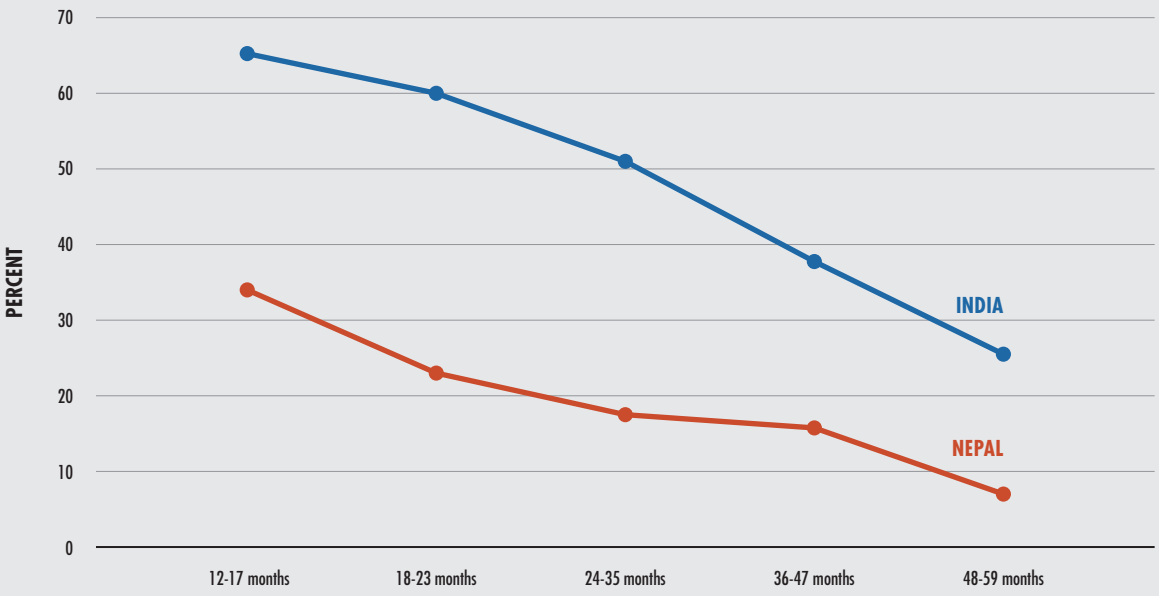
FIGURE 30
TREND IN PREVALENCE OF ANAEMIA IN CHILDREN UNDER FIVE YEARS OF AGE IN ASIA AND THE PACIFIC, 2000 AND 2016



SOURCE: World Health Organization (WHO). 2020. *The Global Health Observatory* [online]. Geneva. [Cited 10 November 2020]. https://www.who.int/data/gho

Reducing the burden of anaemia is an important public health priority. The 2025 Global Nutrition Target is to achieve a 50 percent reduction in the prevalence of anaemia in women of reproductive age by 2025, from 2011 levels.[55] SDG 2 also includes the reduction of anaemia as a target. The estimates of anaemia prevalence in Figure 29 indicate that for most countries in Asia, there has been little improvement in anaemia status for over a decade, and they are off-track to achieve the target of 50 percent reduction in anaemia prevalence. Only four countries made significant progress (more than 10 percentage points) in reducing the burden of anaemia in women of reproductive age between 2000 and 2016 – Bhutan, Nepal, Philippines and Vanuatu – with all other countries experiencing slower or no progress, or even a worsening status. Among subregions, Southern Asia has the highest prevalence, at 49 percent, with Pakistan, India, Maldives and Afghanistan having a prevalence of 40 percent or higher.[56] Estimates of the anaemia situation among women of reproductive age in the Pacific are more positive, with no countries carrying a major public health burden, and most countries indicating a moderate burden. National iron fortification programmes in some countries have contributed to this positive trend (e.g. Fiji, Solomon Islands, etc.). The prevalences in South-eastern Asia and Eastern Asia are the lowest of all subregions, but still substantial at more than one-fourth of all women of reproductive age.

FIGURE 31
ANAEMIA TRENDS ACROSS AGE GROUPS IN CHILDREN UNDER FIVE YEARS OF AGE IN INDIA AND NEPAL

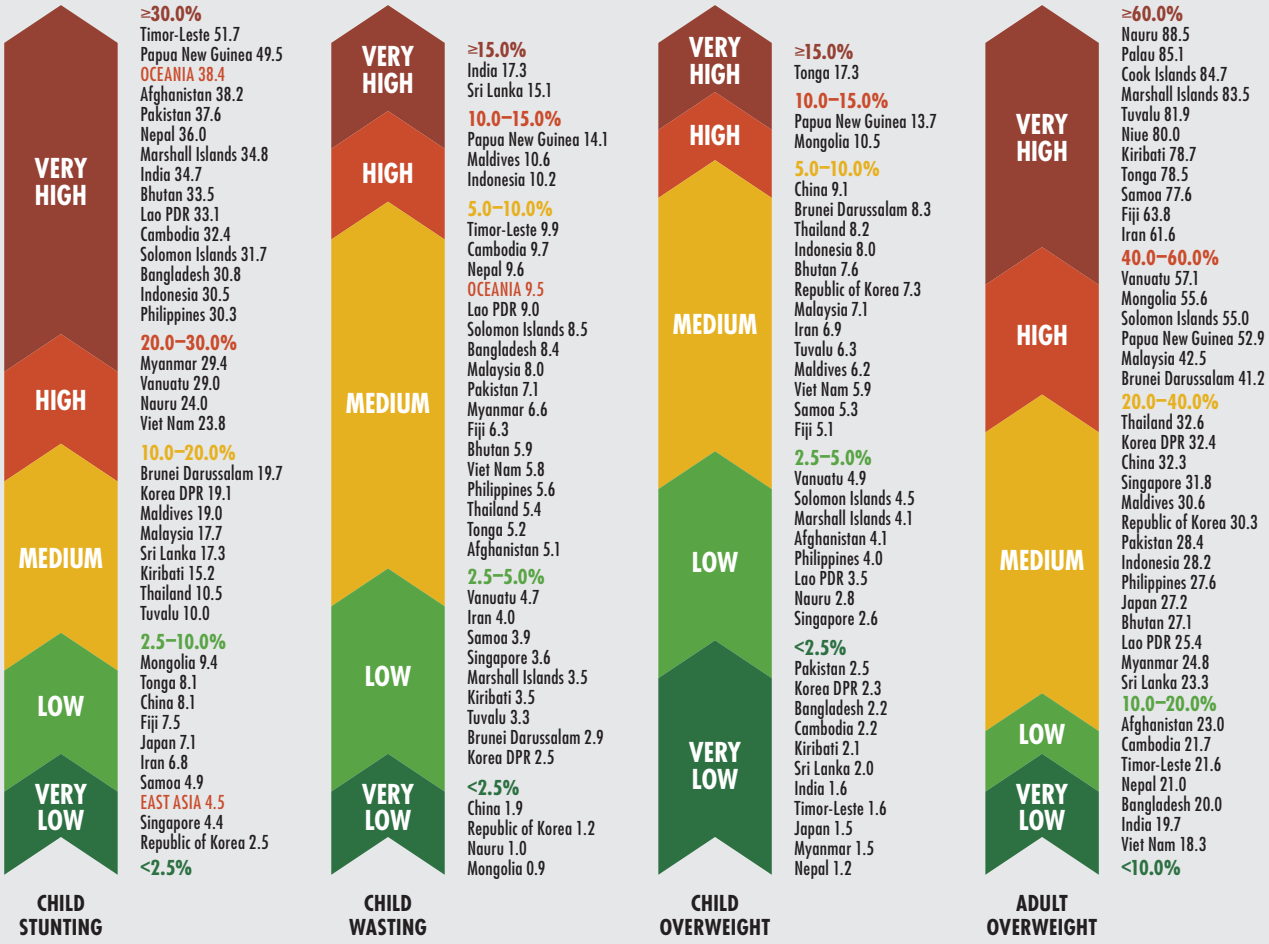


SOURCES: Nepal Ministry of Health and Population, New ERA, United Nations Children's Fund (UNICEF), European Union, United States Agency for International Development (USAID) & Centers for Disease Control and Prevention (CDC). 2018. *Nepal National Micronutrient Status Survey, 2016.* Kathmandu, Nepal. (available at https://www.unicef.org/nepal/media/1206/file/Nepal%20National%20Micronutrient%20Status%20Survey%20Report%202016.pdf); Ministry of Health and Family Welfare (MoHFW), Government of India, UNICEF & Population Council. 2019. *Comprehensive National Nutrition Survey (CNNS) National Report.* New Delhi, India. (available at https://www.popcouncil.org/uploads/pdfs/2019RH_CNNSreport.pdf)

As the data in Figure 30 show, reductions in anaemia prevalence in children under five years of age have occurred over time, and fewer countries have an anaemia burden that is a major public health problem (>40 percent prevalence). Furthermore, the burden of severe anaemia is lower, with most children having mild or moderate anaemia.[57] Improved socio-economic conditions, improved maternal nutrition before and during pregnancy, reduction in low birth weight and control of parasites are likely to have contributed to these improvements. Anaemia in children under five years of age continues to remain a public health challenge in many countries across Asia and the Pacific, despite significant improvements in anaemia status (more than 10 percentage points) in Bhutan, India, Iran, the Maldives, Nepal, the Philippines and Vanuatu (Figure 30).

Iron deficiency is the leading cause of nutritional anaemia, responsible for approximately 40 percent of all anaemia in children.[58] Children are vulnerable to iron-deficiency anaemia because of their increased iron requirements during rapid growth, especially in the first five years of life. In a full-term infant, total haemoglobin mass must almost double during the first year of life alone. For low birth weight babies, the demand is greater.[59] Children under two years of age have a very high rate of growth, and between ages 6–23 months, iron requirements per kilogram of body weight are high.[60] After two years of age, the rate of growth slows, and the prevalence of anaemia decreases (Figure 31).

FIGURE 32
LEVELS OF MALNUTRITION IN ASIA AND THE PACIFIC, LATEST AVAILABLE DATA (PERCENT)



SOURCES: United Nations Children's Fund (UNICEF), World Health Organization (WHO) and World Bank Group. 2020. *Joint Child Malnutrition Estimates Expanded Database: Stunting, Wasting, Overweight.* New York; World Health Organization (WHO). 2020. Global Health Observatory data repository [online]. Geneva. [Cited 10 November 2020]. https://apps.who.int/gho/data/node.main.NCDMBMIOVERWEIGHTA?lang=en

Accurate characterization of anaemia is critical to understand the burden and to plan public health interventions. For children, variations in Hb needs during the early years may necessitate varying haemoglobin thresholds for determining anaemia. The WHO is exploring this issue. Further investigation of the functional effects of anaemia and iron deficiency in young children, and the relative contribution of other factors such as deficiencies of other micronutrients (particularly folate and vitamins B12 and A), malaria, and genetic disorders of Hb in contributing to anaemia in children is urgently needed.

1.14 CONCLUSIONS

Tracking the progress of achieving the SDG and WHA targets through regular monitoring of critical nutrition and health indicators is important for governments and communities to be able to understand if applied policies and intervention strategies are effective and support improvements. Looking at the various indicators presented in Part 1, it is a mixed outlook in terms of progress.

Overall, the Asia and Pacific region is not on track to achieving the set targets. Undernourishment has been stagnating since 2015 in the Asia and Pacific region, and food insecurity is rising in Southern Asia again since 2017, with the rest of the region remaining stable.

The prevalence of stunting has gradually declined, but the rate of reduction is not fast enough to meet the 2025 and 2030 targets. Wasting remains a big challenge, especially in Southern Asia, and many countries are off track to achieving both the SDG and WHA targets on wasting. The prevalence of overweight in children under five years of age is less than 10 percent in most countries, but the prevalence in South-Eastern Asia and Oceania has been steadily increasing since 2010.

Less than half of all infants in the region are exclusively breastfed for the first six months after birth, although more than half of all infants breastfeed to some extent at one year of age. Many countries are not making progress at reducing the prevalence of anaemia in children and women of reproductive age, although a number of countries have made good progress, especially in Southern Asia.

Similarly, diets present a story of two tales – there are too many people consuming excessive amounts of highly processed foods that are high in dietary energy but relatively low in nutrients. Many countries continue to have more than 30 percent of young children (6-23 months in age) consume zero fruit and vegetables (on any given day). On the other hand, in most countries of the region, more than 50 percent of young children consumed egg or flesh meat within the past 24 hours.

The full extent of the impacts of COVID-19 is not yet known, as the virus is still widespread around the world. Some scenarios predict a large deterioration of food security and nutritional status, especially for the most vulnerable populations. In order to avoid this outcome, it will be critical to use available data to inform policy and practice, but also to improve the quality of available data. With only ten years left to achieve the 2030 agenda, governments, development partners and communities need to step up their work to eradicate hunger and malnutrition. ■

HEALTHY DIETS
To improve healthy diets for all in a sustainable way, food systems need to be more resilient to climate change through increased product diversification and higher productivity.

INDIA
Maternal and caretaker nutrition education is critical in ensuring safe and healthy diets for children under 5 years of age.

PART 2
A SYSTEMS APPROACH TO MATERNAL AND YOUNG CHILD DIETS IN THE ASIA–PACIFIC REGION

PART 2

A SYSTEMS APPROACH TO MATERNAL AND YOUNG CHILD DIETS IN THE ASIA–PACIFIC

2.1 WHY FOCUS ON MATERNAL AND CHILD DIETS AND WHY USE A SYSTEMS APPROACH? HOW TO IMPROVE DIETS THROUGH MULTIPLE SYSTEMS?

The State of Food Security and Nutrition in the World 2020 (SOFI) report focuses on "transforming food systems for affordable healthy diets." The global report presents data demonstrating that around the world, healthy diets are unaffordable for many households, particularly for the poor and those facing economic challenges. More than 3 billion people across the world cannot afford the cheapest healthy diet, including 1.9 billion people in Asia and the Pacific.[1] Healthy diets are estimated to be up to five times more expensive than diets that only meet dietary energy requirements.[2] The unaffordability of healthy diets is associated with increased food insecurity and multiple forms of malnutrition. It is due in part to the high cost of food relative to people's income, especially for the most vulnerable populations. The COVID-19 pandemic is only exacerbating this problem.

This Asia and the Pacific Regional Overview of Food Security and Nutrition 2020 focuses on maternal and child diets as a critical and complex component of affordable healthy diets for all. Children under five years of age and women undergoing pre-conception, pregnancy, and postpartum periods have increased nutrient requirements and vulnerabilities, and require special attention and focus. As the region is off track with achieving the regional and national SDGs and WHA nutrition targets (see Part 1), efforts to reach these requires focused and coordinated efforts to improve maternal and child nutrition outcomes, and ensure healthy diets are affordable, available and accessible for all critical groups.

This report focuses on the specific elements that drive and determine the diets of women and young children in Asia and the Pacific, understanding that affordability of nutritious foods is a primary driving factor in the access to healthy diets (see Box 10). It reflects on the role and contribution of food, health, WASH, social protection and education systems to achieve healthy diets for all. Additionally, it looks at underlying social and behavioural determinants as a cross cutting element in influencing maternal and child diets. Using this systems approach, the report aims to identify key policies and interventions that governments and communities can promote to improve diets and achieve national and global nutrition targets.

BOX 10
GUIDING PRINCIPLES OF HEALTHY DIETS[3]

Healthy diets:

- Start early in life with early initiation of breastfeeding, exclusive breastfeeding until six months of age, and continued breastfeeding until two years and beyond, combined with appropriate complementary feeding;
- Are based on a great variety of unprocessed or minimally processed foods, balanced across food groups, while restricting highly processed food and drink products;*
- Include wholegrains, legumes, nuts and an abundance and variety of fruits and vegetables;**
- Can include moderate amounts of eggs, dairy, poultry and fish; and small amounts of red meat;
- Include safe and clean drinking water as the fluid of choice;
- Are adequate (i.e. reaching but not exceeding needs) in energy and nutrients for growth and development, and to meet the needs for an active and healthy life across the life cycle;
- Are consistent with WHO guidelines to reduce the risk of diet-related NCDs, and ensure health and well-being for the general population;[4]
- Contain minimal levels, or none if possible, of pathogens, toxins and other agents that can cause foodborne disease

* Food processing can be beneficial for the promotion of high-quality diets; it can make food more available as well as safer. However, some forms of processing can lead to very high densities of salt, added free sugars and saturated or trans fats and these products, when consumed in high amounts, can undermine diet quality.[5]

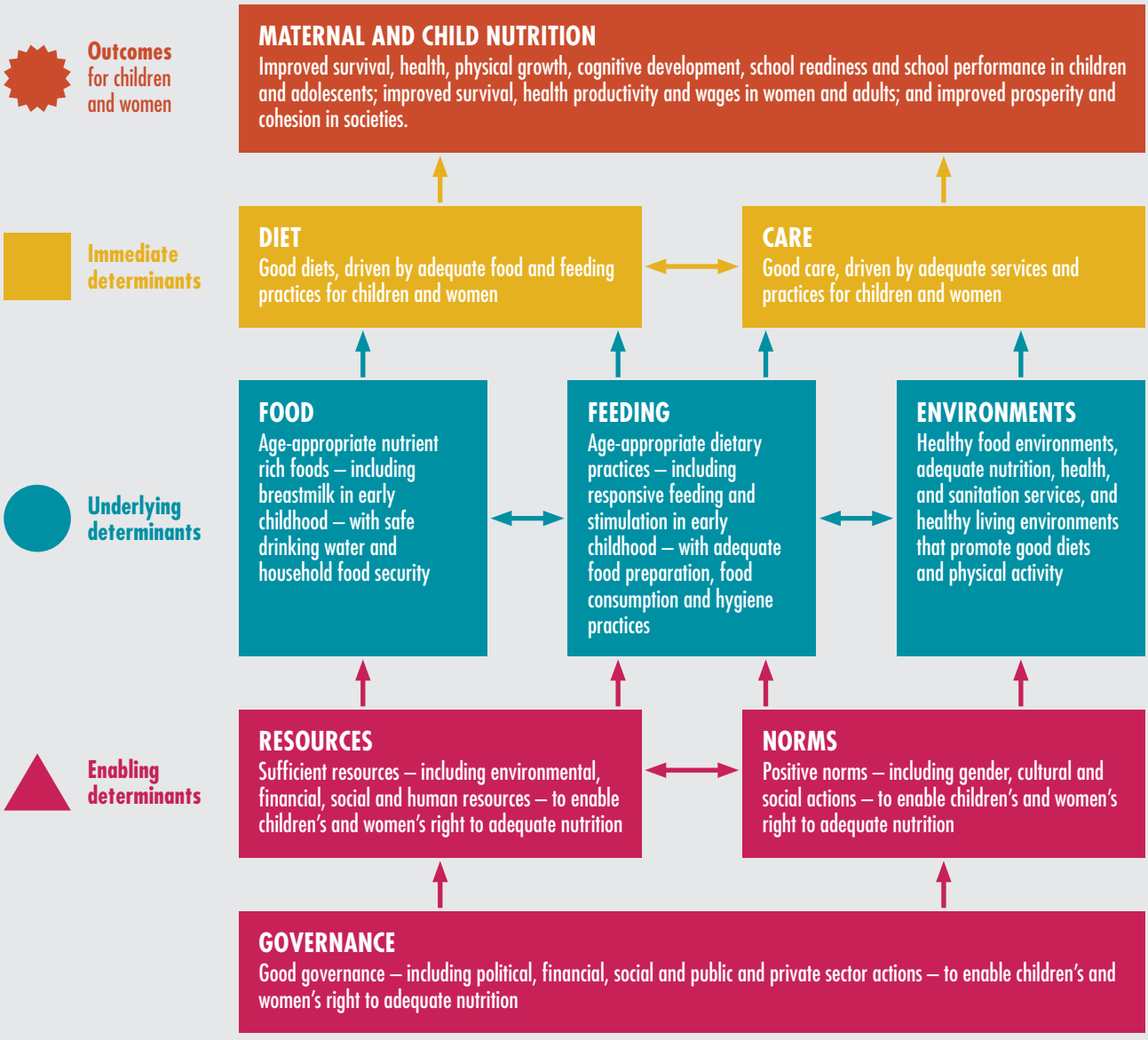
** Potatoes, sweet potatoes, cassava and other starchy roots are not classified as fruits or vegetables.

Among the low- and middle-income countries in Asia and the Pacific, women's and children's nutritional needs are largely unmet. Two out of ten children in Southern Asia and one in three children in South-Eastern Asia aged 6–23 months are not receiving a diverse diet[6] (see Part 1 Section 1.10), and the diets of many women and children contain too much salt, sugar and fat. As shown in Section 1.8 and 1.9, the rate of overweight and obesity is rising rapidly among children and adults in South-Eastern Asia and Oceania. At the same time, stunting and wasting remain persistently high among children under five years of age in all subregions. Poor diets underpin all forms of malnutrition around the world, including for young children and pregnant and lactating women. Malnutrition is also the single largest contributing risk factor to the global burden of disease,[7] and 71 percent of all deaths are associated with non-communicable diseases (NCDs), which are caused by poor diets.[8]

Maternal and child diets are influenced by a range of barriers related to:

- food availability, economic and physical access to food, and food utilization, and availability, quality and use of services – including health, education, social protection and WASH services; and
- social and behavioural determinants of feeding and care practices.

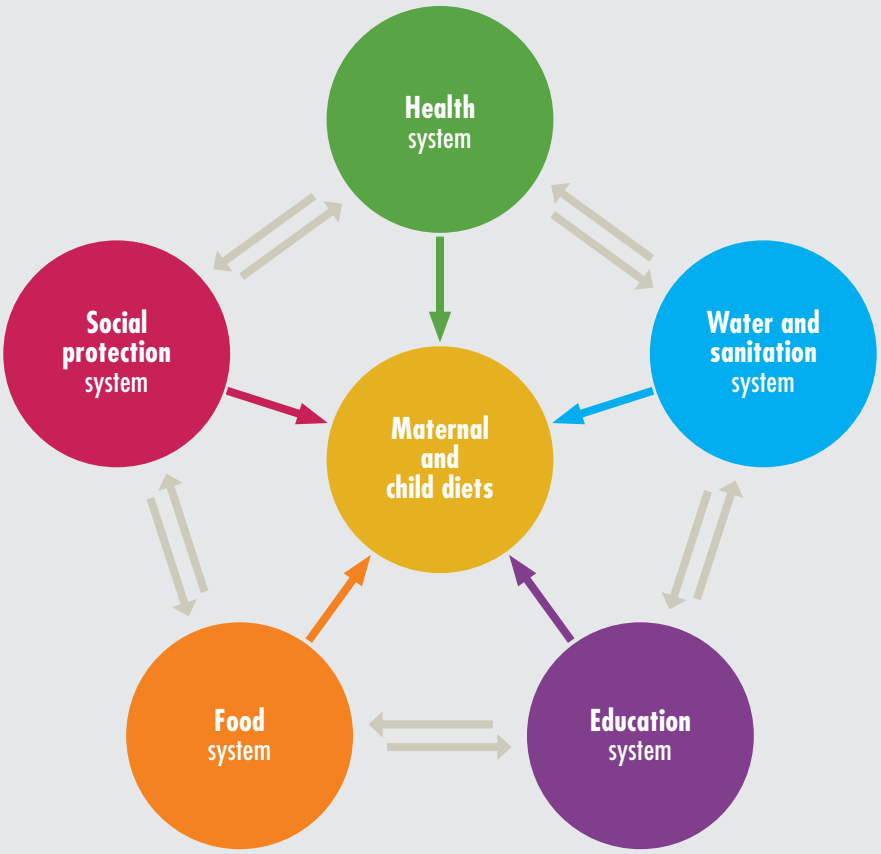
FIGURE 33
CONCEPTUAL FRAMEWORK FOR THE DETERMINANTS OF MATERNAL AND CHILD NUTRITION



SOURCE: United Nations Children's Fund (UNICEF). UNICEF's approach to scaling up nutrition for mothers and their children. Discussion paper. Programme Division. New York. June 2015 [online]. [Cited 25 November 2020]. https://www.unicef.org/nutrition/files/Unicef_Nutrition_Strategy.pdf.

In turn, these determinants are influenced by broader social, cultural, political and economic factors as laid out in the conceptual framework of malnutrition (Figure 33).

FIGURE 34
A SYSTEMS APPROACH TO MATERNAL AND CHILD DIETS



SOURCE: United Nations Children's Fund (UNICEF). 2019. *Maternal and Child Nutrition UNICEF Strategy 2020-2030.* New York.

Evidence presented in Part 2.3.4 and in SOFI 2020 shows that healthy diets are unaffordable for 1.9 billion people in this region. While the cost of individual foods does not change depending on whom the food is for, pregnant and lactating women, adolescent girls and children under five years of age have higher energy and micronutrient requirements (per kg of body weight) than other family members. Hence nutrient adequate diets to meet those specific needs are more expensive and thus often unaffordable for many households. Additional factors that affect the availability, and economic and physical access to diets include seasonality, distance to markets, household decision-making and preferences, among others.

The COVID-19 pandemic is likely to make it even more difficult to consume healthy diets. The job losses and declines in household incomes caused by the economic contraction have made food, especially nutritious food, less affordable for many people. School closures may lead to missed meals and nutrition education normally provided through school programmes, and lockdowns may lead to cancellation of vitamin A distribution. There may be a deterioration of childcare practices, and shifts in food purchasing patterns in favor of products with longer shelf life that often have poorer nutrition profiles. Disruptions in health care services and deterioration of

BOX 11
A SYSTEMS APPROACH TO ACHIEVING HEALTHY DIETS FOR MOTHERS AND CHILDREN

There are five key systems that contribute to achieving healthy maternal and child diets. Each system has a contribution to make:

- The Food System – can contribute to healthier diets and improved dietary diversity by supplying a wide variety of safe and nutritious foods, and improving availability, access and consumption of diverse, healthy, safe, affordable diets all year round. It can achieve this by minimizing food losses and waste during production and post-harvest stages, as well as avoiding the production of highly processed foods that are high in sugar, fat, and salt.
- The Health System – improves access to and use of health and nutrition services addressing gaps in dietary quality, knowledge and practices in maternal and young child diets and feeding practices. It does this through promoting healthy eating habits including restricting consumption of foods high in sugar, fats and salt. It provides supplementation of key nutrients not adequately supplied by local diets, promotes optimal infant and young child feeding (IYCF) practices and maternal nutrition during pregnancy and lactation through quality counselling services, and provides treatment for occurring malnutrition where the nutritional needs of children and women were not met. The health system also provides immunization for disease prevention and treatment for malnutrition.
- The Social Protection System – can improve access to and use of social protection services, increasing the ability of households to afford and access healthy diets, health and nutrition services. It contributes to improved consumption of and access to healthy and affordable diets, especially for vulnerable and poor households.
- The Water, Sanitation and Hygiene (WASH) System – improves access to and use of safe food and water and clean household and community environments to enable hygienic practices and safe food preparation and storage.
- The Education System – offers a platform to reach children and adolescents with education on good nutrition practices, and delivers a variety of supplements, e.g. iron. The education system also provides nutritious meals and nutrition education to school-age children. Pre-schools offer a platform for delivering nutritious foods and support to caregivers alongside early childhood education for pre-school-age children.

childcare practices will also exacerbate the negative impacts on nutrition.[9]

Children under two years of age have specific dietary needs. In the first two years of a child's life, optimal nutrition fosters healthy growth and improves cognitive development. Evidence has shown that better nutrition in early childhood may also reduce the risk of becoming overweight or obese and developing NCDs later in life. Young children 6–23 months of age should be fed nutritionally adequate and safe solid, semi-solid or soft complementary foods. Breastfeeding should continue for up to two years of age or beyond. An adequate diet during the complementary feeding period should be diverse, nutrient-rich, without excess energy, saturated and trans fats, free sugars or salt.[10]

Pregnant and breastfeeding women also have specific dietary and nutritional needs. The WHO guidance for a healthy pregnancy says that a healthy diet during pregnancy should contain adequate intake of energy, protein, vitamins and minerals, obtained through the consumption of a variety of foods, including green and orange vegetables, meat, fish, beans, nuts, pasteurized dairy products and fruits.[11] There are also specific recommendations on how many additional calories pregnant women should consume by trimester. Women are advised to take micronutrient supplements (iron folic acid or multiple micronutrients supplements) during pregnancy to prevent micronutrient deficiencies. Iron folic acid (IFA) and multiple micronutrients (MMs) can reduce birth defects, low birth weight and improve child health and nutritional status.[12]

BOX 12
COVID-19 IMPACT ON CHILD AND MATERNAL NUTRITION IN MYANMAR THROUGH A SYSTEMS LENS

The International Food Policy Research Institute (IFPRI)[13] estimates an increased number of children and mothers at risk of malnutrition due to COVID-19 in Myanmar. The study forecasts three pathways of underlying causes affecting the nutrition and health status of children and mothers resulting from the crisis. The first impact stems from the loss of incomes from the reduction of the country's overall economy. Reduced incomes are associated with a decrease in dietary quality and intake, with families opting for cheaper and lower-quality foods, potentially dropping fruits, vegetables and animal-source foods. The second impact comes from the disruption of and access to essential health care and nutrition services by an overwhelmed health system and fear of disease transmission at health clinics. This may affect the prevention and treatment of malnutrition in children under five years of age and pregnant and lactating women. The third impact derives from changes to breastfeeding practices in fear of transmission of COVID-19 between mother and child, causing additional risk to malnutrition in children under five years of age.

With these pathways in mind, the study predicts significant changes to child and maternal nutrition status in Myanmar. An 8.6 percentage point reduction in the economic growth rate (from 6.4 percent to -2.2 percent) could potentially increase the prevalence of wasting by 1.93 percent. A 10 percent reduction in essential health services would add 0.55 percentage points. This would lead to a 2.5 percent increase in all forms of wasting. This is equivalent to more than an additional 111 000 wasted children under five years of age, with over 65 000 more children in need of treatment for severe acute malnutrition. Most of them are in the already crisis-hit Rakhine, Chin and Shan States.

The study estimates an increased risk of low BMI for women of child-bearing age. With the same 8.6 percentage point drop in the national economic growth rate, the prevalence of low BMI would increase by 0.9 percent, equal to an additional 112 000 women aged 15 to 49 years.

