

Challenges and impacts of poor nutrition

Dr Jessica Fanzo

United Nations Food & Agriculture Organization (FAO),
and Johns Hopkins University

Abstract



Never has there been a more urgent time to ensure that everyone has optimal nutrition. However, globally, that has not been realised. While some indicators of global health are improving, nutrition is not. Undernutrition is decreasing but way too slowly. Overweight and obesity are rising, rapidly. What we are left with is a massive, complex burden of multiple malnutrition outcomes, as a result of multiple drivers and causes. The consequences are staggering not only

for the health and wellbeing of individuals, but economically, socially and environmentally they are costly for society. Twenty-two per cent, or 150 million, children under the age of five are chronically undernourished, or stunted; 50 million children are wasted or acutely malnourished with high risk of mortality; and on the opposite side 38 million children are overweight. At this rate, global progress to reduce these forms of malnutrition is not rapid enough to meet internationally agreed global targets. Adult overweight and obesity prevalence is shocking. Over 2 billion people are overweight and obese and that number is rising in all countries from low- to high-income classifications. Obesity is a significant risk factor of diet-related noncommunicable diseases including diabetes, cardiovascular disease and some cancers. Many countries are grappling with multiple burdens of malnutrition. What actions do we need to take to address this massive burden and who should act? We have known for a long time that nutrition takes many sectors and disciplines to eradicate the multiple burdens. There is nothing new to this. What is new is how we can deliver on the 17 Sustainable Development Goals, the SDGs, which call on the world to approach development differently, through shared action. That is, to see development across the goals as part of an integrated whole and that each goal is essential for what we, as global citizens, would agree is a better, more equitable world. It is not just about what other sectors can do for us in the nutrition community to deliver our goals, but what we can do for them in delivering their goals. Food systems allow many points for intervention to improve nutrition – across the supply chain, within food environments and related to consumer behaviour. However, food systems are not static. They are rapidly transforming due to multiple drivers, including global dietary pattern shifts. With globalisation, urbanisation and income growth, people are experiencing new food environments, expanding their food choices and diversifying their dietary patterns in both positive and negative directions. Current food systems have dramatic effects on human and planetary health. They shape producers' decisions and consumers' food choices. Nevertheless, human decisions and choices

This paper has been prepared from a transcript and the illustrative slides of the presentation.

(whether individual or collective) regarding production and consumption can also influence food systems and improve their ability to deliver healthy and sustainable diets. The global community should embrace the SDGs as interlinked and address simultaneously all forms of malnutrition. This will require everyone who interacts with food systems and the food security mandate to act. Food supply chain and food environment actors, whether small or large, need to be valued and supported to shift towards nutrition-sensitive agriculture and food systems.

This paper gives an overview of how the world is progressing in tackling the malnutrition burden, the current state and the consequences of this burden, going a bit deeper than Sandro Demaio’s paper.

The current burden of malnutrition

Figure 1 shows the latest statistics from the joint malnutrition estimates for the world, compiled largely by the UN. We are not doing very well. About 2 billion people are overweight or obese, 151 million, or 22% of the world’s children, under five, are stunted in bodies and brains – that is a huge number of children! Numbers of wasted children, acutely malnourished due to food shortages, seasonal issues, infectious diseases, has not changed over the last decade.

The Asia–Pacific is a complex region where some countries are suffering from the highest burdens of stunting. Compared to a global average of ~22%, Papua New Guinea (PNG) has 50% stunting, Timor-Leste 50.2%, Laos 44%, Pakistan 45% – these are huge.

Globally, about 5.6% of children under five suffer overweight and obesity – too many – but again in this region the statistics are worse: in PNG 14% of children are overweight, so that nation is dealing with a serious double burden; Tonga 17% overweight; Indonesia 12%; Thailand 8%; Korea 7%; Australia 8%. These are big burdens to deal with.

Figure 2 shows the changing statistics of stunting over time, via subregional data, comparing the years 2000 in the light colour and 2017 in the dark colour. The proportions of stunting are coming down, so there is progress being made, but that is happening very much too slowly. The changes are happening in parts of Asia which have made big changes. China has made big improvements, and also Nepal and a number of low-income countries. However, stunting in Africa has increased from 50 million to 58 million.