Lastly, looking at the impact on child diets using minimum dietary diversity (MDD), the study found that a 10 percent decline in national income could result in a 20 percent fall in the prevalence of adequate MDD in children, dropping from an already low 23 percent before COVID-19 to 18.5 percent.

This scenario clearly calls for the protection of the nutritionally most vulnerable, through stabilization of incomes (social protection), assurance of health and nutrition services (health system), reinforced homestead food production (food system), as well as improved data management and surveillance.

WHY USE A SYSTEMS APPROACH?

To improve diets and overall nutrition status for all population groups, a multi-system approach that targets all the drivers and determinants of malnutrition and diets is needed. Single sector approaches are unable to effectively address the complex challenges of maternal and child diets as no individual sector can cover the broad range of drivers and determinants of diets. The food system has a central role in the availability, economic and physical access, and utilization of nutritious foods, but alone is not able to ensure improved growth and nutrition for women and young children. Maternal and child nutrition is influenced by a wide range of interconnected determinants that cross the food, health, social protection, WASH and education systems. Maternal and child diets are also influenced by the specific economic, political, socio-cultural and household dynamics that affect household and individual preferences, food availability and service delivery.

These systems can act collectively to provide the enabling conditions for affordable and healthy diets, shaping the food environment, while ensuring adequate nutrition services and positive nutrition practices related to maternal and young child feeding (see Figure 34). A systems approach deepens the understanding of the interactions and links between food, health, WASH, social protection and education systems and their influences on maternal and young child diets,

nutrition and health. It crystallizes a common purpose and objective: healthier diets and better nutrition for children, adolescents and women.

A systems approach requires a shared vision across these systems that traverse policy domains and organizational boundaries. The systems approach necessitates coherence in policies and programme interventions, and strategic engagement of institutions and actors to positively impact women's and young children's access to and consumption of nutritious, affordable and sustainable diets. Additionally, to achieve positive overall nutrition outcomes and improvements in maternal and child diets, coordinated action and coherent and supportive policies are required across these multiple sectors and systems, e.g. food, health, social protection, WASH and education. This integrated approach will support sustainable improvements for healthy diets and achievement of the SDG and WHA nutrition targets.

2.2 OVERARCHING BEHAVIOURS, PRACTICES AND CULTURAL DRIVERS

In addition to the complementary systems needed to achieve healthy diets for mothers and young children, cross cutting behaviours, practices and cultural drivers need to be addressed to achieve sustainable maternal and child diets. Of particular importance are the social and cultural drivers, behaviours and norms that influence maternal and child diets. Intra-household dynamics, including women's status within the household and their ability to make decisions, time and workload, preferences and food taboos, as well as household wealth all have significant and direct influence over the foods that children and mothers consume daily.

Global and regional evidence demonstrates that intra-household dynamics, and women's decision-making and autonomy to make food purchases influence feeding practices and diets.[14] Factors known to determine intra-household food allocation in Asia and the Pacific include – decision making, control and social mobility, religious and cultural beliefs about food properties, bargaining power, economic contributions and status within the household.[15] Rising labour mobility means that in some countries, women have increasing responsibility for household food purchases, which can have a positive effect. However, in communities where mothers are not free to travel to markets, they rely on their husbands and mothers-in-law to purchase food for the family and are not always able to control the food purchases for their young children. When women are responsible for shopping, they may still need approval for certain purchases.

Taboos, myths and norms around food are highly localized and vary at sub-regional levels.[16] Women, particularly adolescent girls, often eat last and are the first to reduce their food intake in times of food scarcity.[17] For young children, what they eat is dictated by their caretakers and what the family can afford and believes is appropriate for their consumption as well as by what is available. In many cases, primary caregivers and family members withhold nutrient-dense foods from young children and pregnant and lactating women.[18] In many countries, caregivers feel that young children cannot eat or digest animal-source foods, or that certain foods harm the child (e.g. eating eggs makes the child deaf). For pregnant and lactating women, particularly adolescent mothers with limited autonomy, the influence of family members and the community over the food they consume can be particularly harmful. In many parts of Asia and the Pacific, beliefs about foods during pregnancy and postpartum persist, and restrict consumption of eggs, types of meats and fish during pregnancy.[19]

Inadequate knowledge on the importance of a healthy diets during pregnancy and optimal feeding practices for young children is a significant barrier to improving diets and overall nutrition status. Across Southern and South-Eastern Asia, caregiver and family knowledge on feeding frequency, consistency, quantity and quality is limited. Even where caregivers report knowing the infant feeding

behaviours, the data reveal that this does not translate into improved practices as dietary diversity, feeding frequency (see Part 1.9) and feeding during illness are low across the region.

Maternal and family-member knowledge on healthy diets is one barrier for young children, but women's workload and time is another significant limiting factor to healthy diets. Studies of women in urban and rural areas in Bangladesh, Pakistan, Myanmar, Cambodia and Lao PDR reported limited time as a major barrier to feeding children healthy diets.[20] Work and household duties also limit the time women have available to prepare nutritious foods for themselves during the critical 1000-day period, from the time of conception until a child reaches two years of age. High participation in formal and informal labour across Asia and the Pacific means that mothers have less time available to breastfeed, rest, eat and prepare meals. Studies of women who work in garment factories in Southern and South-Eastern Asia revealed that many working women have insufficient time and money (due to sending money home) for healthy diets, and are often underweight and affected by micronutrient deficiencies.[21] This decline in women's available time is coinciding with increasing consumption of processed foods and beverages that are high in energy, refined sugar, fats and salts by children, mothers[22] and households.

Innovative and integrated interventions and social and behaviour change communication (SBCC) strategies, can be used across all systems to shift the norms, behaviours and practices that influence maternal and child diets in food secure communities.[23] Furthermore, investments in other systems that improve access to nutritious foods and health services, caregiver, family and community knowledge and income, amplify the impacts of social and behaviour change interventions.[24]

Effective social and behaviour change strategies involve strategic use of data and formative research to: identify the social and behavioural determinants of and barriers to specific behaviours; identify who influences mothers; prioritize behaviours into "small do-able actions"; tailor interventions and communication to reach different audiences; reach caregivers more than one time, and use multiple communication channels and platforms.[25]

Health systems commonly use SBCC strategies and stronger emphasis on SBCC across other systems will contribute to a multi-system effort to improve maternal and child diets. Examples of SBCC approaches across the systems include:

- **Food System** – Farmer Field Schools/Farmer Nutrition Schools[26] can address caregiver knowledge on the importance of diverse diets, gender norms and increase household access to nutrient-dense foods through improved farming skills and resource transfers. Farmer nutrition schools implemented in Bangladesh with female farmers reported increases in consumption of animal-source food among women, and higher productivity in household poultry raising and aquaculture.[27]
- **Social Protection System** – messaging and soft conditionalities can be used in conjunction with social protection programmes and receiving cash and/or food transfers to improve caregiver knowledge, increase expenditure on food for maternal and child diets, and link participants with health and nutrition services through effective SBCC.
- **Health System** – Individual and group counselling and community mobilization activities are commonly used by the health system to address social norms and household practices relating to diets and intrahousehold food distribution. Experience in Bangladesh proved that at-scale delivery of a comprehensive SBCC strategy that included counselling, mass media and community mobilization could improve complementary feeding practices.[28]
- **WASH System** – Integrated Nutrition and WASH SBCC can improve household and community hygiene practices that will benefit diets and health. Improving environmental hygiene through SBCC and specific interventions will also have an indirect impact on diets by reducing children's exposure to pathogens. Small-scale irrigation programmes can similarly contribute to improved diets through increased household food-production

capacity. In Cambodia, WASH SBCC activities were integrated and delivered alongside nutrition activities through community mobilization and mass media, along with resource inputs for WASH products. The programme led to reduced open defecation, improved handwashing practices and treatment of drinking water, which has a knock-on effect on child nutrition status, diets and overall health.[29]

- Education System – Schools offer an excellent platform to educate adolescent girls and boys about the importance of good nutrition and healthy diets.[30] Maternal education is strongly associated with improved IYCF practices and maternal dietary diversity.[31]

2.3 FOOD SYSTEM

A food system encompasses the entire range of activities and actors involved in producing, processing, handling, marketing, trading and regulating food and produce, from agricultural production through to consumption and food disposal. Hence, a food system is not just about food supply chains; it also comprises the food environment, consumer behaviour on food demand, selection and preparation. Additionally, the socio-political, economic and technological environments in which these activities take place influence the overall food system.[32]

The food systems in the Asia and the Pacific region are facing considerable challenges. These challenges are mainly related to economic growth, urbanization and globalization, changing dietary patterns and choices, climate change, sustainability, persistent conflicts and crises and growing inequity. All of these challenges have substantial impacts on food systems at the local, national and regional level.[33]

Countries require a suite of coordinated and coherent actions to transform food systems to make nutritious foods for healthy diets more easily accessible, affordable and available to all communities all year round, in particular the most vulnerable population groups, including pregnant and lactating women and children.[34] Countries should invest in and promote sustainable agriculture and food systems to strengthen food production Simultaneously, governments should regulate the consumption of foods high in fats, salt and sugars (HFSS), and low in micronutrients and dietary fibres. Measures could include sugar taxes, restrictions on marketing HFSS foods and beverages to children, front-of-pack labelling schemes to signpost unhealthy nutrient content, product reformulation such as elimination of trans fats as a food ingredient, and reduction in fats, salts and sugars contents, etc. To be more effective in changing consumer eating behaviours, consumer empowerment to understand the importance of healthy eating habits must go hand-in-hand with these policies and legislations. For example, the development of national food-based dietary guidelines (FBDGs) to inform agricultural, food and nutrition policies should complement the promotion of healthy eating and complementary feeding for mothers and children, and nutrition education. Establishing a healthy food environment is critical, including the promotion of healthy eating in communities, hospitals, workplaces and other public and private institutions. These efforts should involve formal and informal food vendors, restaurants and food courts, child-care facilities, school meal programmes and school food environments.[35]

Food production for healthy diets

Access to affordable healthy diets for all depends upon many factors, including adequate production of nutritious foods that can benefit farmers through own-consumption and income generation, enabling farmers to purchase additional diverse foods in markets. Adequate and diverse production also benefits consumers by making nutritious foods more affordable in markets.

Globally, only upper-middle-income countries and Asia have sufficient fruits and vegetables available to meet the FAO/WHO recommendation of consuming a minimum of 400 g per day. However, in many countries in Asia, the population relies heavily on carbohydrates (e.g. in local staples like rice) without sufficient nutrient-rich food. More than 46 percent and 57 percent of the people in South-eastern Asia and Southern Asia cannot

BOX 13
PROMOTION OF HEALTHY DIETS THROUGH STREET FOODS IN ASIA AND THE PACIFIC

Informal sector foods within the urban food systems play a critical role in feeding people in urbanized Asia and the Pacific. Operators include street food vendors with fixed kiosks or mobile stands, market vendors, small restaurants and roadside cafes, etc. Urban dwellers, especially the poor and the under-privileged, increasingly depend on street foods for their daily meals, which provide affordable foods at convenient locations. The informal food sector creates employment and income for the lower socio-economic groups, including women, unemployed, illiterates and migrants. The rising prevalence of all forms of malnutrition and non-communicable diseases (NCDs) in Asia and the Pacific has raised concern on the health and nutritional benefits of street foods. Promoting healthy diets through the informal food sector needs urgent attention, which can be an entry point to transform urban food systems for improved food security and nutrition, and to prevent NCDs in urbanized Asia and the Pacific.[36] The informal food sector also needs support, regulation and improved capacity to provide safe, good quality and nutritious foods to consumers under a safe and hygienic food environment. FAO and WHO in partnership with national governments and other partners are jointly promoting healthy diets through the informal food sector, with forthcoming policy briefs, tool kits and pilot studies, to support countries transform urban food systems for healthy diets.

afford a healthy diet, respectively (see additional analysis on cost of various foods in Figure 35 and Figure 36).[37]

Since so many people in the region are unable to get adequate nutrition through their diets, regional production of nutritious foods such as fish, poultry, fruits and vegetables will almost certainly need to increase to eradicate malnutrition in line with SDG2.[38] However, increasing the production of nutritious foods presents various challenges:[39]

1. Growing new crops and producing new foods requires new knowledge that farmers may not have.
2. Not all land is suitable for producing new foods, e.g. fruits and vegetables – agricultural production choices are heavily conditioned by local climate, water supply, topography and soil, most of which cannot be changed.
3. Many fruits require several years before the tree produces a harvest, and farmers need an alternative source of income during this transition period.
4. Growing fruits and vegetables or engaging in aquaculture or livestock tends to be riskier than rice, with greater fluctuations in both production and prices.
5. Fruit and vegetable production is more labour-intensive than rice.[40] This means growing production costs in countries where wages are rising, although higher output prices should compensate for this.[41] The increased labour intensity also means potentially more employment for the rural poor.[42]
6. Rice import restrictions in some countries raise domestic rice prices substantially, thus discouraging farmers from diversifying into other crops.

Overcoming these barriers to the production of more nutritious foods will require innovations in institutions and policies: improved extension systems (including through greater use of digital technologies); research on the suitability of different crops in different agro-ecological zones; improved adaptation to climate change; policies to provide farmers with flexible lines of credit and investment; and policies to support farmers who would like to grow more nutritious crops, e.g. stronger promotion of nutritious indigenous crops.[43]

CASE STUDY 1

MALNUTRITION, DIETARY PATTERNS AND SUSTAINABLE DIETS TO REDUCE GREEN HOUSE GAS (GHG) EMISSIONS IN INDONESIA (for more details see global SOFI 2020 report)[44]

Indonesia is an emerging lower-middle-income country that has made significant progress in poverty reduction. Its prevalence of undernourishment (PoU), currently at around 8 percent, is on the same level as the overall Asia and Pacific region (8.2 percent), and below the average of the South Eastern sub-region (9.8 percent). However, the country still faces a triple burden of malnutrition: more than one-third of all children under five years of age are stunted, a quarter of all adults are overweight or obese; and micronutrient deficiencies are widespread.

Current diets are dominated by cereals and starchy roots (of which rice is the most important), which collectively provide 70 percent of dietary energy needs. Energy intake is higher while protein intake is lower than recommended by the Indonesian FBDGs. Low dietary diversity in the country leads to an inadequate intake of essential micronutrients, which affects people's short- and long-term health and development outcomes. Furthermore, the disproportionately high level of energy intake from rice and foods high in fat and sugar increases the prevalence of overweight and obesity.

Indonesians need to consume more diversified diets in order to meet nutrient needs, prevent undernutrition and its consequences for human capital development, and prevent NCDs. The challenge is that a more diversified diet with less rice costs more and has higher GHG emissions than diets consumed today, even when limiting the increase of animal source foods consumption and focusing on non-ruminants and seafood as animal sources of proteins and micronutrients.

The recommended reduction in rice consumption is substantial and would require major changes in dietary practices and food production patterns. The "no red meat", "pescatarian", "low food chain" and "vegan" diets all have lower GHG emissions than current food consumption patterns. However, only the latter two have GHG emissions below the target for sustainable food systems. In terms of nutrient-adequacy, the "optimized diet" has the highest GHG emissions.

Policies to improve access to and affordability of more diversified, healthy diets that meet nutrient needs while possibly contributing to reductions of GHG emissions, would need to focus on reducing the cost of nutritious foods, adding nutritional value and promoting the use of sustainable agricultural practices. Key entry points to this policy change could be through food production, food value chain optimization, food fortification and creation of healthy food environments. This would need to be complementary to policies providing better access to nutritious foods to the most vulnerable and poor consumers through social protection systems, including school feeding programmes and healthy public procurement policies.

Food supply chains, markets and food environments

Consumer access to nutritious foods depends on the overarching type of food supply chains and their functionality from a nutrition perspective.[45] Food supply chains can be categorized into traditional, transitional and modern systems:

- **Traditional supply chains** are short and local, dominated by a myriad of labour-intensive home micro-enterprises, and represent roughly 10 percent of food systems in Southern Asia, and only 5 percent in South-Eastern Asia.
- **Transitional supply chains** account for 70 and 50 percent of the food economies of Southern and South-Eastern Asia, respectively. They are likely to be even more prevalent in the Pacific, albeit there are scant data in this regard. Stretching from rural to urban areas, these chains evolve around public wholesale and wet markets, and thousands of labour-intensive small- and medium-enterprises.
- **Modern supply chains** are capital-intensive and tend to be dominated by large processing firms and supermarkets. They constitute roughly 20 percent of the food systems in Southern Asia, and 45 percent in South-Eastern Asia.[46]

BOX 14
MARKETING OF BREASTMILK SUBSTITUTES (BMS) AND COMPLEMENTARY FOODS – A STATUS UPDATE IN THE ASIA–PACIFIC

The World Health Assembly adopted the International Code of Marketing of Breastmilk Substitutes (hereafter referred to as "the Code") in 1981 to protect, promote and support breastfeeding. Enactment and enforcement of robust national legal measures are essential to ensuring that parents and other caregivers are protected from inappropriate and misleading information. Implementation of the Code also ensures that health workers, their professional associations, and health facilities do not promote breastmilk substitutes, or accept support from breastmilk-substitute manufacturers or distributors.[47]

The available evidence clearly shows that continued and aggressive marketing of breastmilk substitutes is a major factor undermining efforts to sustain and improve breastfeeding rates.[48] Countries need to enact, enforce and strengthen legislation to stop the inappropriate marketing of food products that compete with breastfeeding and can negatively affect infant feeding practices.

According to the WHO/UNICEF/IBFAN 2020 Status Report on National Implementation of the International Code, the Asia–Pacific region still faces significant challenges in terms of enactment of legal measures with provisions to implement the Code. Of the 37 countries in the Asia–Pacific region that the report evaluated, only five had legal measures that substantially aligned with the Code,[49] and another ten had measures moderately aligned with the Code.[50] Four countries had only included some of the provisions of the Code,[51] while 18 countries had no legal measures at all.[52]

Even when legislation is in place, illegal and aggressive advertising tactics to promote breastmilk substitutes are common, and manufacturers spend vast amounts of resources on BMS marketing. The robust and growing market for breastmilk substitutes, mostly for "growing-up-milks" and "follow-on" formula marketed to children older than six months, has not only negatively impacted exclusive breastfeeding and continued breastfeeding rates in the region, but also negatively affects the quality of child diets with caregivers replacing nutritious complementary foods with growing-up-milks after six months of age. Growing-up-milks and follow-on formula are unnecessary, and although heavily marketed to parents for their essential vitamins and mineral content, are not formulated to replace nutritious complementary foods.

Unlike BMS for older infants and young children, well-fortified commercial complementary foods such as infant cereals can be an important source of essential nutrients for young children. Although the market in Asia and the Pacific is small, guidance on what constitutes a well-formulated fortified complementary food and minimum standards for commercial complementary foods are not well established in the region. Adoption of nutrient profile models based on CODEX guidance for the formulation of complementary foods, aligned with additional legislation and policy measures to restrict marketing of certain foods to children, is essential for an improved food environment for young children and their caregivers.

The places and ways in which food is sold to and accessed by consumers depend on the prevailing value-chain typology, thus, influencing nutritional and dietary outcomes. In traditional food chains, fresh or minimally processed foods are available, but strong seasonal patterns might reduce the local availability or accessibility of important and nutritious foods at certain times of year. In contrast, modern food chains offer consumers a large variety of processed packaged foods, often cheap and convenient but not necessarily nutritious.[53] Additionally, in modern food chains, foods are often available all year round. The characteristics of the food chains will inevitably have an impact on maternal and child diets. This is especially the case in urban areas, where home production is limited.

The region's food landscape is rapidly changing, particularly in urbanised Asia due to the emergence of online grocery shopping and meal delivery services.[54] Online shopping is the fastest-growing channel in Asia's grocery markets,[55] sustained by the surge of urban

CASE STUDY 2
REGULATING FOOD MARKETING FOR CHILDHOOD OBESITY PREVENTION IN FIJI AND THE PHILIPPINES

Food marketing to children and adolescents in Fiji

Approximately 37 percent of children in Fiji aged 5–9 years and 33 percent of adolescents aged 10–19 years are overweight. High consumption of sugar-sweetened beverages and high-fat and salty snacks is common among children and adolescents and is associated with higher body weight.[56]

While many factors contribute to the dietary patterns of children, the marketing and promotion of foods and beverages high in fat, sugar and salt pervade children's lives with increasing intensity and frequency, influencing their food preferences, purchasing and consumption. In Fiji, it reaches children mostly through television, radio, street advertising (signage), and sponsorship of school sports events.[57] About 77 percent of children in primary schools and 59 percent in secondary schools said they "watched and listened" to advertisements. Over 90 percent consumed the advertised foods, which are mostly unhealthy.[58] The changing food environment has had a negative impact on the dietary patterns of children. Processed foods high in fat, sugar and salt are readily available and accessible, and now more valued by many than traditional foods.

The Government of Fiji has advanced a number of initiatives and actions to address the marketing of foods to children with the endorsement of the Regional Action Framework on Protecting Children from the Harmful Impact of Food Marketing.[59] Fiji has endorsed the Pacific Ending Childhood Obesity (ECHO) Network that was established by Member States in 2018 and has committed to supporting interventions in three prioritized areas, including restricting the marketing of unhealthy foods and non-alcoholic beverages to children. Challenges remain in addressing the widespread marketing of unhealthy food in Fiji, and there is an urgent need to strengthen national actions.

School food policy and marketing restriction in the Philippines

Food environments surrounding schools in urban areas may undermine efforts for better nutrition within schools. A study on the school-nutrition environment in Manila, the Philippines showed that the majority of advertised food and drinks are high in fat, sugar or salt and the density of food advertising was twice as high in the area closest to schools compared to the area further from schools.[60]

The Department of Education has issued a policy and guidelines on healthy food and beverage choices in school. It represented a relatively strong policy framework for the education sector of the Philippines. However, lack of human and financial resources for implementation, planning and enforcement limited the impact of the policy on the healthiness of school food provision and environment. Food companies used existing relationships with schools to promote their brands and compromise the establishment of a stronger food-policy agenda.[61] The lessons from this experience include the need for more robust implementation planning processes and resources to support the adoption and enforcement of policies to promote healthy dietary practices in the school setting.

Restricting exposure to advertising of food high in saturated fats, trans-fatty acids, free sugars or salt is widely considered to be one of the most cost-effective childhood obesity prevention approaches available. Restricting exposure to marketing may contribute to reducing the inequities faced by low-income children. However, national policies regarding the marketing of food and beverage products to children on television vary and are often not enforced. The result is that children remain exposed to a large amount of marketing of foods and beverages high in fast, sugar and salt.

middle-class consumers. The region has become the global leader in this category, dominated by China, Japan and the Republic of Korea,[62] followed by India, Indonesia and Thailand.[63] E-groceries still hold a relatively small market share in the region, even in China (6.6 percent of the country's total grocery sales).[64] In the Republic of Korea, e-grocery is cutting into traditional channel sales (and is projected to account for 14 percent of the total market share by 2023).[65] Online grocery

BOX 15
IMPROVING MICRONUTRIENT STATUS IN VULNERABLE WOMEN IN BANGLADESH THROUGH RICE FORTIFICATION[66]

Micronutrient deficiencies are one of the biggest public health concerns in Bangladesh. Forty percent of Bangladeshi women of reproductive age suffer from anaemia. Dietary diversity remains low, and rice consumption is as high as 438 grams per person per day, representing 77 percent of daily caloric intake. While there are ongoing efforts to promote a diversified diet, rice continues to remain a foundational component of the local diet due to its affordability and cultural acceptance.

Informed by the limited dietary diversity and rice consumption patterns of local communities, a study by the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) and WFP in 2018 measured the effectiveness of fortified rice in addressing anaemia and zinc deficiency among vulnerable women. The study followed over 800 female Vulnerable Group Development (VGD) programme beneficiaries in five districts with the intervention group receiving 30 kilograms (kg) of fortified rice, while the control group received 30 kg of non-fortified rice every month for 12 months.

The study results demonstrated that the targeted distribution of fortified rice to women of reproductive age significantly reduced anaemia and zinc deficiencies.[67] The prevalence of anaemia was reduced in the fortified rice group by 4.8 percent but increased in the non-fortified rice group by 6.7 percent. The study results showed that food fortification could be an effective solution to increase access to more nutrient-rich foods. Combined with holistic efforts towards making food systems more diverse and sustainable, it can contribute to improved dietary quality. Since the study results were published, the VGD programme now includes the provision of fortified rice.

may not overtake off-line market channels soon. Nonetheless, it is profoundly changing Asian food systems in multiple ways: from reshaping retail formats and revolutionizing food marketing and advertising practices, to transforming logistics, especially last-mile delivery, and possibly speeding up the development of new food products that are more nutritious and healthy as convenience foods.[68]

In recent years, Asian countries have witnessed a significant increase in offerings of minimally processed, nutrient-rich foods with a health claim, such as organic, clean, functional foods[69] and free-from foods, e.g. gluten free, lactose free, soy free foods, etc.[70] Companies have developed these foods in response to changing consumer demands. This concerns also maternal and child diets, specifically since food allergies among children are unfortunately increasing. For example, Asia and the Pacific is the fastest-growing market in the world for organic food,[71] meat-free products and food products with a gut-health claim. Driven by consumers' higher levels of nutrition-awareness, the Asian food industry has been working on various solutions to deliver nutrition through product innovation and reformulation efforts.[72] Food manufacturers in India and Singapore have fortified foods during reformulation. Malaysia and Thailand food firms have introduced a variety of recipe changes to reduce sugar, salt or fat content.[73] In India, the Government has added pulses to the basket of subsidized goods in its Public Distribution System (PDS) to actively promote the consumption of improved protein and fibre through a more affordable food policy (see as well Section 2.6 on Social Protection).[74]

Many governments in the region have launched pro-nutrition regulations and incentives.[75] For example, in 2017, Brunei and Thailand launched a sugar tax that affects certain soft drinks and juices, with the Philippines and Malaysia following suit in 2018 and 2019, respectively.[76] Likewise, in 2019, Singapore decided to ban advertisements for sugary drinks to change the public's perception of sugar. Many Pacific Island

countries have been among the early adopters of sugar taxes, such as Tonga in 2013, Kiribati in 2014 or Fiji in 2016.[77] While the region advances in its regulation of fat, salt and sugar content, regulation of foods with health-benefit claims remains very limited. With the evolving market and product density, this will need to be addressed by governments and their health institutes.

Food Fortification

In Asia and the Pacific, diets deficient in diversity and quality[78] are among the main risk factors for suboptimal maternal and child nutrition. In cases where food systems fail to deliver healthy diets, particularly to the poor,[79] biofortification (breeding crops to increase their nutritional value) or fortification of complementary foods and staples with micronutrients can be a cost-effective option. In many circumstances, they have significant potential to enhance dietary quality and address hidden hunger in the short to medium term, without requiring substantial behaviour changes.[80]

As regards biofortification, a number of varieties have been tested or released in the region, enhanced with iron, zinc or vitamin A. Food fortification is widespread across Asia and the Pacific, including in staple foods and the use of micronutrient powder for home fortification. Fortification of condiments such as salt, and staples such as wheat flour and rice, has been going on for several decades, with over 20 countries in the region reported having mandatory salt-fortification requirements. In Bangladesh, targeted distributions of fortified rice to women of reproductive age through the Vulnerable Group Development (VGD) programme significantly reduced anaemia and zinc deficiencies among the beneficiaries (see Box 15).[81]

Micronutrient powder for fortification at home is also common in the region. According to WHO,[82] 40 percent of the countries in South-East Asia Region (SEAR) and 69 percent of countries in Western Pacific Region (WPR)[83] reported distribution of micronutrient powder to children aged 6–23 months (see Case study 4). This could also contribute to reducing the cost of nutrient adequate diets[84] for young children and women.[85]

In Pakistan, Myanmar and the Philippines, market availability of nutritious products, such as fortified rice and Super Cereal for lactating women, could reduce the cost of a nutrient adequate diet by 20–24 percent. Provision of specialized nutritious food, such as the Pakistan-produced, chickpea-based ready to eat energy and nutrient dense food (Wawa Mum[86]), to children 6–23 months at no cost reduced the cost of a nutrient adequate diet for children by 76 percent. Making the product available in the market could still reduce the cost of a nutrient adequate diet by 24 percent. Provision of multiple micronutrient tablets to PLW could reduce the cost of a nutrition-adequate diet by 40 percent in Sri Lanka and 55 percent in Myanmar.[87]

Access to micronutrient powder, or fortified energy-dense complementary foods, either through social assistance, health systems or markets could provide essential micronutrients for young children and their mothers. Continued advocacy for the provision of fortified foods through social protection and health systems is essential. Furthermore, countries should consider creating an enabling environment that fosters public-private partnerships to promote and make available affordable, high-quality, fortified complementary foods and food supplements in local markets. To ensure food safety in the presence of multiple fortified foods in the markets, countries should consider undertaking regular risk assessments and improve coordination of co-existing food fortification and nutrient supplementation programmes across the health, food and social protection systems.[88]

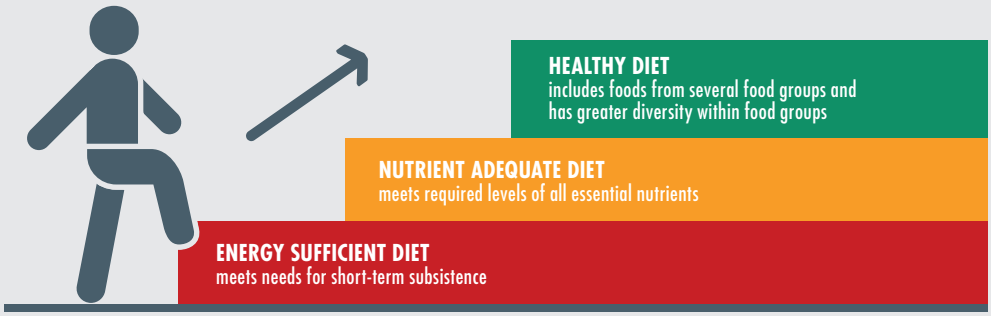
The cost and affordability of diets

Key determinants of maternal and child diets, and diets for all people, are their cost and affordability. To better understand the cost and affordability of diets around the region, this report simulates three diets – an energy sufficient diet that meets basic needs for dietary energy, a nutrient adequate diet that includes adequate dietary energy and a wide range of macro- and micronutrients, and a healthy diet that also includes a more diverse range of foods. Box 16 provides a full description of the three diets.[89]

BOX 16
DESCRIPTION OF THE THREE DIETS USED IN THE COST AND AFFORDABILITY ANALYSIS[90]

This analysis examines the three diets for costs and affordability to simulate incremental levels of diet quality, starting from a basic energy sufficient diet, to a nutrient adequate diet and then a healthy diet.