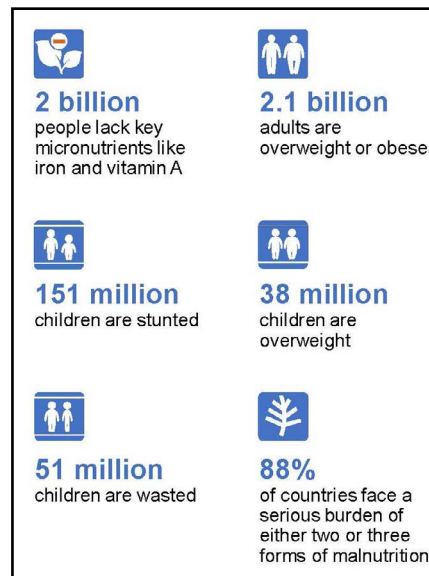


Figure 1. Malnutrition in all its forms is a large-scale and universal problem (Joint Child Malnutrition Estimates 2018; Global Nutrition Report 2017; The Global Report on Food Crises 2018).

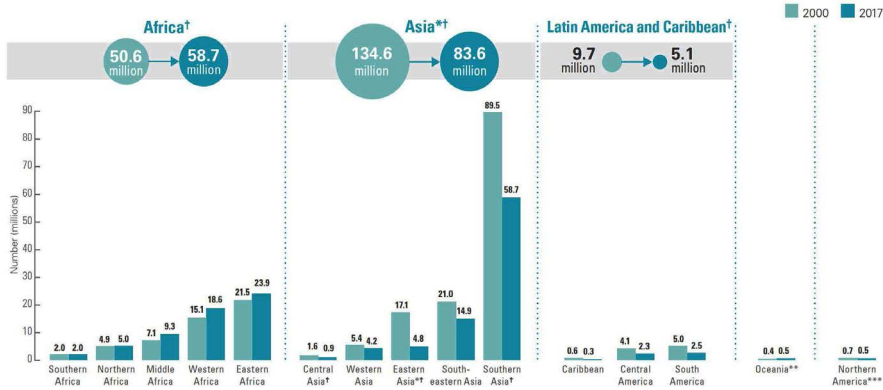


Figure 2. Stunting trends in children under the age of five (Joint Child Malnutrition Estimates 2018).

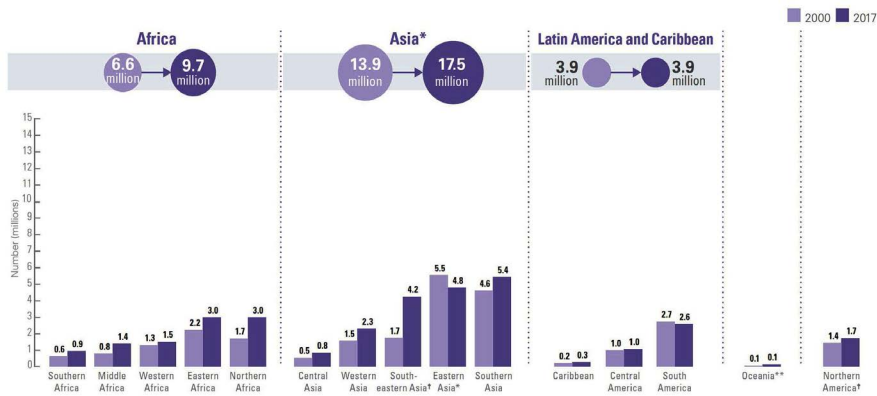


Figure 3. Overweight trends in children under the age of five. (Joint Child Malnutrition Estimates 2018).

If we look at overweight in children under five years of age (Figure 3), we see the opposite effect, with all the statistics going up, everywhere: Africa, Asia, Latin America. This is a big problem and a growing trend.

The vulnerable

Every country is nutritionally vulnerable. According to the ‘2018 Global Nutrition Report’ (for release in November 2018), 41 countries suffer from a triple burden of obesity, stunting and anaemia; 54 countries suffer from overweight and anaemia; almost every country has some sort of burden, with some suffering between one and four burdens. This year’s report notes that an individual may have co-existing nutritional burdens: there can be stunting, overweight and micronutrient deficiencies in a single child. This is very complex to deal with.

The people most affected are women, young children and adolescents, with numbers of obese adolescents rising strongly. As Figure 4 shows, it is an

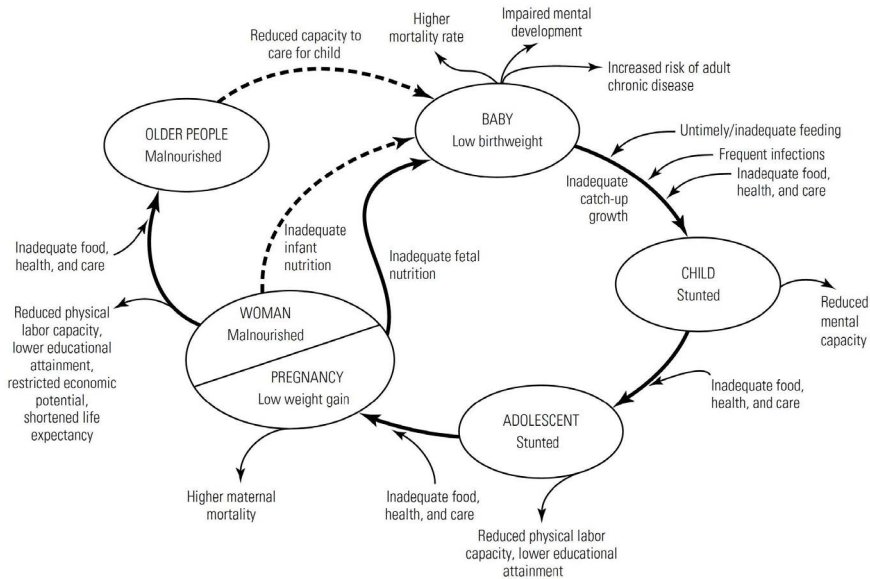


Figure 4. The cycle in women, children and adolescents.

intergenerational cycle. A woman who is undernourished, or overnourished (overweight or obese), puts her child at risk in different ways. If that child does not get adequate care and a healthy diet it will be stunted as an adolescent. The child's chances of going through school and education and fulfilment will be harder, and when the child becomes a woman, her children will then be stunted ... and this cycle just continues. The cycle can be perpetuated more strongly in places where there is conflict or lack of empowerment or disempowerment of women. Many issues feed this cycle.

The poor are nutritionally vulnerable on both sides. Among the 1.4 billion men, women and children who are the poorest 20% of the global population (the P20, living on less than \$1.90/day), most of them carry the burden of stunting. The people in the P20 are found in India, Nigeria, China, Indonesia – which will be the most populated countries by 2050.

We need to find a way to tackle the poverty issue. We know that in high income countries also, the people with obesity tend to be poorer, so this poverty situation exists at both ends of the spectrum. What are the consequences?

Causes and consequences

The classic pathway shown in Figure 5 is called the UNICEF Causal Framework for Nutrition. Though developed in 1990 it is still functional, useful and holds true, and we still use it in the nutrition world. It shows the causes of malnutrition – both immediate and underlying – and the basic causes, and the consequences.

The causes are inadequate dietary intake and the burden of infectious disease, arising from several underlying causes: namely, food security, inadequate care in child-rearing practices, poor sanitation and hygiene, and lack of health