THREE STEPS TO INCREASING LEVELS OF DIET QUALITY



"Energy sufficient diet"

This diet provides adequate calories for energy balance for work each day. This is achieved using only the basic starchy staple for a given country (e.g. maize, wheat or rice only).

"Nutrient adequate diet"

This diet not only provides adequate calories (per the energy sufficient diet above), but also relevant nutrient intake values of 23 macro- and micronutrients through a balanced mix of carbohydrates, protein, fat, essential vitamins and minerals within the upper and lower bounds needed to prevent defiencies and avoid toxicity. Macronutrient intakes are within the Acceptable Macronutrient Distribution Range (AMDR) set by the Institute of Medicine.[91]

"Healthy diet"

This diet provides adequate calories and nutrients (per the energy sufficient and nutrient adequate diets above), but also includes a more diverse intake of foods from several different food groups. This diet is intended to meet all nutrient intake requirements and to help prevent malnutrition in all its forms, including diet-related non-communicable diseases.

The analysis of the three diets provides details on the cost and affordability of each, as well as the number of people who are unable to afford each type of diet. While global guidelines inform the content of a healthy diet,[92] the details are nationally adapted to a country's cultural context, locally available foods and dietary customs.

The average cost of an energy sufficient diet in 26 countries in Asia and the Pacific is USD 0.93 per person per day, with USD 0.40 in Australia and New Zealand, USD 1.27 in Eastern Asia, USD 0.85 in the Pacific (data are available for Fiji only), USD 0.92 in South-eastern Asia, and USD 0.80 per person per day in Southern Asia.[93] Additionally, a nutrient adequate diet and a healthy diet in Asia and the Pacific costs USD 2.34 and USD 4.15 per person per day, respectively. The cost of an energy sufficient diet, nutrient adequate diet and healthy diet in Asia and the Pacific are higher in relation to the global average of USD 0.79, USD 2.18 and USD 3.75, respectively.

FIGURE 35
COST OF THREE TYPES OF DIETS IN USD PER PERSON PER DAY ACROSS 25 COUNTRIES IN ASIA AND THE PACIFIC, 2017

NOTES: The table shows the USD cost per person per day of the three reference diets (energy sufficient, nutrient adequate and healthy diet) in 2017. The analysis is based on a sample of 170 countries for which retail food price data are available in the year 2017. Prices are obtained from the World Bank's International Comparison Programme (ICP) for internationally standardized items, converted to international dollars using purchasing power parity (PPP). See Box 16 for the definition of the three diets. For the full methodological notes and data sources, see Annex 3 in the global SOFI report 2020.

SOURCE: Herforth, A., Bai, Y., Venkat, A., Mahrt, 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.

In Asia and the Pacific, the cost of a nutrient adequate diet[94] is 1.1 to 6.3 times higher than an energy sufficient diet, while healthy diets[95] cost anywhere from 1.8 to 9.4 times more than an energy sufficient diet (Figure 35).[96]

While an energy sufficient diet is affordable to most people, a healthy diet is estimated to be unaffordable to more than 3 billion people around the world.[97] Almost two-thirds of these (1.894 billion people) live in Asia and the Pacific – 1.3 billion people in Southern Asia, 230 million in Eastern Asia, 325.5 million in South-East Asia and 0.5 million in Oceania (Table 1). In many countries, the poor would have to use most or all of their total income in order to acquire adequate quantities of essential nutrients and a diversity of nutritious food groups; and for a number of countries, even this amount would not be enough. In such situations, affordability imposes an insurmountable obstacle to eating a healthy diet.

One of the key drivers of affordability of a healthy diet is the cost of fruits and vegetables, as well as protein rich foods (plant and animal-sourced foods). These foods contribute substantially more to the cost of a healthy diet than starchy staples and fats (Figure 36). Indeed, dairy, fruits,

TABLE 1

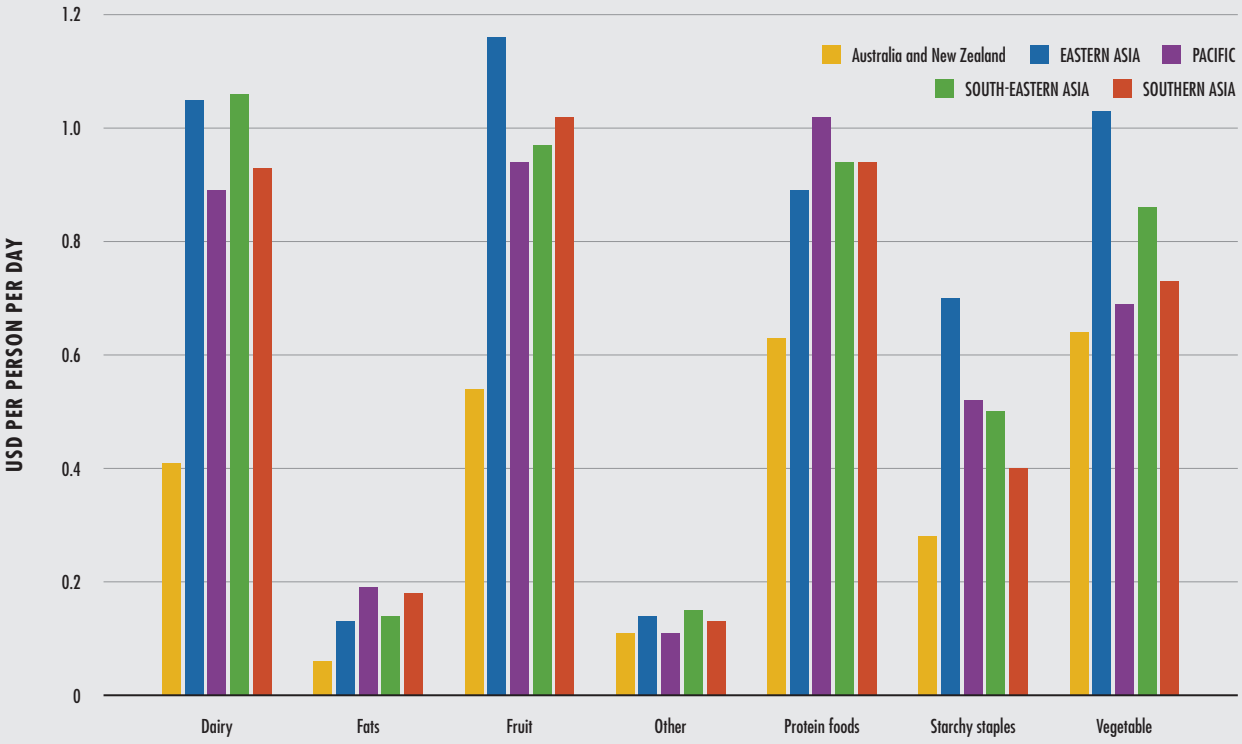
MORE THAN 3 BILLION PEOPLE IN THE WORLD CANNOT AFFORD A HEALTHY DIET, WITH ABOUT 1.9 BILLION OF THOSE CONCENTRATED IN ASIA AND PACIFIC

	Energy sufficient diet		Nutrient adequate diet		Healthy diet	
	%	Number (millions)	%	Number (millions)	%	Number (millions)
Australia	0.2	<0.1	0.5	0.1	0.7	0.2
Bangladesh	0.1	0.2	18.9	30.2	74.6	119.1
Bhutan	0.2	<0.1	12.9	0.1	45.8	0.3
China	<0.1	0.8	0.8	10.9	16.3	225.7
Fiji	<0.1	<0.1	9.6	<0.1	41.3	0.4
India	0.9	12.2	39.1	523.1	77.9	1042.5
Indonesia	1.1	2.9	34.0	90.0	68.8	182.0
Japan	0.9	1.2	1.2	1.5	2.1	2.6
Lao People's Democratic Republic	0.5	<0.1	51.2	3.6	83.3	5.8
Malaysia	<0.1	<0.1	0.1	<0.1	1.0	0.3
Maldives	<0.1	<0.1	1.0	<0.1	6.5	<0.1
Mongolia	<0.1	<0.1	4.2	0.1	42.5	1.3
Myanmar	0.2	<0.1	17.7	9.5	60.9	32.5
Nepal	1.9	0.5	36.1	10.0	76.2	21.0
Pakistan	<0.1	<0.1	10.3	21.3	68.7	142.9
Philippines	2.6	2.7	30.6	32.1	63.0	66.3
Republic of Korea	<0.1	<0.1	1.0	0.5	1.5	0.8
Sri Lanka	<0.1	<0.1	6.8	1.5	53.5	11.5
Thailand	<0.1	<0.1	1.8	1.2	19.5	13.5
Viet Nam	0.6	0.5	9.5	9.0	26.6	25.2
Asia-Pacific	0.5	21.2	14.4	744.8	41.5	1893.9
Eastern Asia	0.3	2.0	1.8	13.0	15.6	230.4
*Pacific (data only available for Fiji)	<0.1	<0.1	9.6	<0.1	41.3	0.4
South-eastern Asia	0.7	6.3	20.7	145.4	46.2	325.5
Southern Asia	0.5	12.9	17.9	586.1	57.6	1337.4
WORLD	**4.6**	**185.5**	**23.3**	**1513.0**	**38.3**	**3021.5**

NOTES: The table presents the percentage (%) and the total number (millions) of people in each country or region who cannot afford the three reference diets (energy sufficient diet, nutrient adequate diet and healthy diet) in the year 2017. This measure of affordability compares the cost of each diet with the average estimated income in a given country, under the assumption that 63 percent of the income available can be credibly reserved for food. A diet is considered unaffordable when its cost exceeds 63 percent of the average income in a given country. See Box 16 for the definition of the three diets. For the full methodological notes and data sources, see Annex 3 in the global SOFI report 2020. *Pacific refers to Oceania minus Australia and New Zealand, which in this case includes data only for Fiji.

SOURCE: Herforth, A., Bai, Y., Venkat, A., Mahrt, 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 36
COST OF A HEALTHY DIET PER PERSON PER DAY, BY FOOD GROUP AND REGION, 2017



SOURCE: FAO.

vegetables and protein-rich foods account for more than 79 percent of the cost of a healthy diet in all countries in the region except Japan (where they account for 72 percent).

With the recent outbreak of COVID-19, food systems and markets face significant uncertainties that may further negatively affect food prices and affordability of healthy diets. Lower production might increase food prices, pushing diets out of affordability for the most vulnerable. Fortunately, food prices on global markets and in the region have been relatively stable so far. Through August/September, the median annualized increase in inflation-adjusted domestic food prices since December 2019 was just 2 percent.[98] Income loss as a result of reduced employment and lower wages is likely to have a more substantial impact on the affordability of healthy diets. Social protection to help those who have been affected is an essential policy response, and indeed governments throughout the region have implemented such policies in the wake of COVID-19.[99] Continuing to monitor changes in market prices, household income, and food expenditure over time will also be important.

Differences in cost and affordability within households and countries

The cost and affordability of a nutrient adequate diet varies across geographical locations, seasons and stages in the lifecycle. They are determined

CASE STUDY 3
CHANGES IN FOOD SECURITY AND INCOME OF FARMING AND HERDING HOUSEHOLDS IN MONGOLIA DUE TO COVID-19

Two key assessments were conducted in April/May 2020 in Mongolia, led by the Government of Mongolia National Statistics Bureau and supported by FAO[100] and WB[101] respectively. The assessments focused on the impact of COVID-19 on rural herders and farming households, with emphasis on food security, livelihoods and socio-economic changes. Results show a strong impact on agriculture households, and in particular herding households. FIES results indicate that many households compromised food quality (72 percent) and are worried about not having enough food (47 percent) or have even reduced their food quantity (34 percent). This is due to a lack of economic access and rising food prices (the CPI for food rose 10 percent from December 2019 to May 2020), rather than due to physical and social access to food. A large percentage of households reported some decrease in consumption of various foods: flour (62 percent of households), vegetable oil (60 percent), onion (59 percent), meat (58 percent), sugar (55 percent), potato (54 percent) and dairy products (44 percent). Overall, 70 percent of households reported their agricultural income has declined compared to the same time last year. Most herding households (62 percent) indicated a decrease of about 45 percent of their income compared to the same time last year. In comparison, only 25 percent of crop farmers reported an income decrease.

More precisely, 58 percent of agriculture households reported that they were unable to sell their farm products during the previous month due to disruptions in logistics and supply chain. While livestock prices increased (6-12 percent since January 2020), prices of livestock products, especially cashmere, have declined significantly due to demand contractions and trade disruption. In 2018 (previous round of survey), nearly 90 percent of herding households engaged in cashmere production and made about 71 percent of their animal-based income from cashmere. With demand for cashmere falling, the affected households are at a high risk of falling back into poverty. Additionally, some herders plan to stay longer at their spring camp sites or move to entirely new locations for better pastures, which may pose a risk for overgrazing and new social conflicts, respectively.

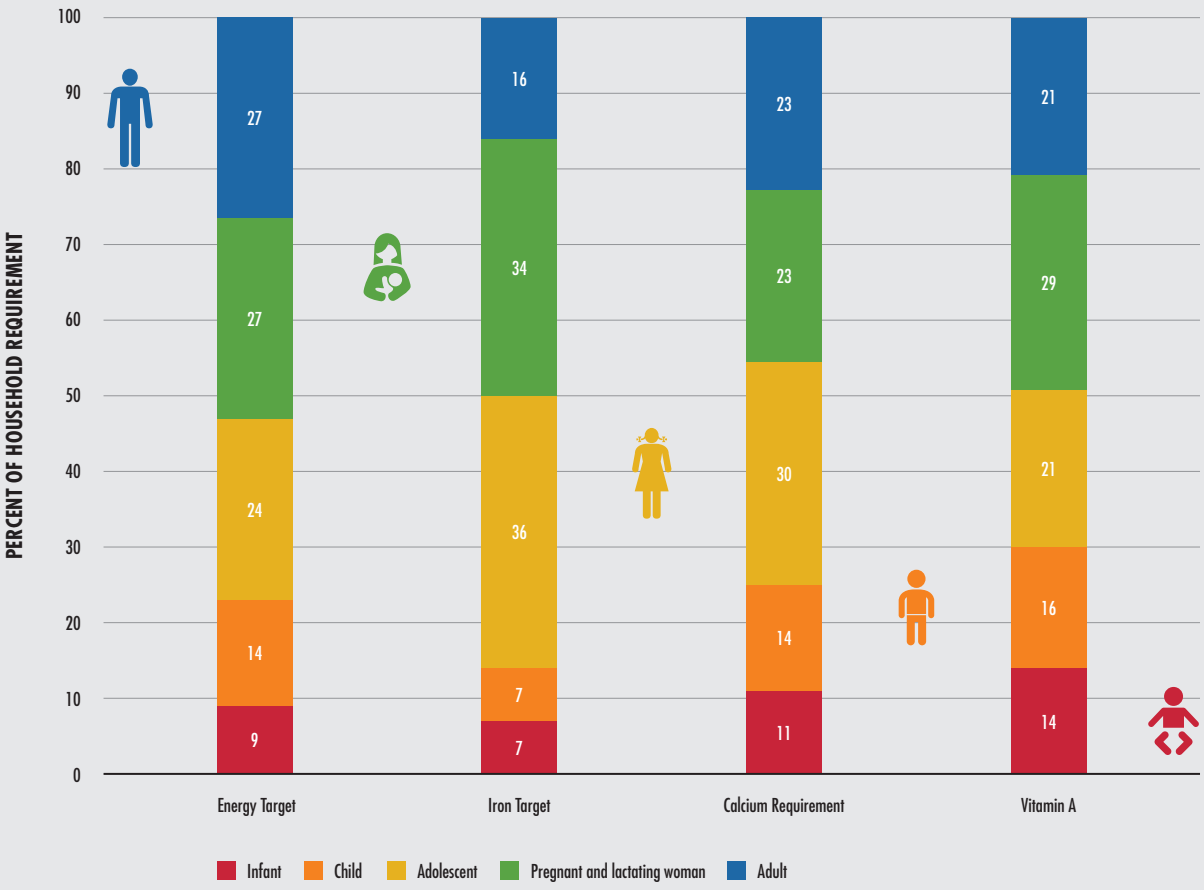
While the Government of Mongolia is already expanding its social protection measures in response to COVID-19 (see Case study 5) particularly addressing food security and consumption aspects, additional measures might be necessary to avoid knock-on effects on rural livelihoods and herder's resilience to shocks. Mongolia is just one example where previous progress in reducing poverty might be undone due to the COVID-19 pandemic.

by where one lives and the nutrient requirements at different stages of growth and development (Figure 37).[102] Nutritional needs vary across the life cycle, hence dietary intake requirements differ in terms of quantity and diversity. This has implications for cost and affordability, and risk of malnutrition and micronutrient deficiencies. Within the same household, the cost of a nutrient adequate diet is not the same for everyone, as members are generally at different stages of life. Pregnant women and adolescent girls have increased needs for some nutrients, while young children require healthy diets with animal-source foods, and fruits and vegetables, which tend to be more expensive than other foods.[103]

According to the Fill the Nutrient Gap analysis conducted in eight countries in the region (Bangladesh, Pakistan, Sri Lanka, Cambodia, Lao PDR, the Philippines, Myanmar, and Timor-Leste),[104] the cost of a nutrient adequate diet and an energy sufficient diet vary by stages of the lifecycle,[105] with the cost of diets meeting nutrient needs being the highest for adolescent girls[106] and PLW (see Figure 38 for an example from Timor-Leste).[107]

The difference in requirements and subsequent cost of a nutrient adequate diet has implications for the design of nutrition and social protection policies, requiring considerations of the quality of foods provided to specific target groups, in the right quantity and combination of foods.

FIGURE 37
MICRONUTRIENT AND ENERGY REQUIREMENTS FOR DIFFERENT HOUSEHOLD MEMBERS AND LIFE STAGES



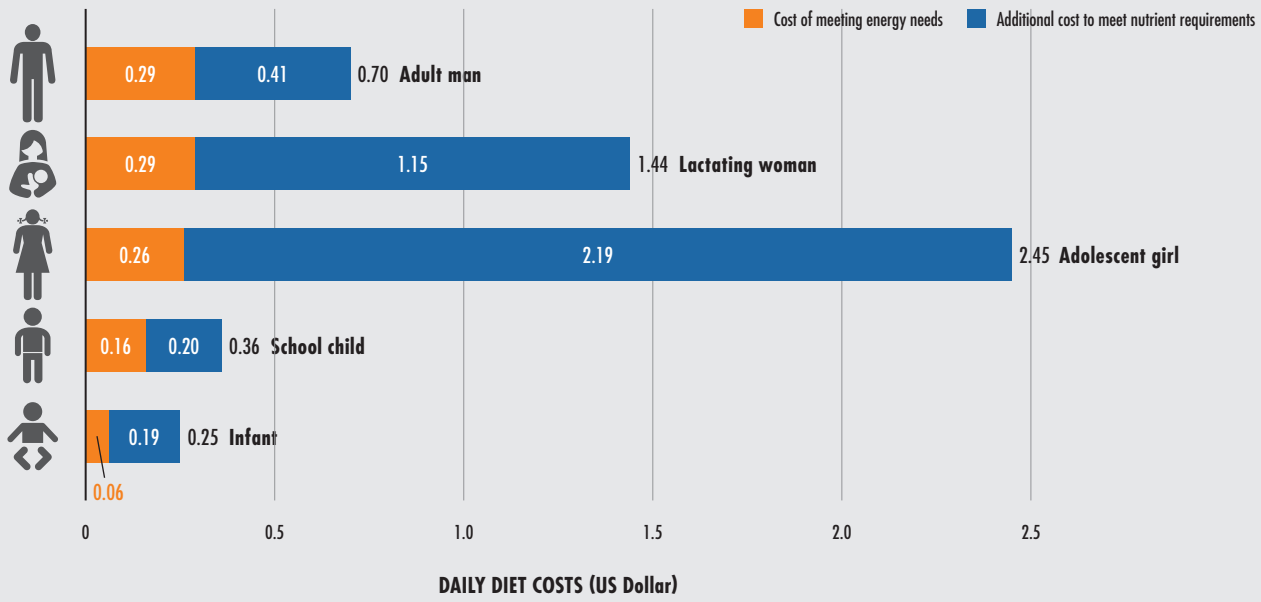
NOTE: The five different types of people are as follows: Baby of either sex (12-23 months); School age child of either sex (6-7 years old); Adolescent girl; Pregnant or lactating woman; Adult male.

SOURCE: World Health Organization (WHO). 2020. *Nutrient requirements and dietary guidelines* [online]. Geneva. [Cited 25 April 2020]. https://www.who.int/nutrition/publications/nutrient/en/

The cost of diet analysis conducted in nine countries in Asia[108] shows the range of within-country variation in unaffordability of a nutrient adequate diet driven by local prices of foods, economic status of a population, availability and diversity of nutritious foods or a combination of these factors (Figure 39). This highlights the need for both context-specific programming (e.g. adjustment of social transfer value depending on target groups and locations), and monitoring of food access and price data across geographic areas and countries.

Several factors along the food supply chain determine the cost of nutritious foods and the affordability of healthy diets. Those factors limit the availability and access to nutritious foods and drive food prices higher. They include low

FIGURE 38
THE ADDITIONAL COST OF A NUTRIENT ADEQUATE DIET COMPARED TO THE COST OF AN ENERGY SUFFICIENT DIET FOR DIFFERENT TARGET GROUPS IN A HOUSEHOLD (BAUCAU, TIMOR-LESTE)



NOTE: The figure shows the cost of meeting energy sufficient diet of different household members and the total cost for meeting a nutrient adequate diet, (using the least-cost diet), in Timor-Leste in 2019. The nutrient adequate diet includes, per person, the average energy needs and the recommended intake for protein, fat, four minerals and nine vitamins. The modelled household includes (from top to bottom) one adult man, one lactating woman, one adolescent girl aged 14–15 years, one school-aged child of 6–7 years and one breastfed child aged 12–23 months.

SOURCE: World Food Programme (WFP). 2019. *Fill the Nutrient Gap* [online]. Rome. [Cited 28 July 2020]. https://www.wfp.org/publications/2020-fill-nutrient-gap

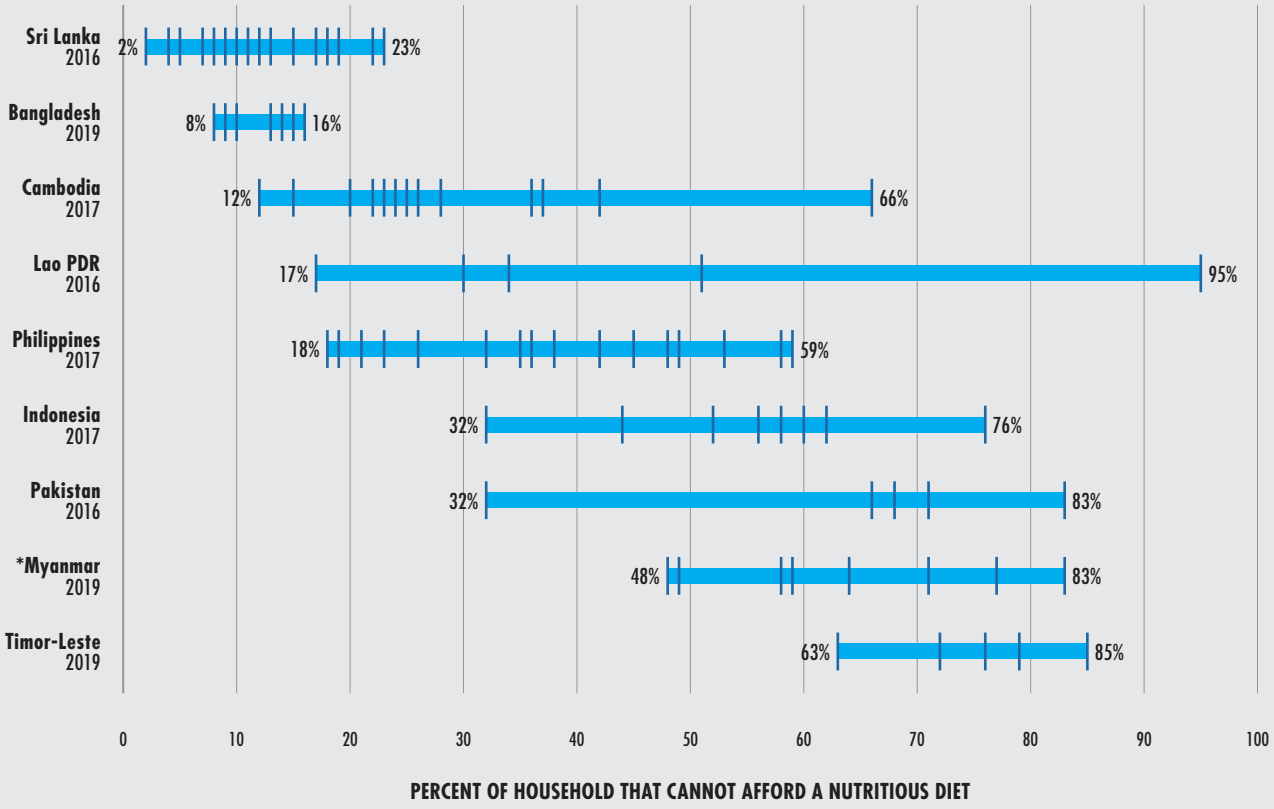
productivity in food production, insufficient diversification in the production of crops, livestock and other nutritious produce, high level of pre- and post-harvest loss in quality and quantity of agricultural products, and inadequate market infrastructure. To influence the cost of food and make healthy diets more affordable, governments need to adapt policies governing food, agriculture and trade to address these issues along the food supply chain, taking into consideration the needs of producers and consumers. Inclusive economic growth will also be important for making healthy diets more affordable.

Affordability of diets and childhood stunting

Poor maternal and child diets are the result of a complex web of factors within the surrounding environments of individuals. While behaviours determined by knowledge, practices, cultural norms and beliefs play a significant role in dietary choices, evidence increasingly suggests that the degree of affordability of a healthy diet is a critical determinant of diet quality and subsequent nutrition outcomes.[109]

The Fill the Nutrient Gap (FNG) analyses from Pakistan, Sri Lanka, Cambodia and the Philippines highlight a significant co-relationship and co-concentration between the unaffordability of nutrient adequate diets and stunting

FIGURE 39
UNAFFORDABILITY OF A NUTRIENT ADEQUATE DIET FOR HOUSEHOLDS ACROSS SELECTED COUNTRIES IN THE REGION



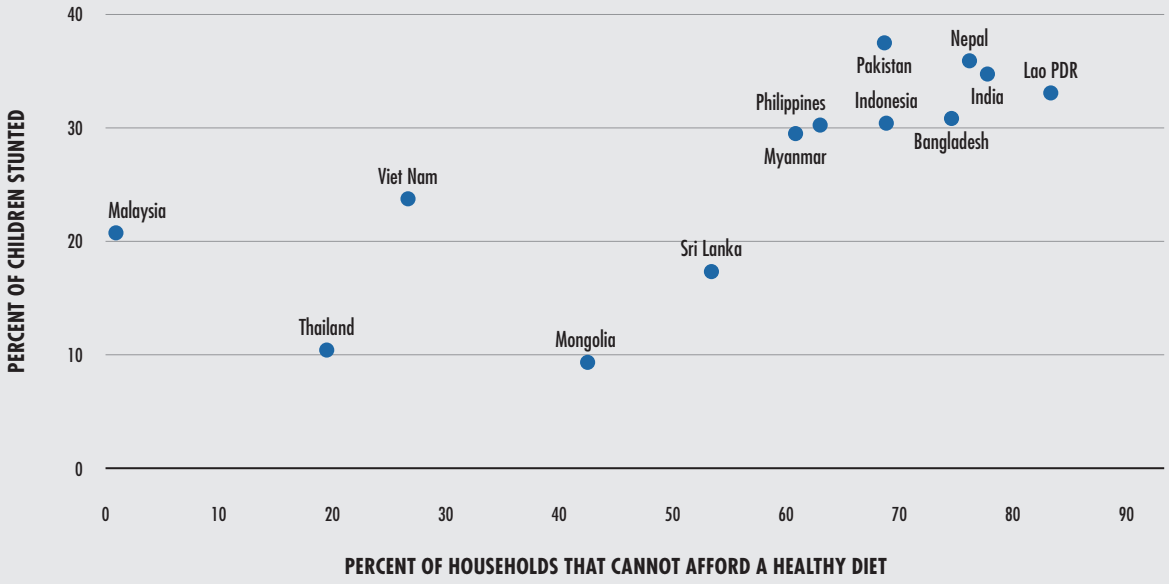
NOTES: The figure indicates the range of unaffordability of a nutrient adequate diet across different countries and different years. Unaffordability is measured by the proportion of households in a country whose food expenditure is not sufficient to afford a nutrient adequate diet in their local environment. The nutrient adequate diet includes, per person, the average energy needs and the recommended intake for protein, fat, four minerals and nine vitamins. The modelled household varies by country, but typically includes one breastfed child aged 12–23 months, one school-aged child aged 6–7 years, one adolescent girl aged 14–15 years, one lactating woman and one adult man. Each data point represents an area of the country. Each vertical line in the range represents a particular administrative area, e.g. a province or district. * Denotes that there was a consumer price index (CPI) adjustment made to expenditure data to match the year for which the food price data were collected.

SOURCE: World Food Programme (WFP). 2019. *Fill the Nutrient Gap* [online]. Rome. [Cited 28 July 2020]. https://www.wfp.org/publications/2020-fill-nutrient-gap

prevalence.[110] Evidence that compared the relative caloric price of foods found an association between prices of animal-source foods, as well as fortified infant foods, with child stunting.[111] An increase in prices of protein rich food such as dairy products, including milk and eggs, were found to be strongly associated with increases in stunting rates among young children.

Data from FAO[112] provide further evidence of the association between diet affordability and nutritional outcomes. These data show that, across Asia and the Pacific, and associated ranges of country income levels, the more unaffordable a healthy diet is, the greater the prevalence of child stunting (Figure 40). In high-income countries with lower levels of stunting, such as Australia,

FIGURE 40
UNAFFORDABILITY OF HEALTHY DIETS AND CHILD STUNTING AMONG COUNTRIES IN ASIA AND THE PACIFIC



NOTE: For each country, the most recent data on child stunting available between the years 2014 and 2019 are used.

SOURCE: FAO; United Nations Children's Fund (UNICEF), World Health Organization (WHO) and World Bank Group. 2020. *Joint Child Malnutrition Estimates Expanded Database: Stunting.* New York.

healthy diets are more affordable than in countries in Southern Asia and South-Eastern Asia, reflecting differences in socio-economic status.

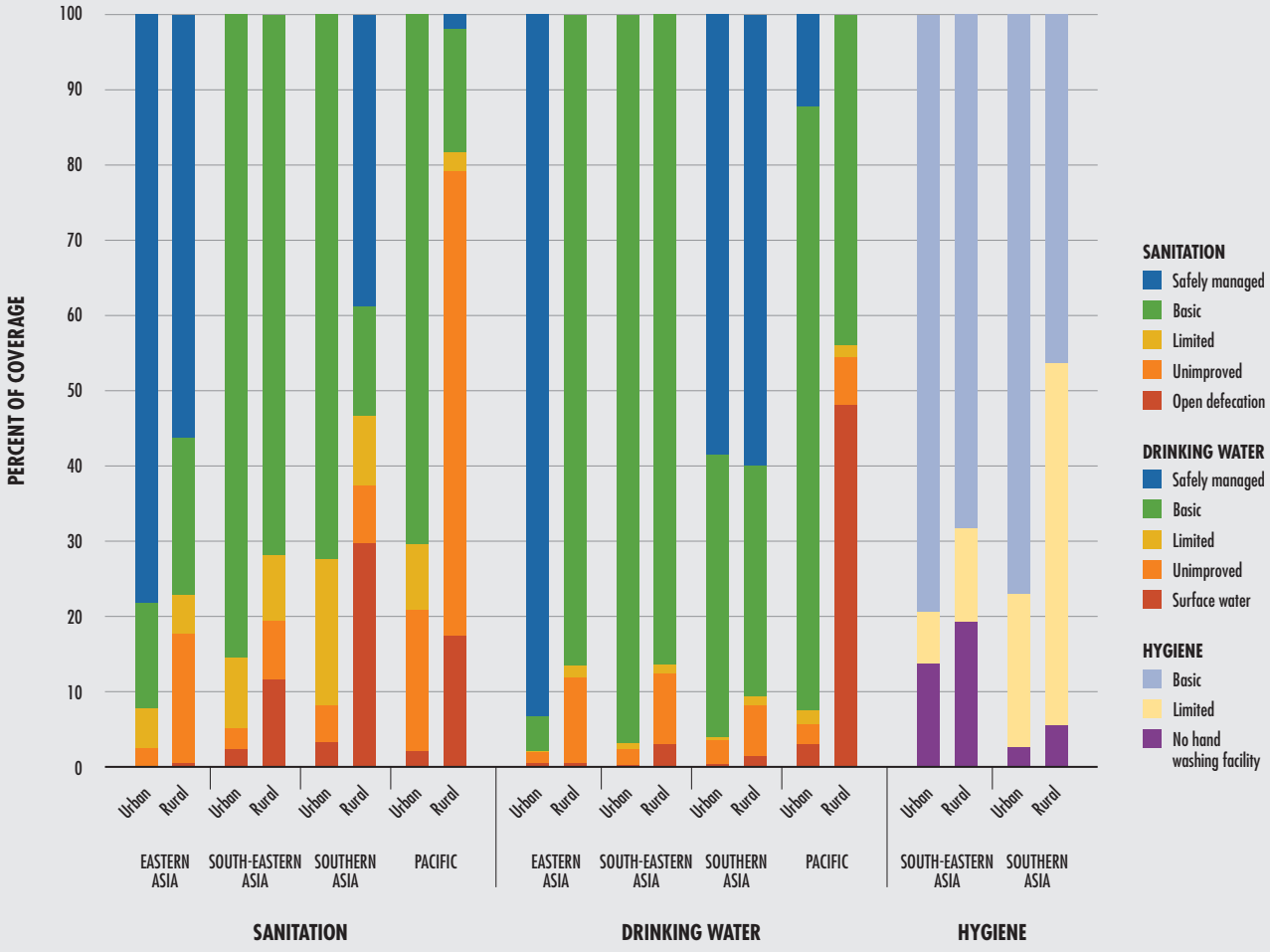
2.4 WATER, SANITATION AND HYGIENE SYSTEM

Water, sanitation and hygiene system for healthy maternal and young child diets

The water, sanitation and hygiene (WASH) system includes the policies, programmes, services, facilities and stakeholders involved in providing safe drinking water and sanitation infrastructure and supporting good hygiene practices. Water, sanitation and hygiene are major underlying determinants of malnutrition (see Conceptual Framework of Malnutrition in Figure 33). The WHO estimates that 50 percent of malnutrition is associated with repeated episodes of diarrhoea or intestinal worm infestation as a result of unsafe water, inadequate sanitation or insufficient hygiene practices, and diarrhoea is a leading cause of death in children under five years of age.[113] Children who are malnourished are more prone to illness, which makes them more susceptible to enteric infections and leads to more prolonged and more severe diarrhoeal episodes.[114] Frequent bouts of diarrhoea increase the risk of stunting and can impact cognitive development.[115]

Inadequate food hygiene and the use of unsafe drinking water in food preparation accounts for a significant proportion of diarrhoeal diseases

FIGURE 41
DIFFERENCES BETWEEN WASH SERVICES IN URBAN AND RURAL AREAS IN ASIA AND THE PACIFIC



SOURCE: United Nations Children's Fund (UNICEF), World Health Organization (WHO). 2020. *JMP global database* [online]. New York. [Cited 10 November 2020]. https://washdata.org/data/household#!/dashboard/new

among infants and young children in low-income countries.[116] It can also cause diarrhoea and food poisoning in women, which during pregnancy can lead to miscarriage, pre-term and stillbirth. Keeping food free from faecal contamination is essential to limit faecal-oral disease transmission. Promotion of good food hygiene and hygiene practices reduce the risk of diarrhoea.

Raising animals in proximity to household dwellings is common in many countries in Asia and the Pacific, especially in rural areas. Young children who are crawling or walking in surroundings contaminated with animal faeces are at an increased risk of developing diarrhoea and suffering from intestinal helminths. Both of these can affect the bioavailability of micro and

macronutrients from complementary food.[117] Unsanitary environments and exposure to pathogens can also cause environmental enteropathy (EE). EE leads to inflammation of the intestines and reduces the child's ability to absorb nutrients. While the exact pathways are unclear, there are strong associations between EE, stunting and iron deficiency.[118]

Efforts to scale up access to improved water sources and sanitation over the past two decades in Asia and the Pacific have paid off – 93 percent of households in East Asia and the Pacific and 92 percent in Southern Asia have access to safe drinking water. However, access varies significantly across and within countries in the region. Just 52 percent of Cambodian households have basic drinking water services, compared to 99 percent in Thailand.[119] Within countries, poor and rural communities typically experience worse WASH conditions than their urban counterparts (Figure 41). For example, 72 percent of urban households in Southern Asia have access to basic sanitation services compared to 53 percent in rural areas. Overall, rural households have less access to clean drinking water and improved sanitation, and have worse environmental hygiene due to inadequate services, cohabitation with animals and limited food storage options.

Limited physical access to water also places a direct and indirect burden on diets and child feeding. Where mothers have to spend significant time fetching water or preparing safe water for household use, they have less time available for child feeding and care practices, feeding themselves, taking needed rest during pregnancy, and preparing food. Spending money on safe drinking water also diverts resources from a household's disposable income that could be used on food purchases. Improving access to safe water sources can eliminate this gendered burden and decrease women's workload. Evidence from other regions also indicates that mothers will provide young children with packaged, sugar-sweetened beverages as a safe alternative to water, where access to clean water is not guaranteed.[120]

To contribute to improving maternal and child diets through the WASH system, governments need a combination of effective policies and strategies. These include improved WASH infrastructure and interventions that increase demand for quality services, and household knowledge and behaviours relating to hygiene and sanitation. Policies must target the most vulnerable households – rural poor and urban slum dwellers – to ensure universal access to clean drinking water and sanitation facilities. Integration of nutrition and WASH social and behaviour change communication (SBCC) activities is a key strategy, with a particular focus on environmental hygiene, hand washing and food safety. Additionally, it is essential to ensure the use of all possible contact points to deliver critical information on hygiene, use of clean water and food safety.

The WASH system interacts with the other four complementary systems discussed in this report, contributing to safe and adequate maternal and child diets in different ways. In relation to the food system, adequate infrastructure can support sustainable food production. More directly, food safety and hygiene in packaged foods and markets is important. Evidence suggests that mothers and caregivers do not feel that food purchased in the market or from street food vendors is adequately hygienic to feed to infants, leading to increased consumption of packaged foods.[121] Investments in hygiene in markets and with traditional vendors would reduce these hygiene risks. Similarly, a well-functioning WASH system ensures safe and hygienic environments for health facilities and schools, and through these contributes to improved maternal and child diets as well.

As highlighted in Section 2.6, social protection programmes can be effective in improving maternal and child diets, particularly when complemented by SBCC activities. These SBCC activities should also be inclusive of WASH behaviour messages. Programmes should allow the use of benefits to purchase or redeem WASH products to improve household hygiene and water quality, water and sanitation practices and facilities.

BOX 17
FRESH MARKETS AND COVID-19 – PEOPLE, PREMISES AND PRACTICES[122]

Fresh markets in the Asia–Pacific region are essential for provision of daily fresh foods such as vegetables, fruits, dairy products, fresh meat, fish and seafood that are rich in protein and essential micronutrients, such as iron, iodine, calcium, zinc, Vitamin A and Vitamin B12. They are also a source of livelihoods, food security and nutrition for millions of vendors and market operators in the region.

However, fresh markets, when not managed properly, can pose serious health risks to the people they serve. The congregation of humans, the presence of live animals, the proximity of animal origin and plant origin foods and poor sanitation conditions can create favourable conditions for the spread of diseases and the entry of contaminants in food, rendering it unsafe. Often, authorities close down these markets because of a food-safety incident or the spread of diseases, as has happened with COVID-19. This could temporarily halt the health threat, but such measures only address the symptom, not the cause. It also restricts the access of millions of people to fresh, nutritious foods and incomes, increasing the risk of malnutrition and micronutrient deficiencies.

Improving fresh and informal markets does not always require heavy investment and planning. Simple and concrete food safety and biosecurity measures can be put in place to improve hygiene, reduce zoonotic risks and provide a healthy shopping experience to consumers.

Recommendations for safe markets:

People

- **Co-opt vendors** in the market management to maintain the market and, therefore, safeguard their incomes.
- **Provide hand-washing facilities** or sanitizers for everyone at strategic locations, including entry and exit.
- **Encourage vendors, consumers and suppliers** with proper signposting to observe personal hygiene.

Premises

- **Perform small renovations** to reduce overcrowding, enhance cleanliness and facilitate ease of movement.
- **Follow proper waste-management protocols** through segregation, timely collection and safe disposal of refuse.
- **Ensure availability of clean ice** or cold chain facilities and their use for preservation and safety of fresh food.

Practices

- **Leverage the COVID-19 situation** to increase awareness of good hygienic practices.
- **Close the market for one day** per week for intensive cleaning and disinfection.
- **Separate the sections** selling plant and animal foods, and establish a distinctly separate area for slaughter, preferably away from the market.

Health and WASH systems have often been closely linked and focused on delivering essential hygiene actions through counselling and community-mobilization activities. The education system plays a critical role in providing school-based education and messaging on good hygiene and sanitation practices. Studies have shown that improved water infrastructure in schools and health facilities help keep adolescent girls in schools.

2.5 HEALTH SYSTEM

The role of the health system in protecting, promoting and supporting maternal and young child diets

Healthy diets and feeding practices are important during the critical life stages of pre-conception, pregnancy, postpartum, and early childhood (6–23 months). Health systems provide facility- and community-level interventions that protect, promote and support healthy diets, optimal feeding and good hygiene practices, especially among the most disadvantaged population groups who tend to disproportionally have less adequate and diverse diets.[123]

Health systems promote and shape healthy eating behaviours. They support the consumption of nutritious foods and restrict consumption of foods high in sugar, fat, and salt through health promotion, taxes and regulatory measures. Furthermore, preventive and curative services offered through the health system are essential for the prevention and treatment of childhood illnesses. These services include deworming, vitamin A supplementation, oral rehydration solutions for the management of diarrhoea, and treatment of wasting through therapeutic interventions.

Status of health system-related policies, strategies and plans

Robust enabling environments (policies, strategies, plans, coordination structures, and monitoring systems) are needed at the national and subnational levels to address health system-related drivers and determinants of maternal and young child diets. Recent reviews of the status of policy and programme actions on maternal nutrition and young children's diets in Southern Asia[124] (Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, Sri Lanka) and South-eastern Asia[125] (Cambodia, Indonesia, Lao PDR, Myanmar, the Philippines and Viet Nam)[126] found that health systems' enabling environments across these countries are strong and robust with sound policies and systems to support the delivery of services to improve diets. However, there are gaps in critical areas, including implementation.[127]

The WHO recommendations on Antenatal Care (ANC) provide guidance on dietary interventions and micronutrient supplementation for PLW within the context of routine ANC.[128] A review undertaken in Southern Asia shows that most countries in the region, except Pakistan, have policy and programme provisions on maternal nutrition recommendations applicable for all contexts, including counselling on healthy eating, dietary intake and daily supplementation with iron-folic acid (IFA).[129] These interventions are also part of the essential package of services for health facilities. In South-eastern Asia, maternal nutrition interventions are embedded in broader national nutrition policy and strategy documents.[130] Maternal nutrition interventions in the region mostly focus on addressing undernutrition concerns,[131] and there may be missed opportunities in addressing the increasing prevalence of maternal overweight/obesity.[132]

Delivery of nutrition counselling and education services to improve maternal and young child diets

The health system plays a critical role in addressing knowledge and practice gaps in maternal nutrition and IYCF practices and behaviours by providing nutrition education and skilled counselling support to women and caregivers.[133]

In Southern Asia, provisions on complementary feeding for young children, such as counselling, are included in the essential packages of services for health facilities in the national health policies in all countries except Nepal, and only partially in the Maldives and Pakistan.[134] In this subregion, only five countries have an indicator on complementary-feeding counselling of children aged 6–23 months included in the health management information systems (HMIS) system. Even where it is included, the data are not regularly monitored.[135] A review undertaken in six South-eastern Asian countries (Cambodia, Indonesia, Lao PDR, Myanmar, the Philippines

TABLE 2
VITAMIN A SUPPLEMENTATION FOR CHILDREN 6–59 MONTHS OF AGE, FULL COVERAGE (%) 2017

Country	Vitamin A	Country	Vitamin A
Afghanistan	95	Mongolia	83
Bangladesh	99	Myanmar	89
Cambodia	73	Nepal	81
Democratic People's Republic of Korea	90	Pakistan	92
Indonesia	62	Sri Lanka	93
Lao People's Democratic Republic	57	Timor-Leste	66
Maldives	69	Viet Nam	99

NOTE: Data are not available for many countries in the region, especially in the Pacific.

SOURCE: United Nations Children's Fund (UNICEF). 2019. *The State of the World's Children 2019. Children, Food and Nutrition: Growing Well in a Changing World.* New York. (available at https://www.unicef.org/reports/state-of-worlds-children-2019).

TABLE 3
POPULATION COVERAGE OF IRON SUPPLEMENTATION INTERVENTIONS IN CHILDREN 6-59 MONTHS OF AGE, VARIOUS YEARS, SOUTHERN ASIA

Country	Source	Year	Iron supplements in the last 7 days (%)
Afghanistan	DHS	2015-16	6.3
Bangladesh	DHS	2014	4.3
India	DHS	2015-16	26.1
Nepal	DHS	2016	7.7
Pakistan	DHS	2018	7.0
Sri Lanka	DHS	2016	7.5

NOTE: Data not available for Bhutan and Maldives.

SOURCES: United Nations Children's Fund (UNICEF). 2019. *Nutritional care of pregnant women in South Asia: Policy environment and programme action.* Kathmandu, Nepal, UNICEF Regional Office for South Asia. (available at https://www.unicef.org/rosa/media/7836/file/Nutritional%20care%20of%20pregnant%20women%20in%20S.Asia_Policy%20environment%20and%20programme%20action_Final.pdf.pdf) UNICEF. 2020. *Regional Report on Maternal Nutrition and Complementary Feeding.* Bangkok, Thailand, UNICEF East Asia and Pacific Regional Office.

and Viet Nam) found gaps in provisions on complementary feeding in the minimum package of health facility services in Indonesia, the Philippines and Viet Nam.[136] These gaps result in weak accountability and lack of reporting in HMIS of these services.[137]

In Southern Asia, except for Bangladesh, Bhutan and Nepal, most countries experience moderate to significant bottlenecks in the delivery of counselling by community health workers to mothers on healthy eating to prevent excessive weight gain during pregnancy.

Capacity-building initiatives for health facility and community health workers in the region emphasize improving dietary intake to prevent undernutrition during pregnancy. However, they lack a focus on the prevention of excessive weight gain.[138] Counselling for pregnant women, particularly on appropriate weight gain, is also not consistently delivered in capacity-building efforts in Eastern and South-eastern Asia.[139]

CASE STUDY 4

ADDRESSING MICRONUTRIENT GAPS TO IMPROVE THE QUALITY OF YOUNG CHILD DIETS IN NEPAL

Nepal has made remarkable progress in reducing the prevalence of stunting in children under the age of five years, from 57 percent in 2001 to 35.8 percent in 2016, but the prevalence is still high.[140] Anaemia in children 6–59 months is a public health concern, with 19.1 percent of children affected.[141] Suboptimal infant and young child feeding practices are a contributing factor to the high prevalence rates of stunting and anaemia in the country with only 45 percent of young children aged 6–23 months meeting the standards of minimum dietary diversity.

The health system in Nepal has a critical role in addressing knowledge and practices for appropriate complementary feeding through counselling support, and in filling key nutrient gaps through vitamin and mineral supplementation and home fortification.[142] In response to the childhood undernutrition and anaemia situation in the country, the Government of Nepal with support from UNICEF introduced an integrated IYCF practices and micronutrient powder (MNP) fortification programme, targeting children aged 6–23 months in 2009. The MNP includes 15 vitamins and minerals and was branded as Baal Vita – "Vitamins for children" in Nepali language. The primary health care system delivers the integrated IYCF–MNP programme through facility-based health workers and female community health volunteers (FCHV), who are responsible for distributing sachets of MNP free of charge to all children aged 6–23 months every six months and providing counselling to mothers on IYCF practices during regular child visits and through FCHVs and other community contact points during mother group meetings and home visits.[143]

A feasibility study was implemented in two districts in 2009 to assess the acceptability of MNPs, develop key messages, branding and strategies for implementation and design of a pilot programme in six districts between 2010–2011, and to inform the development of a scale-up plan to the rest of the country. Impact evaluations carried out in Aacham and Kapilvastu showed that MNP coverage was independently associated with a reduced risk of anaemia and iron-deficiency anaemia.[144] Among children 12–23 months receiving at least two MNP distributions, the prevalence of anaemia[145] and iron deficiency anaemia[146] were significantly lower compared to children who never received MNP. The evaluation also showed that the prevalence of minimum dietary diversity and minimum acceptable diet improved significantly after 36 months of programme implementation.[147] By the end of 2019, the programme scaled up to 47 of the 77 districts in the country. The integrated IYCF–MNP programme has provided a platform for extending nutrition counselling to caregivers. It has led to encouraging improvements in knowledge and practices related to IYCF and improved coverage of young children 6–23-months who are anaemic.

Delivery of micronutrient interventions to address nutrient gaps in maternal and young child diets

The health system plays a vital role in the delivery of crucial micronutrient supplements and fortified food supplements as part of essential public health interventions to prevent micronutrient deficiencies.[148]

The coverage of national vitamin A and iron supplementation programmes for children 6–59 months varies widely across the region, and coverage of vitamin A supplementation is generally higher compared to iron supplementation. Several countries in the region recognize the potential for improving the micronutrient status of children 6–23 months through supplementation with micronutrient powders. Nonetheless, most have limited implementation of free MNPs through health facilities because of a lack of policy and prioritization.[149]

Estimates show that in 2016, 83 percent of children 6-59 months of age were reached with two doses of vitamin A in East Asia and the Pacific, while in Southern Asia only about 64 percent of children in need were reached.[150] Table 2 provides an overview on the population coverage of Vitamin A supplementation interventions in children 6-59 months of age.

TABLE 4
POPULATION COVERAGE OF ANY IRON SUPPLEMENTS AND AT LEAST 90 DAYS OF IRON SUPPLEMENTS DURING PREGNANCY (PERCENT)

Country	Source	Year	Any IFA	IFA+90
Cambodia	DHS	2014	96	76
Lao PDR	LSIS II	2017	50	25
Indonesia	DHS	2017	82	44
Myanmar	DHS	2015-2016	88	59
Philippines	DHS	2017	81	51
Viet Nam	NIN	2017	48 (during 1st trimester of pregnancy)	63 (previous 3 months)
Afghanistan	DHS	2015-2016	45	7
Bangladesh	DHS	2014	55	–
India	DHS	2015-2016	78	39
Maldives	DHS	2016-2017	91	46
Nepal	DHS	2016	91	71
Pakistan	DHS	2017-2018	59	29
Sri Lanka	DHS	2007	98	98

NOTE: A dash indicates no data.

SOURCES: United Nations Children's Fund (UNICEF). 2019. *Nutritional care of pregnant women in South Asia: Policy environment and programme action.* Kathmandu, Nepal, UNICEF Regional Office for South Asia. (available at https://www.unicef.org/rosa/media/7836/file/Nutritional%20care%20of%20pregnant%20women%20in%20S.Asia_Policy%20environment%20and%20programme%20action_Final.pdf.pdf) UNICEF. 2020. *Regional Report on Maternal Nutrition and Complementary Feeding.* Bangkok, Thailand, UNICEF East Asia and Pacific Regional Office.

All countries in the region have very low coverage of iron supplementation programmes. Table 3 provides an overview on the population coverage of iron supplementation interventions in children 6–59 months of age.

Several countries in the region recognize the potential for improving the micronutrient status of children 6–23 months through supplementation with micronutrient powders. Still, there is limited implementation of free MNPs through health facilities.

The coverage of daily iron and folic acid (IFA) supplementation during pregnancy also varies across the region (Table 4). Recent reviews of IFA coverage in Southern Asia showed that the proportion of women who received an iron supplement for at least 90 days during their previous pregnancy range from 7 percent in Afghanistan to 98 percent in Sri Lanka.[151] A similar review in six countries in South-Eastern Asia (Cambodia, Indonesia, Lao PDR, Myanmar, the Philippines and Viet Nam) showed coverage ranging from 25 percent in Lao PDR to 76 percent in Cambodia.[152]

Health systems have a key role to play in accelerating and maintaining sustainable scale up of community-based nutrition services. Optimal dietary intake (practices and food content) is an essential part of the treatment of acute malnutrition. Efforts by national governments to make wasting treatment more sustainable include the development and promotion of local therapeutic nutrition products, such as Acha Mum[153] in Pakistan, Nutrix[154] in Cambodia and Triposha[155] in Sri Lanka.

Health systems have a critical role to play in creating an enabling environment and ensuring policy coherence across systems (food, water and sanitation, social protection and education) to achieve desired policy and programme outcomes

for improving maternal and young child diets and feeding practices. Gaps in the health system's enabling environment and coverage of services for improving maternal and young child diets need to be urgently addressed. More robust implementation can be achieved by developing standards, guidelines and tools to ensure full integration of interventions. Interventions include nutrition assessment, counselling on dietary intake, micronutrient supplementation and therapeutic dietary support for the management of acute undernutrition in the minimum and essential package of health services as part of universal health coverage (UHC).

2.6 SOCIAL PROTECTION SYSTEM

Social protection systems supporting healthy maternal and child diets

Social protection[156] is a powerful instrument with significant potential to benefit maternal and child nutrition, reduce poverty and promote overall development.[157] According to an inventory mapping of non-contributory social protection in 28 countries in Asia and the Pacific in 2019,[158] most countries have at least some form of social assistance, with many targeting children, and pregnant and lactating women. While several social-protection interventions focus on reducing poverty and inequality, which are the fundamental causes of malnutrition, they can directly contribute to the alleviation of the underlying and immediate causes of malnutrition.[159] Review of evidence from the region[160] shows positive impacts of social protection on household food security,[161] care practices,[162] access to health services,[163] and contributions to improvement in maternal and child diets and health status (Figure 42).

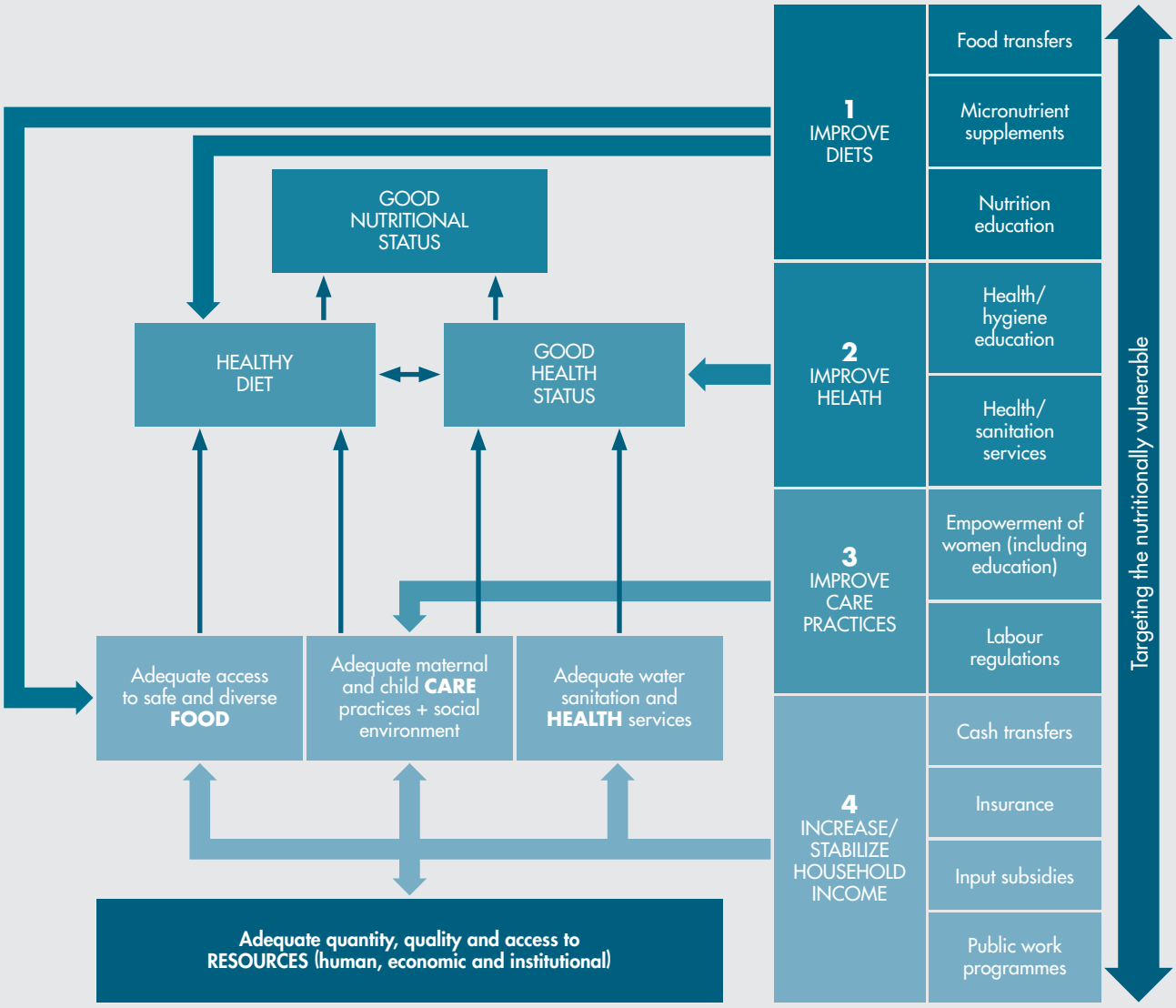
Improving maternal and child diets through nutrition-sensitive social protection is one of the most relevant and effective approaches.[164] Evidence from the region shows mixed but promising results in this regard.[165]

Most social protection measures, such as cash transfers in the form of child grants, family benefits and public work programmes, increase household income, which can, in turn, increase the consumption of both staple and more expensive nutritious foods.[166] According to the Fill the Nutrient Gap Analysis in Bangladesh, Sri Lanka and Myanmar,[167] cash transfer programmes targeting women and children[168] contribute to improving a household's ability to afford nutrient adequate diets by between 10 and 50 percent.

The pathway between social protection and improved maternal and child dietary outcomes is not always guaranteed. Success depends on several factors, including targeting criteria, transfer amount and modality, timeliness and duration of the programme, integrating nutrition-specific components such as providing micronutrients supplements or fortified foods, and integrating nutrition education or SBCC (Figure 43).[169]

The Programme Keluarga Harapan (PKH) in Indonesia (a conditional cash transfer programme)[170] found that participating children aged 18–60 months were more likely to consume protein-rich food, such as eggs and milk. In most of the indicators, rural children seemed to have experienced a larger positive impact, including higher protein consumption.[171] In Myanmar, study results from the maternal and child cash transfer programme, which provided cash transfers and SBCC to women between the last two trimesters of pregnancy until the child turns two years old (first 1000 days),[172] showed a significant positive impact on maternal and child dietary diversity. In Nepal,[173] the child grant programme in Karnali region showed that to maximize the diversity of food available to young children the amount of the cash transfer had to increase to 20 percent or more of overall household expenditure. In Indonesia, a nine-month pilot programme providing cash transfers found limited changes in the minimum acceptable diet of children 6–23 months, compared to a similar programme implemented for a longer period.[174]

FIGURE 42
POTENTIAL PATHWAYS TO NUTRITION THROUGH SOCIAL PROTECTION



SOURCE: FAO. 2015. *Nutrition and social protection.* Rome (available at www.fao.org/3/a-i4819e.pdf)

This evidence demonstrates that cash transfers alone might achieve some positive nutritional outcomes. However, intensive SBCC plays an important role in effective behaviour change and ultimately improving maternal and child nutrition.