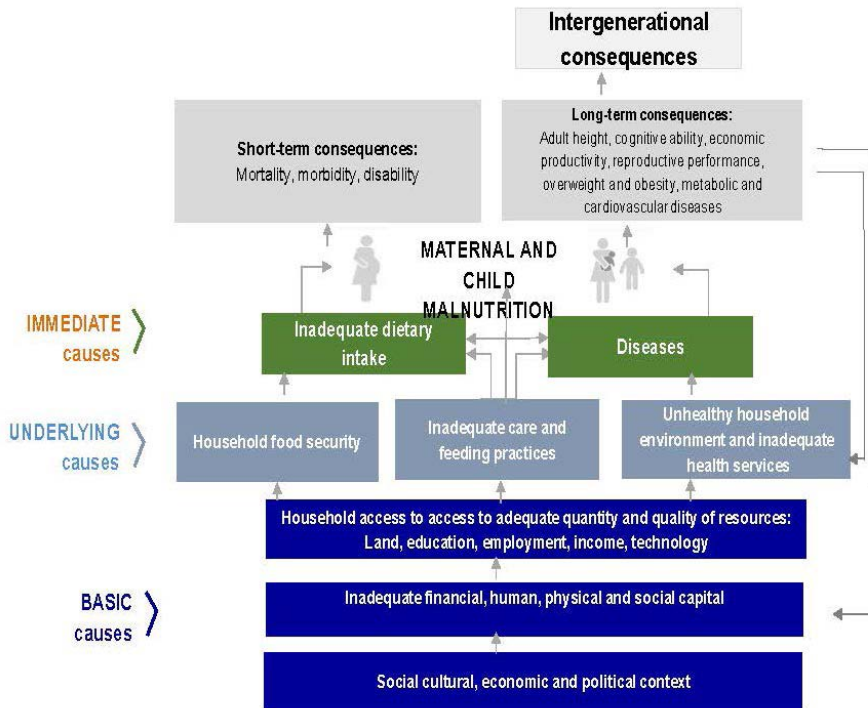


Figure 5. Causal pathway of malnutrition (UNICEF 1990, 2017).

services. In other words, it is not just food that is critical for nutrition, it is also that various sectors need to come together. And at the most basic level, Figure 5 shows the causes are governance, human capital, social capital, etcetera.

The consequences can be summed up at three different levels.

- (i) First, the health consequences: people who are overweight, obese and with inadequate nutrition have higher risk of morbidity, mortality, disability and quality of life. With undernutrition, particularly identified via stunting (as a proxy), people have a higher risk of lifelong cognitive impairments; they will never get on track. Brains develop largely in the first year of life, with some rational reasoning development continuing into the teenage years through puberty. Overall, the laying down of brain tissue happens very early in life, and if people miss out on the key nutrients to help form the brain they can expect difficulties for the rest of their lives. Undernutrition increases also the risk and pace of being obese and suffering from noncommunicable diseases (NCDs) into adulthood. Many epidemiological studies show this, and epigenetics shows that what happens early in life can have devastating consequences into adult life. In short, poor nutrition deals out a double fate.
- (ii) The social consequences: numerous studies have looked at lifetime earnings and shown that people with stunting have a 22–45% reduction in lifetime earnings. A 1% loss in adult height equates to a 1.4% loss in productivity.

Overweight, obesity and undernutrition also lead to higher lifetime health costs, for individuals and also for society.

(iii) The economic consequences: it is estimated that dealing with undernutrition can deplete national GDP (gross domestic product) by between 2% and 16% in the most-affected countries – a very debilitating impact on national development. Estimates of the cost of nourishing the 1 in 3 people who are currently malnourished include these by IFPRI*:

- US\$7 – 265 billion annually, to 2030, to end hunger; and
- US\$7 billion annually, to 2025, to achieve the four World Health Assembly targets; namely, to reduce child stunting by 40%, halve the number of women suffering from anaemia, increase exclusive breastfeeding to 50%, and reduce child wasting to less than 5%. Also,
- global obesity is estimated to cost US\$2 trillion annually.

Are current actions effective?

Are we improving these situations? Not really. Currently, most official development assistance (ODA) goes to humanitarian aid such as famine-relief in Yemen, in South Sudan and northern Nigeria. In comparison, ODA for undernutrition and long-term development is about 0.5%, which is too small to register, and ODA going towards overweight and obesity – which have a much higher burden – is 0.01%. Effectively, nutrition is not being funded.

Figure 6 shows how world food systems are changing, transitioning, shifting, and our diets are changing with them. Countries are moving from rural subsistence food systems (the left-hand block) to more modern systems (the right-hand block). Most of the world is currently described by the middle block.

On the left, there are still about a billion people going to bed hungry each day. They are smallholder farmers, subsistence farmers, still carrying high burdens of stunting and high mortality and morbidity of women and children.

On the right, with modern food systems, people are educated – everyone at this conference, for example. We eat healthily, we purposefully exercise, we are willing to spend more money on food to be healthy.