Both human and climate-induced shocks can have negative impacts on households, including on their dietary diversity and quality of diets.[175] Natural disasters strike countries in Asia and the Pacific more than any other region, and climate change is increasing the frequency and severity of

FIGURE 43
OVERVIEW OF KEY NUTRITION-SENSITIVE PRINCIPLES

1. **Define objectives and indicators** based on systematic assessment to identify the food security and nutritional problems and their causes, understand the extent of poverty and exclusion (including gender analysis), and identify context-specific impact pathways (thereby also defining the design features and linkages). This will help ensure that nutritionally vulnerable groups are reached effectively.

2a. Incorporate nutrition considerations and actions into the design of social protection mechanisms, such as the:

- cost of nutritious diets and the safety, quality and nutritional value and diversity of (food) transfers,
- regularity and predictability of transfers,
- duration of benefit,
- timeliness of the benefit/intervention.

2b. Create appropriate linkages with interventions and strategies that support improved diets and nutrition, such as by:

- providing access to high-quality health and sanitation services,
- promoting strategies that enable households to diversify their diets and livelihoods, including in terms of production (i.e. nutrition-sensitive agriculture),
- providing food and nutrition education,
- providing certain individuals in households, such as young children and women, with micronutrient supplements or fortified foods,
- empowering women, such as by increasing their decision-making power over household expenses, the intra-household distribution of food, and access to services.

3. **Ensure the ability to reduce vulnerability, enhance resilience and respond to shocks** Social protection programmes can help households prepare for, cope with and recover from shocks that may have negative impacts on their food security and nutrition. The capacity to withstand shocks can be increased when households have access to predictable social protection, thus building resilience over time and minimizing negative coping mechanisms that can affect food security and nutrition. In addition, the acute and long-term negative effects of shocks can be reduced if social protection systems already in place are expanded or adapted in a timely manner. It is crucial for consumption stabilization that social protection programmes have the capacity to respond to changes in income or food security and nutrition arising from both sudden and slow-onset shocks

SOURCE: Interagency Social Protection Assessments (ISPA). Practical tools: improving social protection for all (online). Rome. [Cited 11 July 2019]. https://ispatools.org; FAO. 2015. *Nutrition and social protection.* Rome (available at www.fao.org/3/a-i4819e.pdf)

disasters. That makes the role of social protection to protect vulnerable populations and their food and nutrition security even more pertinent.[176]

The role of social protection in supporting women and young children and ensuring their continued access to healthy diets is especially critical in emergencies and crises, such as the COVID-19 pandemic. Individuals and their households have suffered substantial health and economic impacts due to the pandemic and the associated economic contraction, with increasing levels of poverty and inequality affecting those who were already vulnerable.[177] The Asian Development Bank estimated that economic losses in Asia and the Pacific range from USD 1.7 trillion to USD 2.5 trillion, with the region accounting for about 30 percent of the global losses.[178]

Well-designed and targeted social protection programmes with sufficient national investment and coverage have considerable potential to impact maternal and child diets and nutritional status in the Asia and Pacific region. Programmes with linkages to other sectors, such as health, education and agriculture, are particularly important. To ensure impactful programming, governments need improved data availability to better understand the gaps and barriers faced by mothers and children in accessing healthy diets. Better data would help inform the design of better social protection programmes for women and children, and more accurately monitor and evaluate relevant indicators to assess the effectiveness of the interventions.

BOX 18
STRENGTHENING SOCIAL PROTECTION PROGRAMMES TO IMPROVE YOUNG CHILDREN'S DIETS – BANGLADESH'S MOTHER AND CHILD BENEFIT PROGRAMME[179]

In 2019, Bangladesh conducted a "Fill the Nutrient Gap Assessment" and confirmed that PLW and adolescent girls were the most nutritionally and socially vulnerable individuals in local households with specific challenges in accessing a diverse diet. Based on two pre-existing social safety net programmes – the rural-based Maternal Allowance (MA) and the urban-based Lactating Mother Allowance (LMA) programmes – the Government introduced a new Mother and Child Benefit Programme (MCBP) in July 2019 under the Ministry of Women and Children Affairs (MoWCA). The programme's focus is on addressing malnutrition through improved diets of infants, young children and vulnerable mothers.

The MCBP seeks to address nutritional vulnerability by prioritizing support to infants and young children 0–4 years and their mothers. The MCBP consists of the following components: 1) Cash transfer: PLW receive a monthly transfer of BDT 500 (approximately USD 6) for 24 months, either for their first or second live birth; and 2) Provision of nutrition-related BCC. The programme is accompanied by nutrition training, improved linkages to health services, and a new child-benefit programme.

Bangladesh has been implementing a pilot approach in eight sub-districts in both urban and rural areas. The MCBP aims to reach 7.5 million children 0-4 years by 2030, with the goals of achieving safe births, preventing stunting and wasting, and ensuring breastfeeding for proper cognitive and psychosocial development of young children.

BOX 19
LEVERAGING SOCIAL PROTECTION TO MITIGATE THE NUTRITION CRISIS IN PAKISTAN – THE BENAZIR INCOME SUPPORT PROGRAMME[180]

Pakistan's high rates of malnutrition (43.7 percent stunting, 31.5 percent underweight and 15.1 percent wasting[181]) are indicative of an ongoing child-nutrition crisis. The long-term economic impact of malnutrition is severe. Every year, Pakistan loses 3 percent of its GDP (USD 7.6 billion) to malnutrition-induced reductions in future productivity.[182]

In 2019, Agha Khan University (AKU) in Thatta and Sajawal Districts in Sindh Province conducted a study that showed the viability of stunting-prevention interventions combined with unconditional cash transfers and specialized nutritious food with SBCC activities. The programme uses the national Benazir Income Support Programme and health services to deliver the intervention. Results showed that children aged six months of women in the intervention group, who enrolled during pregnancy, had significantly lower risks of stunting (15.2 percent), wasting (21.5 percent), underweight (20.8 percent) and anaemia (5 percent) compared to those in the control group. The results for children aged 6–23 months were also promising, with reduced risk of stunting (8.6 percent), wasting (19.6 percent) and anaemia (3.2 percent). With 5.5 million beneficiary households spread across the country and a network of 50 000 women-led beneficiary committees, the Benazir Income Support Programme provides an ideal platform for strengthening this collaborative effort with the primary health services and bringing about a positive change in nutrition in a short period.

In March 2020, based on findings of the study, the programme scaled up to provide monthly unconditional cash transfers of PKR 1 666 (USD 10) to 5.7 million registered households across Pakistan. Provision of SBCC activities and specialized nutritious food to PLW and children 6–23 months complemented the cash support during the 1 000-days window of opportunity.

CASE STUDY 5

MOTHER AND CHILD SUPPORT DURING COVID-19 – EXPANSION OF SHOCK RESPONSIVE SOCIAL PROTECTION IN THE ASIA–PACIFIC REGION[183]

In response to the COVID-19 outbreak, governments around the world have been expanding or setting up social protection programmes to address the increasing needs of their vulnerable populations. A few governments in the Asia–Pacific region adjusted their existing social protection programmes to support particular needs for mothers and children in this difficult time. Most of the expansions built on existing systems, with a horizontal or vertical expansion of transfers, and inclusion of vulnerable families. The following provides a short overview of government steps to address mother and child needs and reinforce healthy diets and care practices.

- The Cook Islands provide an additional USD 100 on top of the regular USD 50 for each child aged 0–16 already receiving the child benefit, every fortnight during school closures except for holidays. While children already in the programme will receive benefits, as usual, those who are not yet covered will need to apply to reach universal coverage of all children under 16 years of age. The amount was allocated for food to replace school meals, as well as other care items and child care if necessary.
- India's Kerala State Government delivered food for usual midday meals to cover 300 000 children studying in more than 30 000 rural child care centres that were closed because of the COVID-19 pandemic. The purpose of the food transfer is to replace school meals and support nutritious meals at home during the lockdown.
- Indonesia's flagship child cash transfer programme, *Programme Keluarga Harapan*, expanded its coverage from 9.2 to 10 million families and doubled the benefits for three months, April–June. Additionally, transfers are now paid monthly rather than quarterly, improving access to fresh foods and healthy diets.
- In Mongolia, the *Child Money* monthly allowance of MNT 10 000 (USD 3.8) was increased to MNT 30 000 (USD 11.4) in April 2020 as part of the first package of measures by the Government, with a subsequent increase to MNT 100 000 (USD 38) until 1 October 2020. The top-up will help to purchase healthy foods and other essential care items for children.
- Myanmar's Government has expanded the *Maternal and Child Cash Transfer* (MCCT) programme to help the most vulnerable cope with COVID-19 and recover from the economic consequences of the lockdown. The Government has been expanding vertically (increasing transfer amounts for each family), and additional partners are supporting this effort by expanding the MCCT horizontally (temporarily adding new beneficiaries). More than 240 000 households benefiting from the MCCT (Pregnant and Lactating Women and children under two years of age) will receive a one-off MMK 30 000 (USD 21.8) cash payment in addition to the existing monthly payments of MMK 15 000 (USD 10.9).
- In Pakistan, existing beneficiaries of the *Ehsaas Emergency Cash programme* (4.5 million women) will receive an additional PRs 1 000 (USD 5.9) as emergency relief for four months in addition to the regular PRs 2 000 (USD 11.8).
- The Republic of Korea's Government is providing KRW 50 000 (USD 42) per day to low-income families whose children had to shift from child day care to home care. There was an additional four-months-worth transfer to households that are regular child and social assistance receivers. Both expansions target economic access to diverse and healthy foods.
- In Sri Lanka, identified and wait-listed recipients (600 000 families) of the *Samurdhii* allowance received an additional LKR 5 000 (USD 26.7). Additionally, *Thriposha* and other nutrition supplements are delivered to families with PLW and children at risk of and with nutrient deficiencies.
- Lastly, the Government of Vanuatu has declared a school fee exemption for 2020 as part of its extended social protection programme in light of COVID-19.

Across the different approaches to expansion, the needs of mothers and children have been highlighted. Most address the lack of income or lack of usual school meals with transfers to support economic access to healthy and nutritious foods for the most vulnerable families. It will be critical to ensure good monitoring, evaluation and learning from these experiences to document the most effective and efficient ways to stabilize and improve maternal and child diets in situations of disasters and emergencies.

2.7 EDUCATION SYSTEM

Education systems for healthy maternal and child diets

The significance of the first 1 000 days of a child's life – from conception to the first two years of age – for optimum growth and development is well recognized.[184] However, increasing evidence points towards the importance of the next window of opportunity: the subsequent 7 000 days after a child's second birthday.[185] This period, during their school-age years, offers continued possibilities to support children and adolescents in reaching their developmental potential.[186] Both undernutrition and overnutrition during adolescence,[187] when girls have increased nutritional requirements to support their rapid growth and development, often continue until pregnancy. This perpetuates the cycle of maternal malnutrition, foetal growth restriction, childhood stunting and wasting.[188] The impacts continue throughout the lifecycle.[189] Inadequate diet diversity and quality, characterized by low consumption of fruits and vegetables and animal-source protein,[190] high consumption of fat, sugar, salt and frequent snacking of processed foods, are among the main causes of malnutrition among adolescent boys and girls.[191]

In the Asia and Pacific region, adolescents aged 10–19 years are at risk of the triple burden of malnutrition, including thinness, overweight and obesity, and micronutrient deficiencies.[192] In Eastern Asia and the Pacific and Southern Asia, 6 percent and 24 percent of adolescents are thin,[193] and 21 percent and 7 percent are overweight or obese,[194] respectively. Approximately 27 percent of women aged 15–49 years in Eastern Asia and the Pacific, and 50 percent in Southern Asia are anaemic.[195] Pacific countries such as the Cook Islands, Kiribati, Nauru, Samoa, Tonga and Tuvalu face an exceptionally high prevalence of overweight and obesity, with well above 40 percent prevalence among school-attending girls 13–15 years old, and above 60 percent for adult women.[196]

Recent evidence points to the intergenerational effects of overweight and obesity.[197] In Viet Nam, an analysis that examined the association between maternal pre-conception nutrition status and subsequent child nutrition outcomes[198] found that women with pre-conception weight below 43 kg were at increased risk of having a stunted child at two years of age. Similarly, women who were thin[199] were significantly associated with a 1.3-times increased risk of child stunting. The findings highlighted the importance of including the maternal pre-conception periods in policies and strategies to reduce childhood stunting. Therefore, a greater emphasis on nutrition for adolescent girls and young women before, during and after pregnancy is warranted.

In addition to the importance of adolescence and maternal nutritional status in breaking the inter-generational cycle of malnutrition, the level of maternal education is a strong predictor of childhood nutrition outcomes.[200] An analysis of the linkages between parental education and child health in 56 developing countries found a strong association between maternal education and child dietary diversity. The study emphasized the significance of promoting girl's education in tackling childhood malnutrition.[201]

The high rates of early marriage and teenage pregnancy in the region, with an adolescent birth rate[202] of 25 per 1 000 in Southern Asia,[203] further aggravates the nutrition situation.[204] In Southern Asia, as many as 30 percent of girls get married before the age of 15,[205] limiting their access to education and health services and making it harder to reach their full development capacity. This also means that many girls may enter pregnancy with poor nutritional status, which increases the risk of complications during pregnancy and childbirth. Such mothers are often unable to support healthy foetal growth, which impacts their newborn's nutrition outcomes.[206]

The education system, including pre-schools, primary schools and secondary schools, is an essential entry point to improve nutrition among children and adolescents aged 3–18 years.[207] The education system is a cost-effective platform that can serve as a foundation to foster positive life-long dietary choices and practices.[208] Nutritious school meals, micronutrient supplements for adolescents, school gardens, and nutrition education can improve nutrition

BOX 20
INTEGRATED PROGRAMMING TO IMPROVE SCHOOL MEALS IN NORTHERN THAILAND[209]

Located in the remote and mountainous areas of Northern Thailand is Wanaluang School in Mae Hong Son Province. The food and nutrition situation, especially for children under five years of age and of school age, is poor and is linked to poverty and socio- cultural factors like ethnicity that influence food habits and care practices.

The national government is allocating a budget of 13 THB (USD 0.42) per child per school day for school meals as per the national School Meal Policy. However, this amount is insufficient to provide adequate and nutritious meals. The Integrated Highland Livelihood Development Programme was launched to address the budget and nutrient gap. It aims to expand school gardens by providing modest material inputs to the targeted schools – vegetable seeds, fruit saplings, chicks and ducks, a pig, catfish fingerlings, materials for fencing and construction of cages and small gardening implements, as well as pipes and other materials to improve access to water. Technical assistance and capacity strengthening to more effectively use those inputs were also provided. Nutrition was emphasized through trainings on healthy diets that targeted teachers, parents and health officials, complemented by community training. The topics covered basic food groups and their functions, meal planning, food safety and the specialized nutritional needs of school-aged children.

Two years after the project finished, Wanaluang School has expanded the school garden activities. With increasing yield and additional income from selling surpluses, the school started to engage in other activities such as hydroponic gardening and egg production. Two key elements made major contributions to this success story. First, solving the problem of access to water removed the major constraint to food production. Second, strong political leadership by the school headmaster, with support from the teachers, made the production of nutritious foods and healthy diets a core component of the school activities and curriculum.The spill over effect of sales and income creation from surplus production ensured that not only the school but also the larger community was able to benefit, hence creating an incentive for continued implementation and expansion of activities.

among girls, break the intergenerational cycle of malnutrition and incentivize girls to attend school longer.[210]

In Asia and the Pacific, school-based interventions have the potential to reach over 670 million children and adolescents, with 52 million children attending pre-schools, 284 million children attending primary schools, and 343 million enrolled in lower- and upper-secondary schools as of 2018. Eighty-three percent of girls in Eastern Asia and the Pacific and 74 percent of girls in Southern Asia attend lower-secondary schools. The proportion of girls attending schools declines with age, despite government efforts to encourage continued school participation. Nonetheless, schools remain an important option to reach a large number of boys and girls, in particular, before they become parents.[211]

For young children aged 3–5 years, pre-school attendance offers an opportunity to complement essential nutrition interventions delivered by the health system, such as immunization, deworming, micronutrient supplementation, and screening of nutrition status and integrated counselling. The Disease Control Priorities Network's recently published Disease Control Priority 3[212] recommends interventions during two important phases. The first is during the adolescent growth spurt (10–14 years) when substantial changes place commensurate demands on good diet and health. The second is during the adolescent growth and consolidation phase (15–19 years) when new responses are needed to support brain maturation, intense social engagement and emotional control.[213]

According to the Fill the Nutrient Gap analysis conducted in nine countries in Asia, the nutrient requirements of an adolescent girl and a lactating woman are the most expensive diets in the household. These diets account for up to 30 percent of the cost of a nutritious diet for the

CASE STUDY 6
MOVING FROM SCHOOL FEEDING TO NATIONAL INTEGRATED SCHOOL NUTRITION PROGRAMMES IN BHUTAN[214]

Improving the nutritional status of Bhutanese school children, who make up 25 percent of the total population of the country, has been a top priority of the Royal Government of Bhutan. The National Health Promotion Strategic Plan (NHPSP) 2015-2023 emphasizes strengthening the existing School Health and Nutrition Programmes and is based on a whole-school approach that engages not just students and staff but also the broader community, including parents and the private sector.The Ministry of Education is now transitioning from a school feeding programme into a national school nutrition programme that places an increased focus on achieving nutritional outcomes for school children in addition to educational goals. Specific aspects of this integrated approach include:

- design of nutritious school meals through the use of a digital platform that balances the most nutrition-rich menu at the lowest cost and with the highest proportion of local food;
- links between schools and local farmer organizations to provide fresh, local and nutritious ingredients;
- improvement of school hygiene and food safety infrastructure;
- adjustment and updates of the school health and nutrition curriculum and development of a digital and interactive game-based learning platform;
- development of a digital monitoring and reporting system that integrates nutrition, health and education data;
- comprehensive social behaviour change communication (SBCC) that aims to improve dietary and physical habits of school children, in line with the recently introduced initiative by the Prime Minister called "Healthy Drukyul" – building a healthy Bhutan.

These school health and nutrition initiatives are linked with other government health policies and programmes, such as the Ministry of Education's school feeding programme to address thiamine deficiency through the introduction of fortified rice.

entire household. This is a larger share than the diet of an adult man, and disproportionately higher than their shares in a household energy-adequate only diet. This reflects the heightened and specific nutritional requirements of adolescence, a time when a girl is undergoing rapid growth and beginning menstruation. School-based interventions targeting adolescent girls could reduce the cost of adequate nutrition for households. In Pakistan, Sri Lanka and Myanmar, multiple micronutrient tablets and iron and folic acid supplements could reduce household costs between 10 and 40 percent, and fortified school meals in Sri Lanka and Myanmar could reduce the household cost by 20 to 27 percent. This highlights the significance of appropriate interventions for adolescents.

Several school-based nutrition interventions and frameworks exist that promote healthy diets and dietary practices and address the multiple burdens of malnutrition.[215] School-based interventions should be comprehensive, with interventions at the individual level for dietary intake and practices and at the school, home and community levels for creating healthy food environments.

Most interventions are targeted towards the primary-school level, while insufficient investments are made in the secondary-school levels to address adolescent nutrition and wellbeing. Despite the rapid increase in overweight and obesity among school-aged children and adolescents, schools remain an underused arena for promoting healthy diets.[216] Most countries reported efforts to integrate health and nutrition education into the school curriculum, but there are only limited interventions that focus on healthy diets through the provision of nutritious school meals, individual behaviour change, establishing school gardens or regulating and establishing a conducive in-school environment.[217]

BOX 21
COVID-19 IMPACT ON EDUCATION SYSTEMS

As of July 2020, governments in over 143 countries are implementing nation-wide school closures as a result of the COVID-19 pandemic, affecting over 1.1 billion (67.6 percent) learners worldwide.[218] In Asia and the Pacific, school closures affect over 220 million students. School closures impact children's education and prevent them from accessing critical health and nutrition services, including receiving daily iron and folic acid supplements, immunizations and nutritious school meals. Globally, 346 million children are missing out on school meals, and at least 98 million are in the Asia–Pacific region. In many food insecure contexts, this represents one-third or more of children's nutritional intake. School closures could potentially have adverse impacts on children's health and nutrition status.[219]

To protect the health and nutritional well-being of children, the United Nations System Standing Committee on Nutrition joint statement on nutrition in the context of the COVID-19 pandemic in Asia and the Pacific,[220] calls on governments in the region to continue providing assistance to school-aged children. It recommends that while schools are closed, governments should continue to provide guidance to school staff, parents and children on the importance of safe and healthy diets, hygiene and physical activity for school-aged children. Where possible, school meal programmes should continue using alternative transfer modalities, including cash transfers and food deliveries to homes.

In addition to engaging with individuals and the school environment to support and promote healthy diets, school-based interventions can have an even larger impact on families and communities. Interventions could include advocacy for supportive policies, including restrictions on advertising food and beverages to school children, legislation on food taxes and subsidies, integration of nutrition and physical activity into school policy, and monitoring of sales and advertisements of unhealthy foods and beverages in the vicinity of schools.[221]

All evidence highlights the need to expand coverage of school-based interventions in the region, with increased attention on the requirements of adolescents in secondary school, and use the opportunity that the education platform has to improve maternal and child diets in the immediate and long run. The potential benefits of school-based nutrition programmes are maximized when they are designed as multi-sectoral interventions and integrated into broader national social protection systems, leveraging existing and potential synergies with safety nets and agricultural development programmes.[222]

2.8 CONCLUSIONS

This year's report shows that the Asia and Pacific region, even before COVID-19, and similar to the rest of the world, was off track to achieve the SDG and WHA nutrition targets (see Part 1). Although the magnitude of the deterioration is not known, the COVID-19 pandemic and its associated economic contraction has undoubtedly worsened food security and nutrition through its impacts on the overall economy, food systems, health systems, WASH systems and education systems. Social protection has responded and played an important role in mitigating the damage, but the response has not fully compensated for all the problems. It is now essential to take action, as only ten years remain to address these challenges and bring about needed change for the most vulnerable populations.

The success in some countries to curb malnutrition and food insecurity stems from comprehensive policies and political will. It is insufficient to focus on single sector interventions and policies, like food, or agriculture inputs, or water and sanitation, or health services alone. Rather, it is crucial to focus on a combination of these different services and provisions for the most

vulnerable populations, as the underlying causes of malnutrition and food insecurity are multi-dimensional and complex. They require an integrated and well-coordinated response, as illustrated in Part 2 of this report.

Each of the five systems discussed in part 2 makes an essential contribution to the improvement of maternal and child diets. Many countries already implement a variety of interventions that are tailored to this exact purpose, managed and implemented one system at a time. The effectiveness of a single system approach varies across countries. However, maternal and child diets can be improved more successfully and sustainably by implementing the contributions from multiple systems in an integrated and coordinated manner.

The policy prioritization of maternal and child diets in particular, and food security and nutrition in general, needs political will, commitment and leadership to mobilize the different stakeholders to work together on an integrated approach, and to ensure the necessary resources are allocated and used in a transparent manner in order to ensure accountability. Furthermore, applying national policies and strategies in local and community settings is complex and requires strong support from the national level for capacity building and adaptation to local contexts.

Finally, to make the most efficient use of scarce resources, it is important to invest in the most cost-effective and impactful interventions to improve maternal and child diets. This requires regular data collection and improved data management systems, as well as analysis of those data to assess and document progress. Information systems across different sectors and ministries should make efforts to align their indicators, frequency and scope of data collection. Comparison with the experience of other countries and regions can also provide insights to support decision making.

The combination of all these efforts will contribute to achieving the SDG and WHA targets and support the active promotion of healthy maternal and child diets. ■

NOTES

NOTES TO PART 1

1 Malnutrition: An abnormal physiological condition caused by inadequate, unbalanced or excessive consumption of macronutrients and/or micronutrients. Malnutrition includes undernutrition (child stunting and wasting and vitamin and mineral deficiencies) as well as overweight and obesity. Micronutrients – Include vitamins and minerals and are required in very small (micro) but specific amounts. Vitamins and minerals in foods are necessary for the body to grow, develop and function properly and they are essential for our health and well-being. Our bodies require a number of different vitamins and minerals, each of which has a specific function in the body and must be supplied in different, sufficient amounts. Multiple burden of malnutrition- The coexistence of forms of undernutrition (child stunting and wasting and vitamin and mineral deficiencies) with overweight and obesity in the same country, community, household or individual. **United Nations.** 2015. *The Sustainable Development Goals.* [online]. New York. [Cited 18 November 2020]. https://www.un.org/sustainabledevelopment/hunger/; **Food and Agriculture Organization of the United Nations (FAO), International Fund for Agricultural Development (IFAD), United Nations Children's Fund (UNICEF), World Food Programme (WFP) and World Health Organization (WHO).** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome. https://doi.org/10.4060/ca9692en

2 **WHO.** 2014. *Global Nutrition Targets 2025, Policy Brief Series* [online]. Geneva. [Cited 18 November 2020]. https://www.who.int/nutrition/publications/globaltargets2025_policybrief_overview/en/

3 2020 Global Nutrition Report: Action on equity to end malnutrition. Bristol, UK: Development Initiatives. https://doi.org/10.4060/ca9692en

4 **WHO.** 2013. *Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020. Geneva; WHO. 2014. Global Targets 2025: To improve maternal, infant and young child nutrition* [online]. Geneva. [Cited 18 November 2020]. https://www.who.int/nutrition/global-target-2025/en/

5 **International Monetary Fund (IMF).** 2020. *Global Outlook October 2020* [online]. [Cited 2 December 2020]. https://www.imf.org/en/Publications/WEO/Issues/2020/09/30/world-economic-outlook-october-2020

6 **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome. https://doi.org/10.4060/ca9692en

7 Southern Asia includes Afghanistan, India, Bangladesh, Pakistan, Sri Lanka, Nepal and Iran.

8 South-Eastern Asia includes Timor-Leste, the Philippines, Cambodia, Myanmar, Thailand, Indonesia, Viet Nam and Malaysia.

9 Oceania includes the Solomon Islands, Vanuatu, Fiji, Kiribati and Samoa.

10 Eastern Asia includes PR China, DPR Korea and Mongolia.

11 **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome. https://doi.org/10.4060/ca9692en

12 The definition of Asia and the Pacific used in this publication corresponds to FAO's regional office structure. Thus, Asia and the Pacific comprises Eastern, South-eastern and Southern Asia, and Oceania. Central and Western Asia are excluded. "Pacific" when used alone indicates Oceania excluding Australia and New Zealand.

13 **Headey, D., Heidkamp, R., Osendarp, S., Ruel, M., Scott, N., Black, R., Shekar, M., Bouis, H., Flory, A., Haddad, L. & Walker, N.** 2020. Impacts of COVID-19 on childhood malnutrition and nutrition-related mortality. *The Lancet,* 396(10250): 519-521 [online]. [Cited 18 November 2020]. https://doi.org/10.1016/S0140-6736(20)31647-0

14 Extreme poverty defined as living on less than USD1.90 per day.

15 **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome. https://doi.org/10.4060/ca9692en

16 **McGovern, M.E., Krishna, A., Aguayo, V. M. & Subramanian, SV.** 2017. A review of the evidence linking child stunting to economic outcomes. *International Journal of Epidemiology,* 46(4): 1171-1191 [online]. [Cited 18 November 2020]. https://doi.org/10.1093/ije/dyx017; **Hoddinott, J., Alderman, H., Behrman, J.R. & Horton, S.** 2013. The economic rationale for investing in stunting reduction. Maternal and Child Nutrition [online]. [Cited 18 November 2020]. https://doi.org/10.1111/mcn.12080

17 **Popkin, B.B., Corvalan, C., & Grummer-Strawn, L.M.** Dynamics of the Double Burden of Malnutrition and the Changing Nutrition Reality. *The Lancet,* 395, no. 10217 (2020): 65–74 [online]. [Cited 18 November 2020]. https://doi.org/https://doi.org/10.1016/S0140-6736(19)32497-3.

NOTES

18 **Blankenship, J., Rudert, C., & Aguayo, V.M.** 2020. Triple trouble: Understanding the burden of child undernutrition, micronutrient deficiencies, and overweight in Eastern Asia and the Pacific. *Maternal and Child Nutrition,* 16(S2):e12950 [online]. [Cited 18 November 2020]. https://doi.org/10.1111/mcn.12950

19 **UNICEF, WHO, International Bank for Reconstruction and Development & The World Bank (WB).** 2020. *Levels and trends in child malnutrition: Key Findings of the 2020 Edition of the Joint Child Malnutrition Estimates.* Geneva: World Health Organization; 2020. (available at https://www.who.int/publications/i/item/jme-2020-edition)

20 2020 Global Nutrition Report: Action on equity to end malnutrition. Bristol, UK: Development Initiatives.

21 2020 Global Nutrition Report: Action on equity to end malnutrition. Bristol, UK: Development Initiatives.