The other 5 billion people's food systems are represented by the middle block: the processed food system. Their lifestyles are changing from rural to peri-urban; they are eating processed packaged foods; they are eating away from home, including street food. This is the population we *need* to focus on. However, that is not happening: the FAO for example focuses its work on the 1 billion hungry. It is the elite, all of us in this conference, who have the power to change things, and to care.

Sandro Demaio mentioned the Global Burden of Disease project. Diet is crucial. For example, fruits, nuts, vegetables – almost everyone, regardless of wealth, is eating too little of those foods. Very few people eat whole grains. On the other hand, people on high incomes eat too much red meat while those on low

* IFPRI = International Food Policy Research Institute.

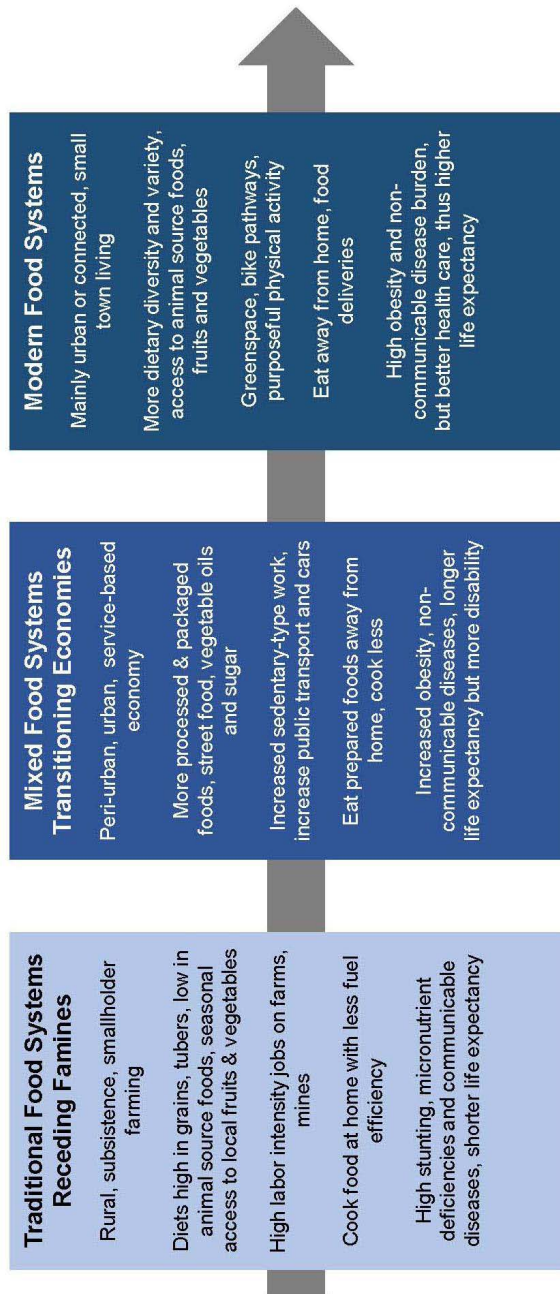


Figure 6. Diets and food systems are transforming (adapted from Popkin & Drewnowski 1993).

incomes get too little. Yet, every wealth group is consuming excessive sugar, sweet things and beverages, so while we could argue that wealth protects against dietary problems, sometimes that is not so. People can eat unhealthily whether they are wealthy or poor.

In Figure 7, the Global Burden of Disease chart recently published, diets (circled) are near the top of the risk factors for DALYs (disability-adjusted life years). They are second on the list (in Figure 7), largely due to cardiovascular disease (the long light blue part of the bar). The number one risk factor is still child malnutrition, for children dying of diarrhoeal disease or neonatal disease.

Separating this out into countries' income levels, in a low-income country children and women are still dying of undernutrition, with diet the second most important risk factor. But in high-income countries diet is the number one risk factor. Diet is the highest risk factor for morbidity and mortality in the world – more than smoking.