22 **UNICEF, WHO, International Bank for Reconstruction and Development & The World Bank (WB).** 2020. *Levels and trends in child malnutrition: Key Findings of the 2020 Edition of the Joint Child Malnutrition Estimates.* Geneva: World Health Organization; 2020. Licence: CC BY-NC-SA 3.0 IGO. (available at https://www.who.int/publications/i/item/jme-2020-edition)

23 **FAO, UNICEF, WFP & WHO.** 2019. *Placing Nutrition at the Centre of Social Protection. Asia and the Pacific Regional Overview of Food Security and Nutrition 2019.* Bangkok. (available at http://www.fao.org/documents/card/en/c/ca7062en/)

24 **WHO.** 2020. *Global Action Plan on Child Wasting: a framework for action to accelerate progress in preventing and managing child wasting and the achievement of the Sustainable Development Goals* [online]. Geneva. [Cited 18 November 2020]. https://www.who.int/publications/m/item/global-action-plan-on-child-wasting-a-framework-for-action

25 **Victora, C.G., Adair, L., Fall, C., Hallal, P.C., Martorell, R., Richter, L. & Sachdev, H,S.** 2008. Maternal and Child Undernutrition: Consequences for Adult Health and Human Capital. *The Lancet,* 371(9609):340–357 [online]. [Cited 19 November 2020]. https://doi.org/10.1016/S0140-6736(07)61692-4

26 **WHO.** 2020. *Child growth standards* [online]. Geneva. [Cited 19 November 2020]. https://www.who.int/childgrowth/en/

27 **FAO, UNICEF, WFP & WHO.** 2019. *Placing Nutrition at the Centre of Social Protection. Asia and the Pacific Regional Overview of Food Security and Nutrition 2019.* Bangkok. (available at http://www.fao.org/documents/card/en/c/ca7062en/)

28 **WHO.** 2013. *Global action plan for the prevention and control of non-communicable diseases 2013–2020* [online]. Geneva. [Cited 19 November 2020]. http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf?ua=1

29 Note that many Asian countries use lower BMI cut-off points for measuring overweight and obesity. This is consistent with research showing that the negative health effects of overweight/obesity begin at a lower value of BMI in Asian populations. **Ma, R.C.W. & Chan, J.C.N.** 2013. Type 2 diabetes in East Asians: similarities and differences with populations in Europe and the United States. *Annals of the New York Academy of Sciences,* 1281(1): 64–91 [online]. [Cited 19 November 2020]. https://doi.org/10.1111/nyas.12098; **Wen, C.P., Cheng, T.Y.D., Tsai, S.P., Chan, H.T., Hsu, H.L., Hsu, C.C. & Eriksen, M.P.** 2009. Are Asians at greater mortality risk for being overweight than Caucasians? Redefining obesity for Asians. *Public Health Nutrition,* 12(4): 497–506 [online]. [Cited 19 November 2020]. https://doi.org/10.1017/S1368980008002802; **WHO expert consultation.** 2004. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *The Lancet,* 363(1): 157–163 [online]. [Cited 19 November 2020]. https://doi.org/10.1016/S0140-6736(03)15268-3; **Deurenberg-Yap, M., Chew, S.K. & Deurenberg, P.** 2002. Elevated body fat percentage and cardiovascular risks at low body mass index levels among Singaporean Chinese, Malays and Indians. *Obesity Reviews,* 3, 209–215 [online]. [Cited 19 November 2020]. https://doi.org/10.1046/j.1467-789X.2002.00069.x; **Mahajan, K. & Batra, A.** 2017. Obesity in adult Asian Indians – the ideal BMI cut-off. *Indian Heart Journal,* 70: 194–196 [online]. [Cited 19 November 2020]. https://doi.org/10.1016/j.ihj.2017.11.020

30 **WHO.** 2013. *Global action plan for the prevention and control of non-communicable diseases 2013–2020* [online]. Geneva. [Cited 19 November 2020]. http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf?ua=1

31 **Afshin, A., Forouzanfar, M. H., Reitsma, M. B., Sur, P., Estep, K., Lee, A., Marczak, L., et al.** 2017. Health Effects of Overweight and Obesity in 195 Countries over 25 Years. *The New England Journal of Medicine, 377,* 13-27 [online]. [Cited 19 November 2020]. https://www.nejm.org/doi/full/10.1056/nejmoa1614362

32 **Asian Development Bank Institute (ADBI). Helble, M., Sato, A., eds.** 2018. *Wealthy but Unhealthy Overweight and Obesity in Asia and the Pacific: Trends, Costs, and Policies for Better Health.* Tokyo, Japan. (available at https://www.adb.org/sites/default/files/publication/432536/adbi-wealthy-unhealthy-overweight-obesity-asia-pacific.pdf)

33 **Popkin, B.M., Adair, L.S. & Shu, W.N.** 2012. Global Nutrition Transition and the pandemic of obesity in developing Countries. *Nutrition Reviews,* 70(1):3-21[online]. [Cited 19 November 2020]. https://doi.org/10.1111/j.1753-4887.2011.00456.x

34 Countries of the Western Pacific from the WHO include Cambodia, China, Cook Islands, Fiji, Kiribati, Lao People's Democratic Republic, Malaysia, Marshall Islands, Federated States of Micronesia, Mongolia, Nauru, Niue, Palau, Papua New Guinea, The Philippines, Republic of Korea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Viet Nam.

35 **World Health Organization Regional Office for the Western Pacific (WHO WPRO).** 2017. *Overweight and obesity in the Western Pacific Region.* Manila, Philippines. (available at https://apps.who.int/iris/handle/10665/255475)

36 **WHO WPRO.** 2017. *Overweight and obesity in the Western Pacific Region.* Manila, Philippines. (available at https://apps.who.int/iris/handle/10665/255475)

37 The eight food groups are: 1) grains, roots and tubers; 2) legumes and nuts; 3) dairy products; 4) flesh foods, including meat, poultry and fish; 5) eggs; 6) vitamin A-rich fruits and vegetables; 7) other fruits and vegetables; and 8) breastmilk. Working Group on Infant and Young Child Feeding Indicators. 2006. Developing and validating simple indicators of dietary quality and energy intake of infants and young children in developing countries. Washington, DC, Food and Nutrition Technical Assistance (FANTA).

38 Middle Africa in reference to UNICEF regional office comprises Angola, Cameroon, Central African Republic, Chad, Congo, DRC, Equatorial Guinea, Gabon, Sao Tome and Principe.

39 **UNICEF.** 2019. *Infant and young child feeding* [online]. New York. [Cited 19 November] https://data.unicef.org/topic/nutrition/infant-and-young-child-feeding/

40 **WHO.** 2005. *Guiding principles for feeding non-breastfed children 6-24 Months of Age.* Geneva, Switzerland. (available at https://www.who.int/maternal_child_adolescent/documents/9241593431/en/); **Pan American Health Organization (PAHO).** 2003. Guiding principles for complementary feeding of a breastfed child. Washington, DC. USA. (available at https://www.who.int/maternal_child_adolescent/documents/a85622/en/)

41 2020 Global Nutrition Report: Action on equity to end malnutrition. Bristol, UK: Development Initiatives.

42 **Headey, D., Hirvonen, K., & Hoddinott, J.** 2018. Animal Sourced Foods and Child Stunting. *American Journal of Agricultural Economics,* 100(5): 1302–1319 [online]. [Cited 19 November 2020]. https://doi.org/10.1093/ajae/aay053

43 Percentage of children 6–23 months of age who consumed egg and/or flesh foods during the previous day; **UNICEF.** 2020 *UNICEF Data* [online]. New York. [Cited 19 November 2020]. https://data.unicef.org/

44 Percentage of children 6–23 months of age who did not consume any fruits or vegetables during the previous day.

45 The NIPN is an international initiative of the European Commission with support from the United Kingdom Department for International Development and the Bill and Melinda Gates Foundation. There are nine participating countries: Bangladesh, Burkina Faso, Cote d'Ivoire, Ethiopia, Guatemala, Kenya, Lao PDR, Niger and Uganda.)

46 Samoa, Vanuatu, Sri Lanka, Pakistan, Myanmar, Solomon Islands, DPRK in 2020 Global Nutrition Report.

47 2020 Global Nutrition Report: Action on equity to end malnutrition. Bristol, UK: Development Initiatives.

48 **UNICEF.** 2020. *Breastfeeding safely during the COVID-19 pandemic* [online]. New York. [Cited 19 November 2020]. https://www.unicef.org/coronavirus/breastfeeding-safely-during-covid-19-pandemic

49 **WHO.** 2019. *Continued breastfeeding for healthy growth and development of children* [online]. Geneva. [Cited 19 November 2020]. https://www.who.int/elena/titles/continued_breastfeeding/en/

50 **Neves, P.A.R., Gatica-Domínguez, G., Rollins, N., Piwoz, E., Baker, P., Barros, A.J.D. & Victora, C.G.** 2020. Infant Formula Consumption Is Positively Correlated with Wealth, Within and Between Countries: A Multi-Country Study. *The Journal of Nutrition,* 150(4): 910–917 [online]. [Cited 19 November 2020]. https://doi.org/10.1093/jn/nxz327

51 **WHO.** 2017. Nutritional anaemias: tools for effective prevention and control. Geneva, Switzerland. (available at https://www.who.int/publications/i/item/9789241513067)

52 **Kafa, R.I.** 2012. *Iron status and factors influencing iron status of Solomon Islands women living in New Zealand: A thesis presented in the partial fulfillment of the requirements for the degree of Masters of Science (Human Nutrition)* [online]. Albany, New Zealand. [Cited 19 November 2020]. https://mro.massey.ac.nz/handle/10179/4718

53 **Balarajan, Y., Ramakrishnan, U., Özaltin, E., Shankar, A.H. & Subramanian, S.V.** 2011. Anaemia in low-income and middle-income countries. *The Lancet,* 378(9809): 2123–2135 [online]. [Cited 19 November 2020]. https://doi.org/10.1016/S0140-6736(10)62304-5

54 **Weatherall, D.J.** 2010. The inherited diseases of hemoglobin are an emerging global health burden. *Blood,* 115(22):4331-4336 [online]. [Cited 19 November 2020]. https://doi.org/10.1182/blood-2010-01-251348

55 **WHO.** 2014. *Comprehensive Implementation Plan for Maternal, Infant and Young Child Nutrition.* Geneva, Switzerland. (available at https://www.who.int/nutrition/publications/CIP_document/en/)

56 **WHO.** 2015. *The global prevalence of anaemia in 2011.* Geneva, Switzerland. (available at https://www.who.int/nutrition/publications/micronutrients/global_prevalence_anaemia_2011/en/)

57 **WHO.** 2015. *The global prevalence of anaemia in 2011.* Geneva, Switzerland. (available at https://www.who.int/nutrition/publications/micronutrients/global_prevalence_anaemia_2011/en/)

58 **WHO.** 2015. *The global prevalence of anaemia in 2011.* Geneva, Switzerland. (available at https://www.who.int/nutrition/publications/micronutrients/global_prevalence_anaemia_2011/en/)

59 **Pasricha, S.R., Drakesmith, H., Black, J., Hipgrave, D. & Biggs, B.A.** 2013. Control of iron deficiency anaemia in low- and middle-income countries. *Blood,* 121(14): 2607-2617 [online]. [Cited 19 November 2020]. https://doi.org/10.1182/blood-2012-09-453522

60 **Domellöf, M., Braegger, C., Campoy, C., Colomb, V., Decsi, T., Fewtrell, M., Hojsak, I., Mihatsch, W., Molgaard, C., Shamir, R., Turck, D. & van Goudoever, J.** 2014. Iron requirements of infants and toddlers. *Journal of Pediatric Gastroenterology and Nutrition,* 58(1):119-129 [online]. [Cited 19 November 2020]. https://journals.lww.com/jpgn/Fulltext/2014/01000/Iron_Requirements_of_Infants_and_Toddlers.28.aspx

NOTES TO PART 2

1 The definition of Asia and the Pacific used for this statistic includes Western Asia and Central Asia. **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome. https://doi.org/10.4060/ca9692en

2 **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome. https://doi.org/10.4060/ca9692en

3 **FAO & WHO.** 2019. *Sustainable healthy diets: guiding principles.* Rome. (available at https://doi.org/10.4060/CA6640EN)

4 **WHO.** 2018. *Healthy diet factsheet.* Geneva, Switzerland. (available at www.who.int/who-documents- detail/healthy-diet-factsheet394)

5 **Global Panel on Agriculture and Food Systems for Nutrition (GLOPAN).** 2016. *Food systems and diets: facing the challenges of the 21st century.* London. (available at http://glopan.org/sites/default/files/ForesightReport.pdf)

6 A child meets minimum dietary diversity if they have consumed at least five of eight food groups in the previous 24 hours.# A child who does not consume a diverse diet is unlikely to be meeting their micronutrient requirements.

7 **Black, R.E., Victora, C.G., Walker, S., Bhutta, Z, A., Christian, P., de Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., Martorell, R. & Uauy, R.** 2013. Maternal and Child Undernutrition and Overweight in Low-Income and Middle-Income Countries. *The Lancet,* 382(9890): 427–451[online]. [Cited 19 November 2020]. https://doi.org/10.1016/S0140-6736(13)60937-X

8 **WHO.** 2020. Global Health Observatory (GHO) data – NCD mortality and morbidity [online]. Geneva. [Cited 20 May 2020]. www.who.int/gho/ncd/mortality_morbidity/en

9 **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome. https://doi.org/10.4060/ca9692en

10 **WHO.** 2020. *Fact sheets, Healthy diet* [online]. Geneva. [Cited 19 November 2020]. https://www.who.int/news-room/fact-sheets/detail/healthy-diet

11 **WHO.** 2016. WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience. Geneva, Switzerland. (available at https://www.who.int/publications/i/item/9789241549912)

12 **Keats, E.C., Haider, B.A., Tam, E. & Bhutta, Z.A.** 2019. Multiple-micronutrient supplementation for women during pregnancy. *Cochrane Database of Systematic Reviews,* 3(3): CD004905 [online]. [Cited 19 November 2020]. https://doi.org/10.1002/14651858.CD004905.pub6

13 **Headey, D., Cho, A., Goudet, S., Oketch, J.A. & Than, Z.O.** 2020. *The impacts of the COVID-19 crisis on maternal and child malnutrition in Myanmar: What to expect, and how to protect.* Myanmar SSP Policy Note 14. Washington, DC, International Food Policy Research Institute (IFPRI). (available at https://doi.org/10.2499/p15738coll2.133814)

14 **Bhagowalia, P., Menon, P., Quisumbing, A.R. & Soundararajan, V.** 2010. *Unpacking the Links Between Women's Empowerment and Child Nutrition Evidence Using Nationally Representative Data From Bangladesh.* Annual conference paper. Denver, Agricultural and Applied Economics Association. (available at https://ageconsearch.umn.edu/record/61273?ln=en); **Harris-Fry, H.A., Paudel, P., Shrestha, N., Harrisson, T., Beard, B.J., Jha, S., Shrestha, B.P., Manandhar, D.S., Costello, A.M.D.L., Cortina-Borja, M. & Saville, N.M.** 2018. Status and determinants of intra-household food allocation in rural Nepal. *European Journal of Clinical Nutrition, 72*: 1524–1536 [online]. [Cited 19 November 2020]. https://doi.org/10.1038/s41430-017-0063-0

15 **Harris-Fry, H., Shrestha, N., Costello, A. & Saville, N.M.** 2017. Determinants of Intra-Household Food Allocation between Adults in South Asia – a Systematic Review. *International Journal for Equity in Health,* 16, article number 107 [online]. [Cited 19 November 2020] https://doi.org/10.1186/s12939-017-0603-1

16 **UNICEF, Alive and Thrive, GAIN.** 2020. *Draft Report Landscape review of policy and programme action to improve young children's diets in South Asia.* Kathmandu, Nepal, UNICEF Regional Office for South Asia. (forthcoming)

17 **Harris-Fry, H., Shrestha, N., Costello, A. & Saville, N.M.** 2017. Determinants of Intra-Household Food Allocation between Adults in South Asia – a Systematic Review. *International Journal for Equity in Health,* 16, article number 107 [online]. [Cited 19 November 2020] https://doi.org/10.1186/s12939-017-0603-1

18 **Alive & Thrive.** 2018. *Desk Review on Maternal, Infant, and Young Child Nutrition and Nutrition-Sensitive Practices in Indonesia.* Jakarta, Indonesia. (available at https://www.aliveandthrive.org/wp-content/uploads/2018/10/Indonesia-MIYCN-Desk-Review-2018.pdf); **UNICEF, Alive and Thrive, GAIN.** 2020. *Draft Report Landscape review of policy and programme action to improve young children's diets in South Asia.* Kathmandu, Nepal, UNICEF Regional Office for South Asia.

19 **Alive & Thrive.** 2018. *Desk Review on Maternal, Infant, and Young Child Nutrition and Nutrition-Sensitive Practices in Indonesia.* Jakarta, Indonesia. (available at https://www.aliveandthrive.org/wp-content/uploads/2018/10/Indonesia-MIYCN-Desk-Review-2018.pdf); **Save the Children, Rural Development Agency (RDA), United States Agency for International Development (USAID) Nurture Project.** 2016. *A Literature Review: Maternal, Infant and Young Child Nutrition and WASH Practices in Lao PDR.*; **Februhartanty, J.** 2012. Desk Review Studies on Factors affecting complementary feeding practices and maternal nutrition in Indonesia. Report.; **Gordoncillo NP, Talavera MTM, Barba CVC, Quimbo MAT.** 2017. Knowledge and use of complementary food fortification with multiple micronutrient powders in selected communities in the Philippines. *Malaysian Journal of Nutrition,* 23(2):191–198 [online]. [Cited 19 November 2020]. https://nutriweb.org.my/mjn/publication/23-2/c.pdf

20 **WFP.** 2017. *Fill the Nutrient Gap Pakistan: Summary Report* [online]. [Cited 02 December 2020]. https://docs.wfp.org/api/documents/WFP-0000040001/download/; **WFP.** 2017. *Fill the Nutrient Gap Lao PDR: Summary Report* [online]. [Cited 24 November 2020]. https://www.wfp.org/publications/2017-fill-nutrient-gap-lao-pdr; **WFP.** 2018. *Fill the Nutrient Gap Philippines: Summary Report* [online]. [Cited 24 November 2020]. https://www.wfp.org/publications/2018-fill-nutrient-gap-philippines-summary-report; **WFP.** 2017. *Fill the Nutrient Gap Cambodia: Summary Report* [online]. [Cited 24 November 2020]. https://docs.wfp.org/api/documents/WFP-0000070325/download/; **WFP.** 2019. *Fill the Nutrient Gap Bangladesh: Concise Report* [online]. [Cited 24 November 2020]. https://docs.wfp.org/api/documents/WFP-0000114508/download/

21 **Goudet, S., Lwin, M.H., & Griffiths, P.L.** 2020. Exploring Food Security and Nutrition among Young Women in the Formally Regulated Garment Sector of Myanmar. *Annals of the New York Academy of Sciences,* 1468(1):35-54 [online]. [Cited 24 November 2020]. https://doi.org/10.1111/nyas.14370

NOTES

22 **Pries, A.M., Huffman, S.L., Champeny, M., Adhikary, I., Benjamin, M., Coly, A.N., Diop, E.H.I., Mengkheang, K., Sy, N.Y., Dhungel, S., Feeley, A., Vitta, B. & Zehner, E.** 2017. Consumption of Commercially Produced Snack Foods and Sugar-Sweetened Beverages during the Complementary Feeding Period in Four African and Asian Urban Contexts. *Maternal & Child Nutrition,* 13(S2):e12412 [online]. [Cited 24 November 2020]. https://doi.org/10.1111/mcn.12412; **Sanghvi, T., Seidel, R., Baker, J. & Jimerson, A.** 2017. Using Behavior Change Approaches to Improve Complementary Feeding Practices. *Maternal & Child Nutrition,* 13(S2):e12406 [online]. [Cited 24 November 2020]. https://doi.org/10.1111/mcn.12406; **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 [online]. [Cited 24 November 2020]. https://doi.org/10.1016/S0140-6736(17)32129-3

23 **Sanghvi, T., Seidel, R., Baker, J. & Jimerson, A.** 2017. Using Behavior Change Approaches to Improve Complementary Feeding Practices. *Maternal & Child Nutrition,* 13(S2):e12406 [online]. [Cited 24 November 2020]. https://doi.org/10.1111/mcn.12406

24 **Hirvonen, K., Hoddinott, J., Minten, B. & Stifel, D.** 2017. Children's diets, nutrition knowledge, and access to markets. *World Development,* 95: 303–315 [online. [Cited 24 November 2020]. https://www.sciencedirect.com/science/article/pii/S0305750X17300682; **Nguyen, P.H., Frongillo, E. A., Kim, S. S., Zongrone, A. A., Jilani, A., Tran, L. M., Sanghvi, T. & Menon, P.** 2019. Information diffusion and social norms are associated with infant and young child feeding practices in Bangladesh. *The Journal of Nutrition,* 149 (11): 2034–2045 [online]. [Cited 24 November 2020]. https://doi.org/10.1093/jn/nxz167

25 **Kim, S.S., Nguyen, P.H., Tran, L.M., Alayon, S., Menon, P & Frongillo, E.A.** 2019. Different Combinations of Behavior Change Interventions and Frequencies of Interpersonal Contacts Are Associated with Infant and Young Child Feeding Practices in Bangladesh, Ethiopia, and Viet Nam. *Current Developments in Nutrition,* 4(2):nzz140 [online]. [Cited 25 November 2020]. https://doi.org/10.1093/cdn/nzz140; **Sanghvi, T., Jimerson, A., Hajeebhoy, N., Zewale. & Nguyen, G.H.** 2013. Tailoring Communication Strategies to Improve Infant and Young Child Feeding Practices in Different Country Settings. *Food and Nutrition Bulletin,* 34(3):S169-180 [online]. [Cited 25 November 2020]. https://doi.org/10.1177/15648265130343S204.

26 Farmer Nutrition Schools are semi-structured get-togethers in villages, focusing on basic information and interactive discussions about nutrition, targeting pregnant and nursing women and mothers whose children are under two years of age. Nutrition Knowledge centers are called Farmer Nutrition Schools based on project experience in Lao PDR. **WFP.** 2020. *Farmer Nutrition School Booklet* [online]. [Cited 25 November 2020]. https://docs.wfp.org/api/documents/WFP-0000113996/download/

27 **SPRING.** 2017. *Bangladesh: Farmer Nutrition School Cohort Study. Sustainability of Improved Practices Following Graduation. Arlington, VA: Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project* [online]. [Cited 25 November 2020]. https://www.spring-nutrition.org/sites/default/files/publications/reports/spring_bd_farmer_nutrition_cohort.pdf

28 **Menon, P., Nguyen, P.H., Saha, K.K., Khaled, A., Sanghvi, T., Baker, J., Afsana, K., Haque, R., Frongillo, E.A., Ruel, M.T. & Rawat, R.** 2016. Combining Intensive Counseling by Frontline Workers with a Nationwide Mass Media Campaign Has Large Differential Impacts on Complementary Feeding Practices but Not on Child Growth: Results of a Cluster-Randomized Programme Evaluation in Bangladesh. *The Journal of Nutrition,* 146(10):2075-2084 [online]. [Cited 25 November 2020]. https://doi.org/10.3945/jn.116.232314

29 **Save the Children, USAID.** 2019. NOURISH Project: Endline Survey Report [online]. Phnom Pehn. [Cited 25 November 2020]. https://resourcecentre.savethechildren.net/node/16675/pdf/NOURISH%20Project%20Endline%20Survey%20Report%20April%202019%20Final.pdf

30 **Sawyer, S.M., Reavley, N., Bonell, C. & Patton. G.C.** 2017. *Child and Adolescent Health and Development. 3rd edition: Chapter 21 Platforms for delivering adolescent health actions.* Washington, DC. The International Bank for Reconstruction and Development, The World Bank. (available at https://www.ncbi.nlm.nih.gov/books/NBK525275/)

31 **Basnet, S., Frongillo, E.A., Nguyen, P.H., Moore, S. & Arabi, M.** Associations of maternal resources with care behaviours differ by resource and behaviour. *Maternal & Child Nutrition,* 16(3):e12977 [online]. [Cited 25 November 2020]. https://doi.org/10.1111/mcn.12977; **Senarath, U., Godakandage, S.S., Jayawickrama, H., Siriwardena, I. & Dibley, M.J.** 2011. Determinants of inappropriate complementary feeding practices in young children in Sri Lanka: Secondary data analysis of demographic and health survey 2006–2007. *Maternal & Child Nutrition,* 8(s1):60–77 [online]. [Cited 25 November 2020]. https://doi.org/10.1111/j.1740-8709.2011.00375.x; **Monterrosa, E.C., Pelto, G.H., Frongillo, E.A. & Rasmussen, K.M.** 2012. Constructing maternal knowledge frameworks. How mothers conceptualize complementary feeding. *Appetite,* 59(2):377-384, https://doi.org/10.1016/j.appet.2012.05.032

32 **FAO.** 2018. *Sustainable Food Systems – Concepts and Framework*. Rome. (available at http://www.fao.org/3/ca2079en/CA2079EN.pdf); **Global Panel.** 2016. *Food systems and diets: Facing the challenges of the 21stcentury.* London. (available at https://www.ifpri.org/publication/food-systems-and-diets-facing-challenges-21st-century)

33 **Fan. S.G.** 2019. The intersection between climate change, food, and migration: Transforming agri-food systems for human and planetary health. *Asia & the Pacific Policy Society,* 8 July 2019. (available at https://www.policyforum.net/the-intersection-between-climate-change-food-and-migration/)

34 **Fan. S.G.** 2019. The intersection between climate change, food, and migration: Transforming agri-food systems for human and planetary health. *Asia & the Pacific Policy Society,* 8 July 2019. (available at https://www.policyforum.net/the-intersection-between-climate-change-food-and-migration/)

35 **FAO & WHO.** 2019. Inter-Regional meeting to promote healthy diets through the informal food sector. Bangkok. (available at http://www.fao.org/asiapacific/events/detail-events/en/c/1614/); **London Borough of Tower Hamlets & NHS Tower Hamlet.** 2011. *Tackling the takeways: A new policy to address Fast-foods outlets in Tower Hamlets* [online]. [Cited 25 November 2020]. https://www.towerhamlets.gov.uk/Documents/Planning-and-building-control/Strategic-Planning/Local-Plan/Evidence-base/A5-Takeways.pdf; **Foresight.** 2007. *Tackling Obesities: Future choices – Obesenogenic Environments – Evidence Review.* Government Office. London. (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/295681/07-735-obesogenic-environments-review.pdf)

36 **FAO & WHO.** 2019. Inter-Regional meeting to promote healthy diets through the informal food sector. Bangkok. (available at http://www.fao.org/asiapacific/events/detail-events/en/c/1614/)

37 **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome, FAO. (available at https://doi.org/10.4060/ca9692en)

38 Theoretically, increased imports could supply all of the increase needed to eradicate malnutrition. However, given the large size of the region, it is unlikely that production in other regions can meet all of the increased consumption in Asia and the Pacific.

39 **Kasem, S. & Thapa, G.B.** 2011. Crop diversification in Thailand: Status, determinants, and effects on income and use of inputs. *Land Use Policy,* 28(3): 618–628 [online]. [Cited 25 November 2020]. https://doi.org/10.1016/j.landusepol.2010.12.001

40 **Alviola, P.A., Cataquiz, G.C. & Francisco, S.** 2002. Global competitiveness of rice-vegetable farming systems: Implication to Philippine food security. Paper presented at the International Rice Research Conference, 16–20 September 2002, Beijing, China; **Kasem, S. & Thapa, G.B.** 2011. Crop diversification in Thailand: Status, determinants, and effects on income and use of inputs. *Land Use Policy,* 28(3): 618–628 [online]. [Cited 25 November 2020]. https://doi.org/10.1016/j.landusepol.2010.12.001; **Maertens, M., Minten, B. & Swinnen, J.** 2012. Modern food supply chains and development: Evidence from horticulture export Sectors in Sub-Saharan Africa. *Development Policy Review,* 30(4): 473–497 [online]. [Cited 25 November 2020]. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-7679.2012.00585.x

41 **Zhong, F.** 2014. *Impact of demographic change on agricultural mechanization: Farmers' adaptation and implication for public policy.* Paper presented at the NSD/IFPRI workshop on mechanization and agricultural transformation in Asia and Africa. 18-19 June 2014. (available at https://www.slideshare.net/IFPRIDSG/impact-of-demographic-change-on-agricultural-mechanization-farmers-adaptation-and-implication-for-public-policy).

42 **Dawe, D.** 2006. *Rice trade liberalization will benefit the poor.* International Rice Research Institute.; **Dawe, D.C., Moya, P.F. & Casiwan, C.B., eds.** 2006. *Why does the Philippines import rice? Meeting the challenge of trade liberalization.* pp. 43–52. International Rice Research Institute & Philippine Rice Research Institute. (available athttp://books.irri.org/9712202097_content.pdf)

NOTES

43 For the Pacific, the common indigenous/traditional crops used for young child feeding are sweet potato, taro, yam, banana (both cooking and ripe ready-to-eat varieties), pawpaw and coconut (young coconut flesh and water). Island cabbage or Hibiscus Manihot, is a commonly eaten green leave across the Pacific and also used for feeding young children.

44 **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome, FAO. (available at https://doi.org/10.4060/ca9692en)

45 **FAO.** 2018. *Food systems for healthy diets. Policy Guidance Note,* 12 [online]. Rome. [Cited 25 November 2020] http://www.fao.org/3/CA2797EN/ca2797en.pdf

46 **Reardon, T., Echeverria, R., Berdegué, J., Minten, B., Liverpool-Tasie, S., Tschirley, D. & Zilbermane, D.** 2019. Rapid transformation of food systems in developing regions: Highlighting the role of agricultural research and innovations. *Agricultural Systems,* 172:47-59 [online]. [Cited 25 November 2020]. https://doi.org/10.1016/j.agsy.2018.01.022

47 **WHO, UNICEF & International Baby Foods Action Network (IBFAN).** 2020. *2020 Status Report on the National Implementation of the Code of Marketing of Breast-milk Substitutes* [online]. [Cited 03 December 2020]. https://www.who.int/news-room/events/detail/2020/05/28/default-calendar/online-launch-2020-status-report-on-the-national-implementation-of-the-code-of-marketing-of-breast-milk-substitutes

48 **WHO.** 2018. *Marketing of Breast-Milk Substitutes: National Implementation of the International Code, Status Report 2018.* Geneva, Switzerland. (available at https://www.who.int/nutrition/publications/infantfeeding/code_report2018/en/)

49 Substantially aligned with the Code signifies that countries have enacted legislation or adopted regulations, decrees or other legally binding measures encompassing a significant set of provisions of the Code and subsequent WHA resolutions (score of 75–100).

50 Moderately aligned with the Code signifies that countries have enacted legislation or adopted regulations, decrees or other legally binding measures encompassing a majority of provisions of the Code and subsequent WHA resolutions (score of 50–<75).