Opportunities

We have an opportunity, such as by applying the Sustainable Development Goals (SDGs). I think they are important, although some people disagree. My reasons are that they are universal goals, and every country is supposed to adhere to them and try to achieve them, or strive to do so. They embrace sustainability in all of its forms, more than the Millennium Development Goals did. Many of the countries we (at this conference) work in are making plans to try and meet the SDGs, reformulating national strategies around the SDGs, or at least the ones they think are important for their country. In nutrition we are using the SDGs

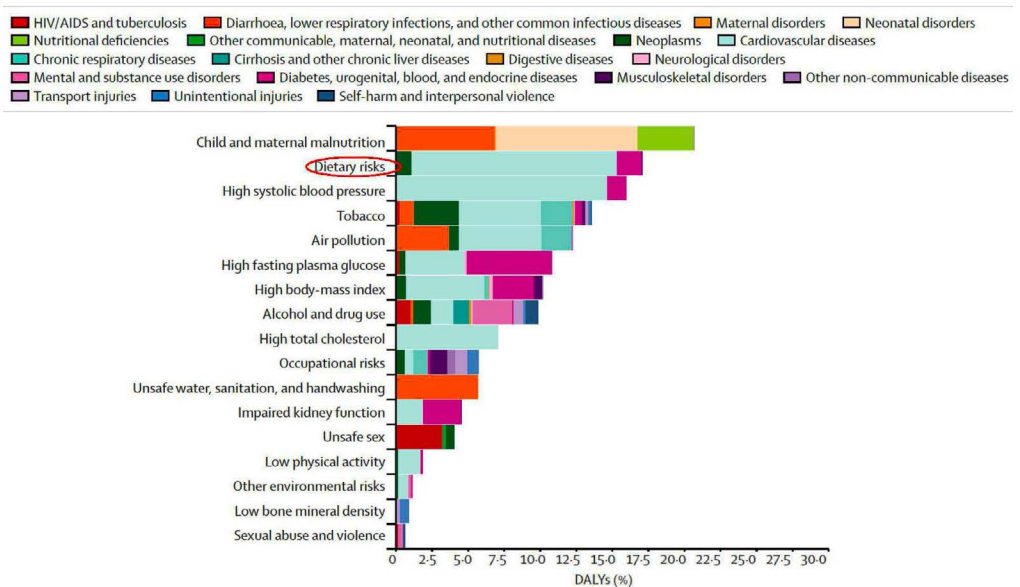


Figure 7. Diets are a top risk factor of disease, measured as disability-adjusted life years (DALYs %) (GBD 2016 Risk Factors Collaborators 2017).

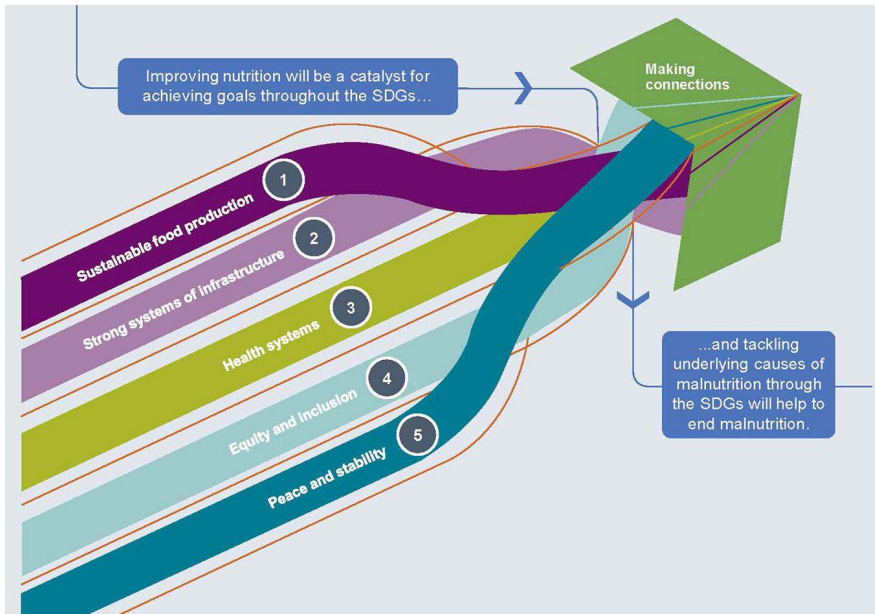


Figure 8. Integrating nutrition into the SDGs (Development Initiatives 2017).

as a ‘road map’. In last year’s Global Nutrition Report (Development Initiatives 2017) we created ‘building blocks’ representing what we thought was important to achieve the SDGs relating to food production and food systems; and also for infrastructure, building healthy cities, functional health systems, equity and inclusion and peace and stability (Figure 8). These are all important for nutrition. Food systems need this type of multi-sectoral sustainable-development-type approach.