51 Some provisions of the Code signifies that countries have enacted legislation or adopted regulations, directives, decrees or other legally binding measures covering less than half of the provisions of the Code or subsequent WHA resolutions (score of <50).

52 No legal measures signify that countries have taken no action or have implemented the Code only through voluntary agreements or other non-legal measures (includes countries that have drafted legislation but not enacted it).

53 **FAO.** 2018. *Food systems for healthy diets. Policy Guidance Note,* 12 [online]. Rome. [Cited 25 November 2020] http://www.fao.org/3/CA2797EN/ca2797en.pdf

54 **FAO.** Forthcoming. *Innovations in Asian food value chains and their implications for smallholder farmers.* Bangkok, Thailand.

55 **Asia Pacific Food Industry.** 2018. IGD: Growth of Asia's Online Grocery. *Asia Pacific Food Industry* [online]. [Cited 26 November 2020]. https://apfoodonline.com/igd-growth-of-asias-online-grocery/

56 **Swinburn, B.A., Kraak, V., Allender, S., Atkinds, V.J., Baker, P.I, et al.** 2019. The Global Syndemic of Obesity, Undernutrition, and Climate Change: The Lancet Commission report. *The Lancet,* 393(10173):791-846 [online]. [Cited 26 November 2020]. https://pubmed.ncbi.nlm.nih.gov/30700377/

57 **Swinburn, B.A., Kraak, V., Allender, S., Atkinds, V.J., Baker, P.I, et al.** 2019. The Global Syndemic of Obesity, Undernutrition, and Climate Change: The Lancet Commission report. *The Lancet,* 393(10173):791-846 [online]. [Cited 26 November 2020]. https://pubmed.ncbi.nlm.nih.gov/30700377/; **Cairns, G., K. Angus, and G. Hastings.** 2009. *The extent nature and effects of food promotion to children: a review of the evidence to December 2008. Prepared for the World Health Organization* [online]. [Cited 26 November 2020]. https://www.who.int/dietphysicalactivity/publications/marketing_evidence_2009/en/

58 **Raj, A., Snowdon, W. & Drauna, M.** 2013. Exposure to advertising of "Junk Food"in the Pacific Islands. *Fiji Journal of Public Health,* 2(1):36-37 [online]. [Cited 26 November 2020]. http://health.gov.fj/PDFs/Fiji%20Journal%20of%20Public%20Health%20Vol2Issue1.pdf; **Hope, S.F., Snowdon, W., Carey, L.B. & Robinson, P.** 2013. "Junk food" promotion to children and adolescents in Fiji. *Fiji journal of public health,* 2(1):27-35 [online]. [Cited 26 November 2020]. http://health.gov.fj/PDFs/Fiji%20Journal%20of%20Public%20Health%20Vol2Issue1.pdf

59 **WHO WPRO.** 2020. *Regional action framework on protecting children from the harmful impact of food marketing in the Western Pacific.* Manila. (available at https://iris.wpro.who.int/handle/10665.1/14501); Naidu, J. 2019. Waiqainabete: Protecting Children From The Harmful Impact Of Food Marketing In The Pacific. FIJI Sun, 11 October 2019. (available at https://fijisun.com.fj/2019/10/11/protecting-children-from-the-harmful-impact-of-food-marketing/) **Thow, A.M., G. Waqa., Browne, J., Phillips, T., McMichael, C., Ravuvu, A., Tutuo, J. & Gleeson, D.** 2020. The political economy of restricting marketing to address the double burden of malnutrition: two case studies from Fiji. *Public Health Nutrition,* page 1-10 [online]. [Cited 26 November 2020]. https://doi.org/10.1017/S1368980020000440

60 **Kelly, B., King, L., Jamiyan, B., Chimedtseren, N., Bold, B., et al.** 2014. Density of outdoor food and beverage advertising around schools in Ulaanbaatar (Mongolia) and Manila (The Philippines) and implications for policy. *Critical Public Health,* 25(3):280-290 [online]. [Cited 26 November 2020]. https://doi.org/10.1080/09581596.2014.940850

61 **Reeve, E, Thow, A.M., Bell, C., Engelhardt, K., Gamolo-Naliponguit, E.C., Go, J.J. & Sacks, G.** 2018. Implementation lessons for school food policies and marketing restrictions in the Philippines: a qualitative policy analysis. *Globalization and Health,* 14:Article number 8 [online]. [Cited 26 November 2020]. https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-017-0320-y

62 **Neo, P.** 2019. Food and beverage e-commerce: The future for retail, logistics, payment and personalization. Food navigator-Asia. 26 July 2019. (available at https://www.foodnavigator-asia.com/Article/2019/07/25/Food-and-beverage-e-commerce-The-future-for-retail-logistics-payment-and-personalisation)

63 **Neo, P.** 2019. Food and beverage e-commerce: The future for retail, logistics, payment and personalization. Food navigator-Asia. 26 July 2019. (available at https://www.foodnavigator-asia.com/Article/2019/07/25/Food-and-beverage-e-commerce-The-future-for-retail-logistics-payment-and-personalisation)

64 **IGD.** 2017. China's online grocery market to more than double by 2020. IGD. 25 Aril 2017. (available at https://www.igd.com/articles/article-viewer/t/igd-chinas-online-grocery-market-to-more-than-double-by-2020/i/16582)

65 **Neo, P.** 2019. Food and beverage e-commerce: The future for retail, logistics, payment and personalization. Food navigator-Asia. 26 July 2019. (available at https://www.foodnavigator-asia.com/Article/2019/07/25/Food-and-beverage-e-commerce-The-future-for-retail-logistics-payment-and-personalisation)

66 **Ara, G., Khanam, M., Rahman, A.S., Islam, Z., Farhad, S., et al.** 2019. Effectiveness of micronutrient-fortified rice consumption on anaemia and zinc status among vulnerable women in Bangladesh. *PLoS One.* 14(1): e0210501 [online]. [Cited 26 November 2020]. https://doi.org/10.1371/journal.pone.0210501

67 **Ara, G., Khanam, M., Rahman, A.S., Islam, Z., Farhad, S., et al.** 2019. Effectiveness of micronutrient-fortified rice consumption on anaemia and zinc status among vulnerable women in Bangladesh. *PLoS One.* 14(1): e0210501 [online]. [Cited 26 November 2020]. https://doi.org/10.1371/journal.pone.0210501

68 **FAO.** Forthcoming. *Innovations in Asian food value chains and their implications for smallholder farmers.* Bangkok, Thailand.

69 Functional foods are foods containing supplements or ingredients that are intended to improve health by aiding specific bodily functions in addition to being nutritious.

70 Food and drink designed to exclude one or more ingredients to which at least some consumers can be allergic or intolerant, such as gluten-free products.

71 **Asia Pacific Food Industry.** 2019. Asia Leads Growth for Organic Food Market. *Asia Pacific Food Industry.* 4 January 2019. https://apfoodonline.com/industry/asia-leads-growth-for-organic-food-market/

72 **FAO.** Forthcoming. *Innovations in Asian food value chains and their implications for smallholder farmers.* Bangkok, Thailand.

73 **Food Industry Asia (FIA).** 2020. *FIA* [online]. Singapore. [Cited 26 November 2020]. www.foodindustry.asia

74 **Global Pulse Confederation (GPC).** 2018. India: Pulses in Public Distribution System (PDS). *GPC,* 30 September 2018. (available at https://globalpulses.com/post/india-pulses-in-public-distribution-system)

75 **FAO, UNICEF, WFP & WHO.** 2019. *Placing Nutrition at the Centre of Social Protection. Asia and the Pacific Regional Overview of Food Security and Nutrition 2019.* Bangkok. (available at http://www.fao.org/documents/card/en/c/ca7062en/)

76 **Iwamoto, K.** 2019. Southeast Asian sugar taxes: Bitter pills for better health. *NIKKEI Asia,* 12 March 2019. (available at https://asia.nikkei.com/Spotlight/Asia-Insight/Southeast-Asian-sugar-taxes-Bitter-pills-for-better-health); and https://www.thestar.com.my/news/nation/2019/07/01/sugar-tax-kicks-off-todaycustoms-sweetened-beverage-importers-must-submit-lab-reports

NOTES

77 **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome, FAO. (available at https://doi.org/10.4060/ca9692en); and Obesity Evidence Hub. 2020. Countries that have implemented taxes on sugar-sweetened beverages (SSBs) [online]. [Cited 26 November 2020] https://www.obesityevidencehub.org.au/collections/prevention/countries-that-have-implemented-taxes-on-sugar-sweetened-beverages-ssbs

78 In East Asia Pacific – Minimum acceptable diet in children 6-23 months was 30 percent and only 12 percent of children 62-3 months in Southern Asia met MAD. While 23 and 55 percent of children 6-23 months in EAP and SA have zero consumption of fruits and vegetables. **UNICEF.** 2019. *The State of the World's Children 2019: Children, food and nutrition: Growing well in a changing world.* New York. (available at https://www.unicef.org/reports/state-of-worlds-children-2019)

79 **WHO.** 2018. *Global nutrition policy review 2016-2017: country progress in creating enabling policy environments for promoting healthy diets and nutrition.* Geneva. (available at https://www.who.int/publications/i/item/9789241514873)

80 WHO South-East Asia Region: Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, Timor-Leste

81 **Ara, G., Khanam, M., Rahman, A.S., Islam, Z., Farhad, S., et al.** 2019. Effectiveness of micronutrient-fortified rice consumption on anaemia and zinc status among vulnerable women in Bangladesh. *PLoS One.* 14(1): e0210501 [online]. [Cited 26 November 2020]. https://doi.org/10.1371/journal.pone.0210501

82 **WHO.** 2018. *Global nutrition policy review 2016-2017: country progress in creating enabling policy environments for promoting healthy diets and nutrition.* Geneva. (available at https://www.who.int/publications/i/item/9789241514873)

83 WHO Western Pacific Region: Australia, Brunei Darussalam, Cambodia, China, Cook Islands, Fiji, Japan, Kiribati, Lao People's Democratic Republic, Malaysia, Marshall Islands, Micronesia (Federated States of), Mongolia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Philippines, Republic of Korea, Samoa, Singapore, Solomon Islands, Tonga, Tuvalu, Vanuatu, Viet Nam.

84 The nutrient adequate diet includes, per person, the average energy needs and the recommended intake for protein, fat, four minerals and nine vitamins. The modelled household varies by country, but typically includes one breastfed child aged 12–23 months, one school-aged child (6–7 years), one adolescent girl (14–15 years), one lactating woman and one adult man. **WFP.** 2019. *Fill the Nutrient Gap* [online]. Rome. [Cited 27 April 2020]. https://www.wfp.org/publications/2020-fill-nutrient-gap)

85 **WFP.** *Fill the Nutrient Gap, 8 countries in Asia and Pacific* [online]. [Cited 03 December 2020]. https://www.wfp.org/publications/2020-fill-nutrient-gap

86 Wawa Mum is a chickpea based lipid-based nutrient supplements (LNS), used for targeted nutrition treatment programs. **Khan, GN., Kureishy, S., Ariff, S., Rizvi, A., Sajid, M., Garzon, C., et al.** 2020. Effect of lipid-based nutrient supplement—Medium quantity on reduction of stunting in children 6-23 months of age in Sindh, Pakistan: A cluster randomized controlled trial. *PLoS ONE,*15(8): e0237210 [online]. [Cited 15 September 2020]. https://doi.org/10.1371/journal.pone.0237210; **WFP.** 2020. WFP Specialized Nutritious Foods Sheet. (available at https://www.wfp.org/specialized-nutritious-food)

87 **WFP.** *Fill the Nutrient Gap, 8 countries in Asia and Pacific* [online]. [Cited 03 December 2020]. https://www.wfp.org/publications/2020-fill-nutrient-gap

88 **Garcia-Casal, M.N., Mowson, R., Rogers, L. & Grajeda, R.** 2019. Risk of excessive intake of vitamins and minerals delivered through public health interventions: objectives, results, conclusions of the meeting, and the way forward. *Annals of the New York Academy of Sciences,* 1446 (1):5–20 [online]. [Cited 26 November 2020]. https://pubmed.ncbi.nlm.nih.gov/30291627/

89 **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome. https://doi.org/10.4060/ca9692en

90 **FAO, IFAD, UNICEF, WFP & WHO.** 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome. https://doi.org/10.4060/ca9692en

91 **Otten, J.J., Hellwig, J.P. & Meyers, L.D., eds.** 2006. Dietary reference intakes: the essential guide to nutrient requirements. Washington, DC, The National Academy Press. (available at www.nal.usda.gov/sites/default/files/fnic_ uploads/DRIEssentialGuideNutReq.pdf)

92 **WHO.** 2020. Healthy diet. In: *World Health Organization* [online]. Geneva, Switzerland. [Cited 15 April 2020]. www.who.int/who-documents-detail/healthy-diet-factsheet394; **WHO.** 2020. Dietary recommendations – Nutritional requirements. In: *World Health Organization* [online]. Geneva, Switzerland. [Cited 20 April 2020]. www.who.int/nutrition/topics/nutrecomm/en; **WHO.** 2020. Five keys to a healthy diet [online]. Geneva, Switzerland. [Cited 24 April 2020]. www.who.int/nutrition/topics/5keys_healthydiet/en

93 Note that the cost of diets is computed using purchasing power parity exchange rates, not market exchange rates.

94 Eating this diet not only ensures adequate calories (as per the energy sufficient diet above), but also adequate nutrients through a balanced mix of carbohydrates, protein, fat, essential vitamins and minerals, within the upper and lower bounds needed to prevent deficiencies and avoid toxicity.

95 Eating this diet ensures adequate calories and nutrients (as per the energy sufficient and nutrient adequate diets above), but also includes a more diverse intake of foods from several different food groups. This diet is intended to meet all requirements of nutrient adequacy and to help prevent malnutrition in all its forms, as well as non-communicable diseases (NCDs).

96 Eating this diet ensures adequate calories for energy balance for work each day. This is achieved using only the basic starchy staple for a given country: e.g. maize, porridge or rice only.

97 **Herforth, A., Bai, Y., Venkat, A., Mahrt, K., Ebel, A. & Masters, M.** 2020. *Cost and affordability of nutritious diets across countries. Technical background paper for the State of Food Security and Nutrition in the World 2020.* FAO, Rome. (available at https://sites.tufts.edu/candasa/files/2020/08/HerforthEtAl_BackgroundPaperForSOFI_FAO-ESA-TechnicalSeries_14Aug2020.pdf)

98 This statement is based on calculations using official national consumer price index statistics through August or September, depending upon the country. For more details, and an earlier version of this analysis. **FAO.** 2020. *Impacts of coronavirus on food security and nutrition in Asia and the Pacific: building more resilient food systems.* Bangkok. https://doi.org/10.4060/ca9473en

99 **Gentilini, U.** 2020. *Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures* [online]. [Cited 03 June 2020]. https://www.ugogentilini.net/

100 **FAO.** 2020. *Rapid assessment: State of Food and Agricultural Among Herders & Farmers in Mongolia during COVID-19.* Ulaanbaatar, Mongolia

101 **World Bank.** 2020. Monitoring COVID-19 Impacts on Households in Mongolia [online]. Washington, DC. [Cited 26 November 2020]. https://www.worldbank.org/en/country/mongolia/brief/monitoring-covid-19-impacts-on-households-in-mongolia?cid=SHR_SitesShareTT_EN_EXT

102 **WHO.** 2020. Nutrient requirements and dietary guidelines [online]. Geneva. [Cited 25 April 2020]. https://www.who.int/nutrition/publications/nutrient/en/

103 Although the cost of complementary feeding for a child 6–23 months would be the lowest in the hypothetical household shown in figure 37, the nutrient density required would be significant. For example, per 100 kcal of food, a breast-fed infant of 6–8 months of age needs nine times as much iron and four times as much zinc as an adult man; **Dewey, K.G.** 2013. The challenge of meeting nutrient Needs of infants and young children during the period of complementary feeding: An evolutionary perspective. *The Journal of Nutrition,* 143(12): 2050–2054 [online]. [Cited 26 November 2020]. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3827643/

104 The lowest cost of a nutritious diet was estimated for a model household of five members selected to represent nutritionally vulnerable target groups in the population. The model household includes a breastfeeding child of 12–23 months, a child of 6–7 years, an adolescent girl of 14–15 years, a breastfeeding adult woman and an adult man. **WFP.** 2019. *Fill the Nutrient Gap – Timor Leste Final Report* [online]. Rome. [Cited 25 April 2020]. https://docs.wfp.org/api/documents/WFP-0000112181/download/?_ga=2.22703547.1617540208.1604927175-1415211437.1604927175.

105 **WFP.** 2019. *Fill the Nutrient Gap. Timor-Leste* [online]. Rome. [Cited 26 November 2020]. https://www.wfp.org/publications/fill-nutrient-gap-timor-leste

106 For adolescent girls, the higher cost of the nutritious diet was mainly driven by the elevated need for calcium, iron, and vitamin A to fuel growth and compensate nutrients lost through menstruation.

107 **WFP.** 2019. *Fill the Nutrient Gap. Timor-Leste* [online]. Rome. [Cited 26 November 2020]. https://www.wfp.org/publications/fill-nutrient-gap-timor-leste

108 **WFP.** *Fill the Nutrient Gap, 8 countries in Asia and Pacific* [online]. [Cited 03 December 2020]. https://www.wfp.org/publications/2020-fill-nutrient-gap

NOTES

109 **Darmon, N. & Drewnowski, A.** 2015. Contribution of food prices and diet cost to socioeconomic disparities in diet quality and health: a systematic review and analysis. *Nutrition Reviews*, 73(10):643-660 [online]. [Cited 26 November 2020]. https://pubmed.ncbi.nlm.nih.gov/26307238/; **Headey, D. & Alderman, H.** 2019. The Relative Caloric Prices of Healthy and Unhealthy Foods Differ Systematically across Income Levels and Continents. *The Journal of Nutrition Community*, 149(11):2020-2033 [online]. [Cited 26 November 2020]. https://doi.org/10.1093/jn/nxz158

110 **WFP.** *Fill the Nutrient Gap, 8 countries in Asia and Pacific* [online]. [Cited 03 December 2020]. https://www.wfp.org/publications/2020-fill-nutrient-gap

111 **Headey, D. & Alderman, H.** 2019. The Relative Caloric Prices of Healthy and Unhealthy Foods Differ Systematically across Income Levels and Continents. *The Journal of Nutrition Community*, 149(11):2020-2033 [online]. [Cited 26 November 2020]. https://doi.org/10.1093/jn/nxz158

112 **Herforth, A., Bai, Y., Venkat, A., Mahrt, K., Ebel, A. & Masters, M.** 2020. *Cost and affordability of nutritious diets across countries. Technical background paper for the State of Food Security and Nutrition in the World 2020.* FAO, Rome. (available at https://sites.tufts.edu/candasa/files/2020/08/HerforthEtAl_BackgroundPaperForSOFI_FAO-ESA-TechnicalSeries_14Aug2020.pdf)

113 **Prüss-Üstün, A., Corvalán, C.F.** 2006. *Preventing disease through healthy environments: towards an estimate of the environmental burden of disease.* Geneva, WHO. (available at file:///Users/tianyiliu/Downloads/9241593822_eng.pdf)

114 **Caufield et al.** 2004. *Undernutrition as an underlying cause of child deaths associated with diarrhea, pneumonia, malaria, and measles.* July 2004. American Journal of Clinical Nutrition 80(1):193-8, DOI: 10.1093/ajcn/80.1.193

115 **Grantham-McGregor, S., Cheung, Y.B., Cueto, S., Glewwe, P., Richter, L., et al.** 2007. Developmental Potential in the First 5 Years for Children in Developing Countries. *The Lancet*, 369(9555): 60–70 [online]. [Cited 26 November 2020]. https://doi.org/https://doi.org/10.1016/S0140-6736(07)60032-4; **Victora, C.G., Adair, L., Fall, C., Hallal, P.C., Martorell, R., et al.** 2008. Maternal and Child Undernutrition: Consequences for Adult Health and Human Capital. *The Lancet*, 371(9609):340–57 [online]. [Cited 26 November 2020]. https://doi.org/10.1016/S0140-6736(07)61692-4

116 **Mills, J.E. & Cumming, O.** 2016. *The Impact of Water, Sanitation and Hygiene on Key Health and Social Outcomes: Review of Evidence.* Sustentation and Hygiene Applied Research for Equity (share) & UNICEF. (available at https://www.unicef.org/wash/files/The_Impact_of_WASH_on_Key_Social_and_Health_Outcomes_Review_of_Evidence.pdf); **Caufield, L.E., de Onis, M., Blossner, M. & Black, R.E.** 2004. Undernutrition as an underlying cause of child deaths associated with diarrhea, pneumonia, malaria, and measles. *The American Journal of Clinical Nutrition*, 80(1):193-198 [online]. [Cited 26 November 2020]. https://doi.org/10.1093/ajcn/80.1.193

117 **Sima, L.C. & Elimelech, M.** 2013. Modeling risk categories to predict the longitudinal prevalence of childhood diarrhoea in Indonesia. *The American Society of Tropical Medicine and Hygiene*, 89(5):884–891 [online]. [Cited 26 November 2020]. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3820331/

118 **Fahim, S.M., Das. S., Sanin, K.I., Gazi, M.A., Mahfuz, M., Islam, M.M. & Ahmed, T.** 2018. Association of fecal markers of environmental enteric dysfunction with zinc and iron status among children at first two years of life in Bangladesh. *American Journal of Tropical Medicine and Hygiene*, 99(2):489–494 [online]. [Cited 27 November 2020]. https://europepmc.org/article/med/29893201

119 **UNICEF & WHO.** 2020. *Joint Monitoring Programme (JMP) global database* [online]. New York. [Cited 10 November 2020]. https://washdata.org/data/household#!/dashboard/new. Additional details on methods: https://washdata.org/monitoring/methods

120 **Schmied, V. et al.** 2020. *Feeding My Child: How mothers experience nutrition across the world. A Companion Report to The State of the World's Children 2019.* Sydney, Western Sydney University and UNICEF. https://doi.org/10.26183/5597-mw05

121 **UNICEF.** 2020. *UNICEF Programming Guidance: Improving Young Children's Diets During the Complementary Feeding Period.* New York. (available at https://www.unicef.org/nutrition/files/Complementary_Feeding_Guidance_2020_portrait_ltr_web2.pdf)

122 **FAO.** 2020. *Webinar on Management of Fresh Markets in COVOD-19 times. Presentation.* Bangkok. FAO Regional office for Asia and the Pacific.

123 **UNICEF.** 2020. *UNICEF Programming Guidance: Improving Young Children's Diets During the Complementary Feeding Period.* New York. (available at https://www.unicef.org/nutrition/files/Complementary_Feeding_Guidance_2020_portrait_ltr_web2.pdf)

124 **UNICEF.** 2019. *Nutritional care of pregnant women in South Asia: Policy environment and programme action.* UNICEF Regional Office for South Asia, Kathmandu, Nepal. (available at https://www.unicef.org/rosa/media/7836/file/Nutritional%20care%20of%20pregnant%20women%20in%20S.Asia_Policy%20environment%20and%20programme%20action_Final.pdf.pdf); **UNICEF, Alive and Thrive, GAIN.** 2020. Landscape review of policy and programme action to improve young children's diets in South Asia. Kathmandu, Nepal, UNICEF Regional Office for South Asia. (forthcoming)

125 **UNICEF.** 2021. *Regional Report on Maternal Nutrition and Complementary Feeding.* Bangkok, Thailand. UNICEF East Asia and Pacific Regional Office (forthcoming).

126 **UNICEF.** 2019. *Nutritional care of pregnant women in South Asia: Policy environment and programme action.* UNICEF Regional Office for South Asia, Kathmandu, Nepal. (available at https://www.unicef.org/rosa/media/7836/file/Nutritional%20care%20of%20pregnant%20women%20in%20S.Asia_Policy%20environment%20and%20programme%20action_Final.pdf.pdf); **UNICEF.** 2021. *Regional Report on Maternal Nutrition and Complementary Feeding.* Bangkok, Thailand. UNICEF East Asia and Pacific Regional Office (forthcoming); **UNICEF, Alive and Thrive, GAIN.** 2020. *Landscape review of policy and programme action to improve young children's diets in South Asia.* Kathmandu, Nepal, UNICEF Regional Office for South Asia. (forthcoming)

127 **Thow, A.M., Karn, S., Devkota, M.D., Rahseed, S., Roy, S.K., Suleman Y., et al.** 2017. Opportunities for strengthening infant and young child feeding policies in South Asia: Insights from the SAIFRN policy analysis project. *BMC Public Health,* 404(2017) [online]. [Cited 27 November 2020]. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-017-4336-2; **Torlesse, H. & Raju, D.** 2018. *Feeding of Infants and Young Children in South Asia. Policy Research Working Paper 8655.* Washington, DC, World Bank.

128 **WHO.** 2016. *WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience.* Geneva. (available at https://apps.who.int/iris/bitstream/handle/10665/250796/9789241549912-eng.pdf?sequence=1)

129 **UNICEF.** 2019. *Nutritional care of pregnant women in South Asia: Policy environment and programme action.* UNICEF Regional Office for South Asia, Kathmandu, Nepal. (available at https://www.unicef.org/rosa/media/7836/file/Nutritional%20care%20of%20pregnant%20women%20in%20S.Asia_Policy%20environment%20and%20programme%20action_Final.pdf.pdf)

130 **UNICEF.** 2021. *Regional Report on Maternal Nutrition and Complementary Feeding.* Bangkok, Thailand, UNICEF East Asia and Pacific Regional Office. (forthcoming).

131 **WHO.** 2018. *Global nutrition policy review 2016-2017: country progress in creating enabling policy environments for promoting healthy diets and nutrition.* Geneva. (available at https://www.who.int/publications/i/item/9789241514873).

132 **UNICEF.** 2021. *Regional Report on Maternal Nutrition and Complementary Feeding.* Bangkok, Thailand, UNICEF East Asia and Pacific Regional Office. (forthcoming).

133 **WHO.** 2016. *Recommendations on antenatal care for a positive pregnancy experience* [online]. [Cited 03 December 2020]. https://www.who.int/publications/i/item/9789241549912; **WHO.** 2018. *Guidelines on counselling of women to improve breastfeeding practices* [online]. [Cited 03 December 2020]. https://www.who.int/nutrition/publications/guidelines/counselling-women-improve-bf-practices/en/; **UNICEF.** 2020. *Programme guidance on improving young children's diets during the complementary feeding period* [online]. [Cited 03 December 2020]. https://mcusercontent.com/fb1d9aabd6c823bef179830e9/files/12900ea7-e695-4822-9cf9-857f99d82b6a/UNICEF_Programming_Guidance_Complementary_Feeding_2020_Portrait_FINAL.pdf

134 **UNICEF, Alive and Thrive, GAIN.** 2020. Landscape review of policy and programme action to improve young children's diets in South Asia. Kathmandu, Nepal, UNICEF Regional Office for South Asia (forthcoming).

135 **UNICEF, Alive and Thrive, GAIN.** 2020. Landscape review of policy and programme action to improve young children's diets in South Asia. Kathmandu, Nepal, UNICEF Regional Office for South Asia (forthcoming).

136 **UNICEF.** 2020. *Regional Report on Maternal Nutrition and Complementary Feeding.* Bangkok, Thailand, UNICEF East Asia and Pacific Regional Office. (forthcoming).

137 **UNICEF.** 2020. *Regional Report on Maternal Nutrition and Complementary Feeding.* Bangkok, Thailand, UNICEF East Asia and Pacific Regional Office. (forthcoming).

138 **UNICEF, Alive and Thrive, GAIN.** 2020. Landscape review of policy and programme action to improve young children's diets in South Asia. Kathmandu, Nepal, UNICEF Regional Office for South Asia (forthcoming).

139 **UNICEF.** 2021. *Regional Report on Maternal Nutrition and Complementary Feeding.* Bangkok, Thailand, UNICEF East Asia and Pacific Regional Office. (forthcoming).

NOTES

140 **Ministry of Health, Nepal; New ERA & ICF.** 2017. *Nepal Demographic and Health Survey 2016.* Kathmandu, Nepal: Ministry of Health, Nepal. (available at https://www.dhsprogram.com/pubs/pdf/fr336/fr336.pdf)

141 **Ministry of Health and Population, Nepal, New ERA, UNICEF, European Union (EU); USAID & Centers for Disease Control and Prevention (CDC).** 2018. *Nepal National Micronutrient Status Survey, 2016.* Kathmandu, Nepal: Ministry of Health and Population, Nepal. (available at https://www.unicef.org/nepal/reports/nepal-national-micronutrient-status-survey-report-2016)

142 WHO recommends point-of-use fortification of foods with iron-containing micronutrient powders in infants and young children aged 6–23 months, as well as pre-school and school-aged children aged 2–12 years in populations where the prevalence of anaemia in school-aged children is 20 percent or higher, to improve iron status and reduce anaemia. **WHO.** 2016. *WHO guideline: Use of multiple micronutrient powders for point-of-use fortification of foods consumed by infants and young children aged 6–23 months and children aged 2–12 years.* Geneva. (available at https://www.who.int/publications/i/item/9789241549943)

143 **Locks, L.M., Dahal, P., Pokharel, R., Joshi, N., Paudyal, N., et al.** 2018. Infant and Young Child Feeding (IYCF) Practices Improved in 2 Districts in Nepal during the Scale-Up of an Integrated IYCF and Micronutrient Powder Programme. *Current Developments in Nutrition,* 2(6):nzy019 [online]. [Cited 29 November 2020]. https://doi.org/10.1093/cdn/nzy019

144 **Locks, L.M, Dahal, P., Pokharel, R., Joshi, N., Paudyal, N., et al.** 2018. Changes in growth, anaemia, and iron deficiency among children aged 6–23 months in two districts in Nepal that were part of the post-pilot scale-up of an integrated infant and young child feeding and micronutrient powder intervention. *Maternal and Child Nutrition,* 15(2):e12693. https://doi.org/10.1111/mcn.12693

145 Adjusted prevalence ratio APR [95 percent CI]: 0.79 [0.65, 0.96], P = 0.02.

146 APR [95 percent CI]: 0.75 [0.58, 0.95], P = 0.02.

147 The programme resulted in a large reduction in anaemia among children who consumed at least 30 sachets of MNP. However, poor coverage and compliance produced no significant reductions in anaemia in the overall population. This suggests the need to improve coverage, compliance and programme quality. **UNICEF.** 2018. *The Evolution of the Infant and Young Child Feeding-Multiple Micronutrient Powder (IYCF-MNP) Baal Vita Programme in Nepal.* UNICEF Nepal, Kathmandu.

148 There are various micronutrient supplementation programmes for children 6–59 months of age, like high-dose vitamin A supplementation in settings where vitamin A deficiency is a public health problem. Daily iron supplementation is recommended in infants and young children aged 6–23 months, living in settings where anaemia is highly prevalent (40 percent or higher) for preventing iron deficiency and anaemia. WHO also recommends point-of-use fortification of foods with iron-containing micronutrient powders for infants and young children aged 6–23 months, and for pre-school and school-age children aged 2–12 years where the prevalence of anaemia in school-age children is 20 percent or higher. Lipid-based nutrient supplements (LNS) also benefit children with acute undernutrition. Various micronutrients are recommended for women during pregnancy, including iron and folic acid supplements. In populations with low dietary calcium intake, daily calcium supplementation is recommended, and vitamin A supplementation is only recommended for pregnant women in areas where vitamin A deficiency is a severe public health problem. **UNICEF.** 2018. *Coverage at a Crossroads: New directions for vitamin A supplementation programmes.* New York. (available at https://www.unicef.org/publications/index_102820.html)

149 **UNICEF.** 2018. *Coverage at a Crossroads: New directions for vitamin A supplementation programmes.* New York. (available at https://www.unicef.org/publications/index_102820.html)

150 **UNICEF.** 2018. *Coverage at a Crossroads: New directions for vitamin A supplementation programmes.* New York. (available at https://www.unicef.org/publications/index_102820.html)

151 **UNICEF.** 2019. *Nutritional care of pregnant women in South Asia: Policy environment and programme action.* UNICEF Regional Office for South Asia, Kathmandu, Nepal. (available at https://www.unicef.org/rosa/media/7836/file/Nutritional%20care%20of%20pregnant%20women%20in%20S.Asia_Policy%20environment%20and%20programme%20action_Final.pdf.pdf)

152 **UNICEF.** 2021. *Regional Report on Maternal Nutrition and Complementary Feeding.* Bangkok, Thailand, UNICEF East Asia and Pacific Regional Office. (forthcoming)

153 Acha Mum is a chickpea based LNS- Large Quantity, used for treatment of moderate acute malnutrition. Comes in 100 g sachets. Comparable to Plumpy 'Sup. WFP. WFP Specualized Nutritious Foods Sheet. (available at: https://documents.wfp.org/stellent/groups/public/documents/communications/wfp255508.pdf)

154 **UNICEF.** 2018. *New fish-based ready-to-use-therapeutic food to treat children with severe acute malnutrition in Cambodia* [online]. [Cited 29 November 2020]. https://www.unicef.org/eap/press-releases/new-fish-based-ready-use-therapeutic-food-treat-children-severe-acute-malnutrition

155 **Sri Lanka Thriposha Ltd.** 2020. Nutritional constituents of thriposha [online]. [Cited 29 November 2020]. http://www.thriposha.lk/thriposha-production/nutrient-content/

156 Social protection is a set of policies and programmes aimed at preventing and protecting all people against poverty, vulnerability and social exclusion, throughout their life cycle placing a particular emphasis on vulnerable groups. **International Labour Organization (ILO).** 2017. *World Social Protection Report 2017–19: Universal social protection to achieve the Sustainable Development Goals.* Geneva, Switzerland (available at: https://www.ilo. org/global/publications/books/WCMS_604882/lang--en/ index.htm).

157 **Ruel, M.R., Alderman, H. & Maternal and Child Nutrition Study Group.** 2013. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *The Lancet,* 382(9891):536-551 [online]. [Cited 29 November 2020]. https://doi.org/10.1016/S0140-6736(13)60843-0

158 **International Policy Centre for Inclusive Growth (IPC-IG) & UNICEF.** 2019. *Social Protection in Asia and the Pacific: Inventory of non-contributory programmes.* Brasília, International Policy Centre for Inclusive Growth. (available at https://ipcig.org/pub/eng/RR28_Social_Protection_in_Asia_and_the_Pacific_Inventory_of_non_contrib.pdf)

159 **FAO.** 2015. *Social Protection and Nutrition.* Rome. (available at http://www.fao.org/3/a-i4819e.pdf)

160 **Blankenship, J., Owen, J. & Villanueva, R.** 2020. *The Social Protection Pathways to Nutrition. A stock taking of evidence in Asia and the Pacific.* UNICEF East Asia and the Pacific – Policy working paper EAPWP/02/2020

161 **Philippine Institute for Development Studies (PIDS).** 2020. *Pantawid Pamilyang Pilipino Programme Third Wave Impact Evaluation (IE Wave 3): Regression Discontinuity Report.* Manila, PIDS; **Blankenship, J., Owen, J. & Villanueva, R.** 2020. *The Social Protection Pathways to Nutrition. A stock taking of evidence in Asia and the Pacific.* UNICEF East Asia and the Pacific – Policy working paper EAPWP/02/2020; **Ahmed, A., Quisumbing, A., Nasreen, M., Hoddinott, J. & Bryan, E.** 2009. *Comparing food and cash transfers to the ultra poor in Bangladesh.* IFPRI Research Monograph No. 163. Washington, DC, International Food Policy Research Institute (IFPRI).

162 **Popipanova, C., Samson, M. & Jitsuchon, S.** 2019. *Tackling the exclusion of poor and near-poor children from the Child Support Grant in Thailand: status quo and policy responses.* Bangkok, UNICEF; **World Bank.** 2014. *Philippines Conditional Cash Transfer Programme: impact evaluation 2012.* Washington, DC, World Bank. (available at http://hdl.handle.net/10986/13244); **Blankenship, J., Owen, J. & Villanueva, R.** 2020. *The Social Protection Pathways to Nutrition. A stock taking of evidence in Asia and the Pacific.* UNICEF East Asia and the Pacific – Policy working paper EAPWP/02/2020

163 **World Bank.** 2011. *Programme Keluarga Harapan: Main Findings from the Impact Evaluation of Indonesia's Pilot Household Conditional Cash Transfer Programme.* Jakarta, World Bank; **Glassman, A., Duran, D., Fleisher, L., Singer, D., Sturke, R., Angeles, G., Koblinsky, M., et al.** 2013. Impact of Conditional Cash Transfers on Maternal and Newborn Health. *Journal of Health, Population and Nutrition,* 31 (4 Suppl 2): S48-S66 [onlince]. [Cited 30 November 2020]. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4021703/; **Adhikari, T.P., Thapa, F.B., Tamrakar. S., Magar, P.B., Hagen-Zanker, J. & Babajanian, B.** 2014. *How does social protection contribute to social inclusion in Nepal? Evidence from the Child Grant in the Karnali Region.* London, Oversees Development Institute (ODI); **Tim Nasional Percepatan Penanggulangan Kemiskinan (TNP2K).** 2015. *Evaluating Long Term Impact of Indonesia's CCT Programme: Evidence from a Randomized Control Trial;* **Blankenship, J., Owen, J. & Villanueva, R.** 2020. *The Social Protection Pathways to Nutrition. A stock taking of evidence in Asia and the Pacific.* UNICEF East Asia and the Pacific – Policy working paper EAPWP/02/2020

164 **FAO.** 2015. *Social Protection and Nutrition.* Rome. (available at http://www.fao.org/3/a-i4819e.pdf)

165 **FAO, UNICEF, WFP & WHO.** 2019. *Placing Nutrition at the Centre of Social Protection. Asia and the Pacific Regional Overview of Food Security and Nutrition 2019.* Bangkok. (available at http://www.fao.org/documents/card/en/c/ca7062en/); **Blankenship, J., Owen, J. & Villanueva, R.** 2020. *The Social Protection Pathways to Nutrition. A stock taking of evidence in Asia and the Pacific.* UNICEF East Asia and the Pacific – Policy working paper EAPWP/02/2020

166 **Ahmed, A., Quisumbing, A., Nasreen, M., Hoddinott, J. & Bryan, E.** 2009. *Comparing food and cash transfers to the ultra poor in Bangladesh.* IFPRI Research Monograph No. 163. Washington, DC, International Food Policy Research Institute (IFPRI); **PIDS.** 2020. *Pantawid Pamilyang Pilipino Programme Third Wave Impact Evaluation (IE Wave 3): Regression Discontinuity Report.* Manila, PIDS

NOTES

167 **WFP.** *Fill the Nutrient Gap, 8 countries in Asia and Pacific* [online]. [Cited 03 December 2020]. https://www.wfp.org/publications/2020-fill-nutrient-gap

168 In Sri Lanka – Pregnant and lactating women monthly food/cash package; in Myanmar – MCCT programmes, Bangladesh – maternal and child benefit programme.

169 **Blankenship, J., Owen, J. & Villanueva, R.** 2020. *The Social Protection Pathways to Nutrition. A stock taking of evidence in Asia and the Pacific.* UNICEF East Asia and the Pacific – Policy working paper EAPWP/02/2020; **Slater, R., R. Holmes and N. Mathers.** 2014. Food and Nutrition (in-) Security and Social Protection, OECD Development Co-operation Working Papers, No. 15, OECD Publishing [online]. [Cited 30November 2020]. http://dx.doi.org/10.1787/5jz44w9ltszt-en; **FAO.** 2015. *Social Protection and Nutrition.* Rome. (available at http://www.fao.org/3/a-i4819e.pdf)

170 **World Bank.** 2012. *PKH Conditional Cash Transfer.* Jakarta, World Bank (available at https://openknowledge.worldbank.org/handle/10986/26697)

171 **Cahyadi, N., Hanna, R., Olken, B.A., Prima, R.A., Satriawan, E. & Syamsulhakim, E.** 2018. *Cumulative impacts of conditional cash transfer programmes: experimental evidence from Indonesia, TNP2K working paper 4.* Jakarta. (available at http://www.tnp2k.go.id/download/9759Working%20Paper%20Cumulative%20Impacts%20of%20Conditional%20Cash%20Transfer%20Programs.pdf; **World Bank.** 2014. *Philippines Conditional Cash Transfer Programme: impact evaluation 2012.* Washington, DC, World Bank. (available at http://hdl.handle.net/10986/13244)

172 **Innovations for Poverty Action (IPA) & Save the Children.** 2019. *LEGACY Programme Randomized Controlled Trial, Endline Report* [online]. [Cited 30 November 2020]. https://www.lift-fund.org/sites/lift-fund.org/files/publication/MCCT RCT full report.pdf

173 **Adhikari, T.P., Thapa, F.B., Tamrakar. S., Magar, P.B., Hagen-Zanker, J. and Babajanian, B.** 2014. *How does social protection contribute to social inclusion in Nepal? Evidence from the Child Grant in the Karnali Region.* London, Oversees Development Institute (ODI).

174 **World Bank.** 2011. *Program Keluarga Harapan. Main Findings from the Impact Evaluation of Indonesia's Pilot Household Conditional Cash Transfer Program.* http://documents1.worldbank.org/curated/en/589171468266179965/pdf/725060WP00PUBL0luation0Report0FINAL.pdf

175 **FAO, IFAD, UNICEF, WFP & WHO.** 2018. *The State of Food Security and Nutrition in the World 2018. Building climate resilience for food security and nutrition.* Rome, FAO. (available at http://www.fao.org/3/I9553EN/i9553en.pdf); **Alderman, H.** 2009. Safety nets can help address the risks to nutrition from increasing climate variability. *The Journal of Nutrition,* 140(1): 148S–152S [online]. [Cited 30 November 2020]. https://doi.org/10.3945/jn.109.110825; **Ruel, M.T., Alderman, H. & Maternal and Child Nutrition Study Group.** 2013. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *The Lancet,* 382(9891): 536–551[online]. [Cited 30 November 2020]. https://doi.org/10.1016/S0140-6736(13)60843-0

176 **WFP & Oxford Policy Management (OPM).** 2019. *Strengthening the capacity of ASEAN Member States to design and implement risk-informed and shock-responsive social protection systems for resilience – Synthesis Report.* (available at https://www.opml.co.uk/files/Publications/a2475-asean-member-states/asean-synthesis-report-final-june2019.pdf?noredirect=1)

177 **ILO.** 2020. *Social protection responses to the Covid-19 crisis. Country responses in Asia and the Pacific* [online]. [Cited 30 November 2020]. https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/briefingnote/wcms_739587.pdf

178 **Asian Development Bank (ADB).** 2020. An Updated Assessment of the Economic Impact of COVID-19. Manila, ADB. (available at https://www.adb.org/publications/updated-assessment-economic-impact-covid-19)

179 **Nawaz, M.S., Newar, M. & O'Connor, C.** 2020. Improving social protection programmes to support mothers and young children's diets in Bangladesh: Combining cash transfers with behaviour change. *Nutrition Exchange,* Nutrition Exchange Asia 2:22 [online]. [Cited 30 November 2020]. www.ennonline.net/nex/southasia/2/bangladesh

180 **Khan, G.N., Kureishy, S., Akbar, N., Nasir, M., Hussain, M., Ahmed, I., Bux, R., Rizvi, A., Ullah, A., Hussain, A., Garzon, C., Bourdaire, J., Syed, M.H., Nishtar, S., de Pee, S., Cousens, S. & Soofi, S.** 2019. *A Stunting Prevention Cluster Randomized Controlled Trial: Leveraging the Social Protection System to Prevent Stunting in District Rahim Yar Khan, Punjab.* Pakistan. Islamabad/Bangkok, World Food Programme. (available at https://www.aku.edu/coe-wch/Documents/Stunting%20Prevention%20Trial%20Report.pdf)

181 **Government of Pakistan & UNICEF Pakistan.** 2011. *National Nutrition Survey Pakistan 2011.* (available at https://www.mhinnovation.net/sites/default/files/downloads/innovation/research/Pakistan%20National%20Nutrition%20Survey%202011.pdf)

182 **Ministry of Planning, Development and Reform, Pakistan & WFP.** 2017. *The Economic Consequences of Undernutrition in Pakistan: An Assessment of Losses.* (available at https://www.pc.gov.pk/uploads/report/Economic_Consequences.pdf)

183 **Gentilini, U., Almenfi, M., Dale, P., Lopez, A.V., Mujica, I.V., Quintana, R. & Zafar, U.** 2020. *Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures, "Living paper" version 11. (12 June 2020).* Washington, DC. World Bank. (available at https://openknowledge.worldbank.org/handle/10986/33635)

184 **Bhutta, Z.A., Ahmed, T., Black, R.E., Cousens, S., Dewey, K., Giugliani, E., et al.** 2008. What works? Interventions for maternal and child undernutrition and survival. *The Lancet,* 371(9610):417-440 [online]. [Cited 30 November 2020]. https://doi.org/10.1016/S0140-6736(07)61693-6

185 **Bundy, D. A. P., de Silva, N., Horton, S., Jamison, D.T. & Patton, G.C. eds.** 2017. *Disease Control Priorities (third edition): Volume 8, Child and Adolescent Health and Development.* Washington, DC: World Bank. (available at https://resourcecentre.savethechildren.net/sites/default/files/documents/dcp3_cahd_front_matter.pdf)

186 **Kassebaum, N.J., Barber, R.M., Bhutta, Z.A., Dandona, L,, Gething, P.W., Hay, S.I., et al.** 2016. Global, regional, and national levels of maternal mortality, 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. *The Lancet,* 388(10053):1775–812 [online]. [Cited 30 November 2020]. https://doi.org/10.1016/S0140-6736(16)31470-2; **Drake L, Fernandes M, Aurino E, et al. Bundy DAP, de Silva N, Horton SE, Jamison DT, Patton GC, eds.** 2017. *Child and Adolescent Health and Development, 3rd Edition. Disease Control Priorities, Volume 8, Chapter 12: School Feeding Programs in Middle Childhood and Adolescence.* Washington, DC, World Bank. (available at https://www.ncbi.nlm.nih.gov/books/NBK525240/)

187 Defined as age 10–19 years.

188 **Dewey K. G. & Huffman, S.L.** 2009. Maternal, infant, and young child nutrition: Combining efforts to maximize impacts on child growth and micronutrient status. *Food Nutrition Bulletin,* 30(2 suppl):S187–9 [online]. [Cited 30 November 2020]. https://doi.org/10.1177/15648265090302S201

189 **Bhutta, Z.A., Das, J.K., Rizvi, A., et al.** 2013. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet,* 382(9890):452-477 [online]. [Cited 30 November 2020]. https://doi.org/10.1016/S0140-6736(13)60996-4

190 **Aguayo, V. & Paintal, K.** 2017. Nutrition in adolescent girls in South Asia. the BMJ. 357:j1309 [online]. [Cited 30 November 2020]. https://doi.org/10.1136/bmj.j1309

191 **UNICEF.** 2019. *The State of the World's Children 2019: Children, food and nutrition: Growing well in a changing world.* New York. (available at https://www.unicef.org/reports/state-of-worlds-children-2019); **Mistry, S.K. & Puthussery, S.** 2015. Risk factors of overweight and obesity in childhood and adolescence in South Asian countries: a systematic review of the evidence. *Public Health,* 129(3): 200-209 [online]. [Cited 30 November 2020]. https://doi.org/10.1016/j.puhe.2014.12.004

192 **UNICEF.** 2019. *The State of the World's Children 2019: Children, food and nutrition: Growing well in a changing world.* New York. (available at https://www.unicef.org/reports/state-of-worlds-children-2019)

193 Thinness as measured by body mass index – BMI <18 kg/m^2.

194 Overweight or Obesity as measured by body mass index BMI >25 kg/m^2.

195 **UNICEF.** 2019. *The State of the World's Children 2019: Children, food and nutrition: Growing well in a changing world.* New York. (available at https://www.unicef.org/reports/state-of-worlds-children-2019)

196 **WHO WPRO.** 2017. *Overweight and obesity in the Western Pacific Region.* Manila, Philippines. Licence: CC BY-NC-SA 3.0 IGO. (available at http://iris.wpro.who.int/handle/10665.1/13583)

197 **Herring, S.J. & Oken, E.** 2010. Obesity and diabetes in mothers and their children: Can we stop the intergenerational cycle? *Current Diabetes Reports,* 11:20–27 [online]. [Cited 30 November 2020]. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3191112/; **Yu, Z.B., Han, S.P., Zhu, J.G., Sun, X.F., Ji, C.B. & Guo X.R.** 2013. Pre-pregnancy body mass index in relation to infant birth weight and offspring overweight/obesity: a systematic review and meta-analysis. *PLoS One,* 8(4):e61627 [online]. [Cited 30 November 2020]. https://doi.org/10.1371/journal.pone.0061627

NOTES

198 Young, M., Nguyen, P.H., Casanova, I.G., Addo, O.Y., Tran, L.M., Nguyen, S., Martorell, R. & Ramakrishnan, U. 2018. Role of maternal preconception nutrition on offspring growth and risk of stunting across the first 1 000 days in Vietnam: A prospective cohort study. *PLoS One,* 13(8): e0203201 [online]. [Cited 30 November 2020]. https://doi.org/10.1371/journal.pone.0203201

199 Thinness as measured by body mass index – BMI <18 kg/m^2.

200 Torlesse, H. & Aguayo, V.M. 2018. Aiming higher for maternal and child nutrition in South Asia. *Maternal & Child Nutrition.* 2018. 14(S4):e12739 [online]. [Cited 30 November 2020]. https://doi.org/10.1111/mcn.12739

201 Alderman. H. & Heady, D.D. 2017. How Important is Parental Education for Child Nutrition? *World Development,* 94:448 -464 [online]. [Cited 30 November 2020]. https://doi.org/10.1016/j.worlddev.2017.02.007

202 Adolescent birth rate is defined for girls aged 15–19 years at birth of their child.

203 Countries include: Afghanistan; Bangladesh; Bhutan; India; the Maldives; Nepal; Pakistan; Sri Lanka; Adolescent birth rate is 16 per 1 000 girls aged 15–19. East-Asia Pacific Countries include: Australia; brunei Darussalam; Cambodia; China; Cook Islands; Democratic People's Republic of Korea; Fiji; Indonesia; Japan; Kiribati; Lao People's Democratic Republic; Malaysia; Marshall Islands; Micronesia (Federated States of); Mongolia; Myanmar; Nauru; New Zealand; Niue; Palau; Papua New Guinea; Philippines; Republic of Korea; Samoa; Singapore; Solomon Islands; Thailand; Timor-Leste; Tokelau; Tonga; Tuvalu; Vanuatu; Viet Nam.

204 UNICEF. 2019. *The State of the World's Children 2019: Children, food and nutrition: Growing well in a changing world.* New York. (available at https://www.unicef.org/reports/state-of-worlds-children-2019)

205 Teenage marriage is common in the region. Overall, 30 percent of South Asian, nearly 20 percent of Middle Eastern (including North African) and 7 percent of East Asian girls aged 15–19 are already married or in union. In some countries, like Bangladesh, there is strong family and cultural pressure to marry girls off early, and 44 percent of 15–19 year olds are married or in union. UNICEF. 2019. *The State of the World's Children 2019: Children, food and nutrition: Growing well in a changing world.* New York. (available at https://www.unicef.org/reports/state-of-worlds-children-2019)

206 Thurnham, D. 2014. Nutrition of adolescent girls in low-and middle-income countries. *Sight and Life,* 27:26-37 [online]. [Cited 30 November 2020]. https://issuu.com/sight_and_life/docs/sight_and_life_27_3_2013

207 Bundy, D. A. P., de Silva, N., Horton, S., Jamison, D.T. & Patton, G.C. eds. 2017. *Disease Control Priorities (third edition): Volume 8, Child and Adolescent Health and Development.* Washington, DC: World Bank. (available at https://resourcecentre.savethechildren.net/sites/default/files/documents/dcp3_cahd_front_matter.pdf); United Nations System Standing Committee on Nutrition (UNSCN). 2017. *Discussion paper: Schools as a System to Improve Nutrition A new statement for school-based food and nutrition interventions.* (available at: https://www.unscn.org/uploads/web/news/document/School-Paper-EN-WEB-8oct.pdf); FAO. 2019. Strengthening Sector Policy – Education. Policy Guidance Note 13. FAO, Rome. (available at http://www.fao.org/3/ca7149en/ca7149en.pdf)

208 UNSCN. 2017. *Discussion paper: Schools as a System to Improve Nutrition A new statement for school-based food and nutrition interventions.* (available at: https://www.unscn.org/uploads/web/news/document/School-Paper-EN-WEB-8oct.pdf); UNICEF. 2016. *Improving Nutrition in adolescents and school-age children. A toolkit to provide guidance and recommendations for school-based interventions.* Bangkok, UNICEF.

209 FAO. 2010. *A diamond among the rocks of slopy hills of Mae Hong Son: Wanaluang School – a sustainable model of school gardens. A case study.*

210 Bundy, D., Burbano, C., Grosh, M., Gelli, A., Jukes, M. & Drake, L. 2009. *Rethinking School Feeding: Social Safety Nets, Child Development, and the Education Sector. Directions in Development ; human development.* Washington, DC, World Bank. (available at https://openknowledge.worldbank.org/handle/10986/2634); Drake, L., Woolnough, A., Burbano, C. & Bundy, D. 2016. *Global School Feeding Sourcebook: Lessons from 14 Countries.* London, Imperial College Press. (available at https://openknowledge.worldbank.org/handle/10986/24418)

211 UNICEF. 2019. *The State of the World's Children 2019: Children, food and nutrition: Growing well in a changing world.* New York. (available at https://www.unicef.org/reports/state-of-worlds-children-2019)

212 Watkins, KL, Bundy, DAP, Jamison, DT, Fink, G, and Georgiadis, A. Bundy DAP, de Silva N, Horton SE, Jamison DT, Patton GC, eds. 2017. *Child and Adolescent Health and Development, 3rd Edition. Disease Control Priorities, Volume 8, Chapter 8: Evidence of Impact of Interventions on Health and Development during Middle Childhood and School Age.* Washington, DC, World Bank. (available at https://www.ncbi.nlm.nih.gov/books/NBK525230/)

213 Drake L, Fernandes M, Aurino E, et al. Bundy DAP, de Silva N, Horton SE, Jamison DT, Patton GC, eds. 2017. *Child and Adolescent Health and Development, 3rd Edition. Disease Control Priorities, Volume 8, Chapter 12: School Feeding Programs in Middle Childhood and Adolescence.* Washington, DC, World Bank. (available at https://www.ncbi.nlm.nih.gov/books/NBK525240/; Soekarjo, D.D., Shulman, S., Graciano. F. & Moench-Pfanner, R. 2014. *Improving nutrition for adolescent girls in Asia and the Middle East: Innovations are needed, Conference paper.* Innovation Working Group Asia and One Goal.

214 Bhutan Ministry of Health, WHO & UNICEF. 2016. *National Health Promotion Strategic Plan 2015-2023.* Thimphu, Bhutan. (available at http://old.aidsdatahub.org/sites/default/files/publication/Bhutan_National_Health_Promotion_Strategic_Plan_2015-2023_2016.pdf); Department of Youth and Sports, Bhutan Ministry of Education. 2015. *National Strategic Framework for School Sports and Physical Activity (NSFSSPA).* Thimphu, Bhutan. (available at https://www.dys.gov.bt/wp-content/uploads/2016/05/NSFSSPA.pdf)

215 WHO. 2005. Expert Meeting on Childhood Obesity, Kobe, Japan, 20–24 June 2005 [online]. [Cited 30 November 2020]. https://www.who.int/nmh/media/obesity_expert_meeting/en/; WHO. 2010. *Briefing presentation on Nutrition-Friendly School Initiative* [online]. [Cited 30 November 2020]. https://www.who.int/nutrition/topics/NFSI_Briefing_presentation.pdf?ua=1; UNICEF & WFP. 2005. *The Essential Package: 12 interventions to improve the health and nutrition of school-age children* [online]. [Cited 30 November 2020]. https://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp212806.pdf; UNSCN. 2017. *Discussion paper: Schools as a System to Improve Nutrition A new statement for school-based food and nutrition interventions.* (available at: https://www.unscn.org/uploads/web/news/document/School-Paper-EN-WEB-8oct.pdf); Drake, L., Woolnough, A., Burbano, C. & Bundy, D. 2016. *Global School Feeding Sourcebook: Lessons from 14 Countries.* London, Imperial College Press. (available at https://openknowledge.worldbank.org/handle/10986/24418); Murimi, M., Chrisman, M., McCollum, H.R. & Mcdonald, O. 2016. A Qualitative Study on Factors that Influence Students' Food Choices. *Journal of Nutrition & Health,* 2(1) [online]. [Cited 30 November 2020]. https://www.avensonline.org/wp-content/uploads/JNH-2469-4185-02-0013.pdf; Lamstein, S., Stillman, T., Koniz-Booher, P., Aakesson, A., Collaiezzi, B., Williams, T., Beall, K. & Anson, M. 2014. *Evidence of Effective Approaches to Social and Behavior Change Communication for Preventing and Reducing Stunting and Anemia: Report from a Systematic Literature Review.* Arlington, VA: USAID/ Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) Project. (available at https://www.spring-nutrition.org/sites/default/files/publications/series/spring_sbcc_lit_review.pdf)

216 WHO. 2018. *Global nutrition policy review 2016-2017: country progress in creating enabling policy environments for promoting healthy diets and nutrition.* Geneva. (available at https://www.who.int/publications/i/item/9789241514873)

217 FAO. 2019. Strengthening Sector Policy – Education. Policy Guidance Note. FAO, Rome. (available at http://www.fao.org/3/ca7149en/ca7149en.pdf)

218 United Nations Educational, Scientific and Cultural Organization (UNESCO). 2020. *COVID-19 Impact on Education* [online]. [Cited 29 July 2020]. https://en.unesco.org/covid19/educationresponse

219 WFP. 2020. *Global Monitoring of school meals during COVID 19 school closures* [online]. [Cited 29 July 2020]. https://cdn.wfp.org/2020/school-feeding-map/index.html

NOTES

220 **UNICEF, WFP, FAO & WHO.** 2020. Joint statement on nutrition in the context of the COVID pandemic in Asia and the Pacific UN agencies on the nutritional impacts of COVID-19 [online]. [Cited 30November 2020]. https://www.unicef.org/eap/joint-statement-nutrition-context-covid-19-pandemic-asia-and-pacific

221 **UNICEF.** 2016. *Improving Nutrition in adolescents and school-age children. A toolkit to provide guidance and recommendations for school-based interventions.* UNICEF, Bangkok.

222 **UNSCN.** 2017. *Discussion paper: Schools as a System to Improve Nutrition A new statement for school-based food and nutrition interventions.* (available at: https://www.unscn.org/uploads/web/news/document/School-Paper-EN-WEB-8oct.pdf)

Working for #ZeroHunger

2020
ASIA AND THE PACIFIC
REGIONAL OVERVIEW OF FOOD SECURITY AND NUTRITION
MATERNAL AND CHILD DIETS AT THE HEART OF IMPROVING NUTRITION

KEY MESSAGES

➔ Achieving the SDGs – Progress on food security and nutrition has slowed, and the Asia and Pacific region is not on track to achieving 2030 targets.

➔ COVID-19 – True impacts on food security and nutrition are yet to be established, however, the region needs to better prepare for and build resilience to future disasters and pandemics.

➔ Affordability – the cost of healthy diets is critical when ensuring food security and nutrition for all, and mothers and children in particular.

➔ Data – Availability and timeliness of data remain key constraints to measure achievements and document evidence.

➔ Maternal and Child diets – there is global consensus on the importance of addressing maternal and child diets through an integrated and coordinated system approach.

➔ Food System – healthy diets for healthy people, sustainable food production and diversification of the food system is critical for healthy maternal and child diets.

➔ WASH System – creating hygienic environments at home and in the community, and promoting hygienic practices and safe food preparation, storage and feeding are critical.

➔ Health System – supporting enabling environments are essential to improve maternal and child diets but are not sufficient to ensure effective delivery of interventions at scale.

➔ Social protection system – is imperative to mitigate poverty and hunger, subsidize household incomes and contribute to better food security and nutrition.

➔ Education system – supporting healthy dietary practices and attitudes for individuals, growing a healthy and productive society.

THE STATE OF THE WORLD

ISBN 978-92-5-133853-7
9 789251 338537
CB2895EN/1/01.21