The world is not on-track to meet the 2030 goals on nutrition. In an article very recently published by the Brookings Institution, Homi Kharas, John McArthur and Krista Rasmussen looked at the targets set for SDG 2 (Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture) and found that many of them will be off-track if countries apply the ‘business as usual’ approach. By 2030 there will still be a stunting burden, a wasting burden and (particularly) an overweight burden. This is a sad situation. The Global Burden of Disease project did a similar analysis in Africa, and found that probabilities of achieving the SDGs range from 5% for some African countries to 95% for others. There is a long way to go and we have to become more effective.

Motivated?

I hope that the scale of malnutrition alarms everyone at this conference. We are all responsible – we probably have friends or colleagues dealing with malnutrition burdens; we all eat food; we all participate in the food system; we all need to do *something*. What are we going to do about it?

The motivation to act

- The scale of malnutrition raises alarms.
- The societal costs of unhealthy diets and their health outcomes are considerable.
- Food systems face enormous challenges as well as opportunities.
- Solutions and evidence to act are available and leadership must come from governments and intergovernmental organisations.
- We need **disruptive change** and **action cannot wait**.
- Seize this moment to make the SDGs impactful.

There are big opportunities, so much we can do and so much evidence of how to act. We need leadership. Who owns the food system? Do governments own their country's food system? If not, how can we hold anyone accountable?

We need disruptive change, and action cannot wait.

I hope you all start from this moment to make your own changes and to act to make the SDGs impactful for nutrition.

References and further reading

- Development Initiatives 2017. *Global Nutrition Report 2017: Nourishing the SDGs*. Bristol, UK: Development Initiatives. <http://globalnutritionreport.org/the-report/>
- GBD 2016 Risk Factors Collaborators 2017. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet* **390**(10100):1345–1422. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32366-8/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32366-8/fulltext)
- Global Nutrition Report 2018. <https://globalnutritionreport.org/reports/global-nutrition-report-2018/>
- Kharas H., McArthur J. & Rasmussen K. 13 July 2018. Counting who gets left behind: current trends and gaps on the Sustainable Development Goals. Brookings. <https://www.brookings.edu/blog/future-development/2018/07/13/counting-who-gets-left-behind-current-trends-and-gaps-on-the-sustainable-development-goals/>
- UNICEF 1990. *Strategy for improved nutrition of children and women in developing countries. A UNICEF Policy Review*. http://www.ceecis.org/iodine/01_global/01_pl/01_01_other_1992_unicef.pdf
- UNICEF 2017. Update on the UNICEF Strategic Plan 2018–2021. https://www.unicef.org/about/execboard/files/Update_on_the_UNICEF_SP_2018-2021-FEB2017.pdf
- United Nations Children's Fund, World Health Organization, World Bank Group 2018. *Levels and trends in child malnutrition: Key findings of the 2018 Edition of the Joint Child Malnutrition Estimates*. data.unicef.org/nutrition; www.who.int/nutgrowthdb; data.worldbank.org.
- World Food Programme 2018. *The Global Report on Food Crises 2018*. The Food Security Information Network. <https://www.wfp.org/content/global-report-food-crises-2018>

Jessica serves as the Senior Nutrition and Food Systems Officer in the Nutrition and Food Systems Division of the UN Food and Agriculture Organization. While at the UN, Jessica is taking a two-year leave of absence from her Bloomberg Distinguished Associate Professorship of Global Food and Agriculture Policy and Ethics at the Johns Hopkins University. She also serves as the Director of the Global Food Ethics and Policy Program at Hopkins. She is the Co-Chair of the Global Nutrition Report and was the team leader for the UN High Level Panel of Experts report on Food Systems and Nutrition. Before joining Johns Hopkins, Jessica held positions in the UN World Food Programme, Biodiversity International, the Earth Institute of Columbia University, and the Millennium Development Goal Centre at the World Agroforestry Center in Kenya. Jessica has a PhD in nutrition from the University of Arizona.