



TO: Maximo Torero Cullen, PhD, Chief Economist

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AND TO: Ismahane Elouafi, PhD, Chief Scientist

AND TO: Qu Dongyu, PhD, Director-General

Food and Agriculture Organization

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Re: Effectively addressing the dire circumstances described in the FAO report, “The State of Food Security and Nutrition in the World 2022”

Dear Drs. Torero Cullen and Elouaf, and Director-General Dongyu,

I am a public health lawyer focussed on food and nutrition issues in Canada and internationally since 1997 and in several Sub-Saharan African countries since 2018 for my small public interest CSO, the Centre for Health Science and Law (CHSL).¹

I read with interest FAO’s [The State of Food Security and Nutrition in the World 2022: Repurposing food and agricultural policies to make healthy diets more affordable](#),² published July 6, 2022 and formally endorsed by the World Health Organization, UNICEF, the International Funder for Agricultural Development, and the World Food Program.

I would like to offer the following perspectives on the report, particularly in how the over-arching recommendations can be best implemented as soon as possible to begin making progress toward the relevant Sustainable Development Goals in the previous few years before the 2030 target date for eradicating malnutrition in all its forms. As with many important initiatives, efforts to repurpose food policy to eliminate hunger, improve nutrition, and mitigate climate change invites multi-disciplinary analysis.

I am in broad agreement with a central message and recommendation of the report to “re-purpose policy support for food and agriculture” based on the findings and conclusions that, for example:

“...sugar or emission-intensive commodities (e.g. beef, milk) receive the most support worldwide despite the potentially negative impacts on health of high sugar intakes, and on climate change adaptation and mitigation due to the high carbon emissions from the livestock sector. This support also creates (relative) disincentives towards producing higher amounts of nutritious foods, such as fruits, vegetables and leguminous crops.” (p. 4)

“A comprehensive policy approach to promote reformulation includes regulatory action to eliminate trans fatty acids (TFA); government-led reformulation programmes to progressively reduce saturated fats, free sugars, salt/sodium and energy covering all major categories of highly processed food and beverages; and, adoption of evidence-based nutrient profile models to inform policies that encourage reformulation.” (p. 111 Options)

“Section 4.2 pointed out the importance of policies that promote shifts in food environments and consumer behaviour towards healthy eating. These could include implementing mandatory limits or voluntary targets to improve the nutritional quality of processed foods and drink products, enacting legislation on food marketing, and implementing nutrition labelling policies and healthy procurement policies to ensure that food served or sold in public institutions contributes to healthy diets.” (p. 132-3 Conclusions)

1. The “compelling but outrageous” descriptive statistics invite more efforts to clarify remedial actions.

The main observations and conclusion of the report are that:

- 828 million people currently suffer from chronic hunger;
- a healthy diet is not affordable for more than 3 billion people;
- the world is moving backwards in its efforts to end hunger, food insecurity, and malnutrition in all its forms with only eight years left to achieve the 2030 SDG targets; and
- most improvement towards these objectives envisioned would be achieved through repurposing fiscal subsidies, particularly if these were to be shifted from producers to consumers.

Many other descriptive statistics were cited to characterize the dire and worsening circumstances and the likely failure to achieve 2030 Sustainable Development Goals on time and solutions appeared focused on episodic concerns (like the war in Ukraine and COVID-19). However, I offer the perspective that the lion’s share of inequity and disadvantage have been exacerbated, not occasioned, by the three Cs: conflict, climate change, and COVID-19 (though Dr. Tedros also cited famine and other reasons).³ Poor nutrition and health are systemic impediments to socioeconomic development of individuals, families and populations that, in turn, undermine good health in a vicious circle.

All the speakers at the July 6th launch stressed the importance of taking action and dedicating more funds, but few stressed or particularized what should be done to disrupt this vicious feedback loop. It is unwise to treat the food and nutrition crisis as a temporary problem that will be solved by curbing (or waiting out) COVID-19 infections, ending the war in Ukraine, and cooling the planet.

2. Law reform offers more cost-effective promise than meagre additional funding.

While billions more dollars may be forthcoming, the amount per citizen in Low-Income Countries pales by comparison—by several orders of magnitude—to the amounts spent by High-Income Countries on COVID-19 mitigation measures within their own borders. One cannot expect meagre investment to have transformational impacts as if by magic. For instance, annual official development assistance by OECD countries increased from \$156 billion per year to \$169 billion from 2019 to 2021 when the ravages of COVID-19 became most worrisome. (See: <https://data.oecd.org/oda/net-oda.htm>) As His Excellency Munir Akram, President of the Economic and Social Council, noted during the launch event,⁴ developing economies have had access to \$100 billion in COVID-19 mitigation funds (including loans), but High-Income Countries injected US\$17 trillion dollars into their own economies to recover from COVID-19, 170-fold more. The contrast between meagre official development assistance to mitigate COVID-19 harm in Low- and Middle-Income Countries to Canadian federal government’s compassionate, generous internal financial supports for Canadians reveals a thousand-fold difference in protective spending per capita compared to OECD donor assistance in LMICs, expressed as receipts per capita.⁵ Considering that LMIC countries exceed the total population of high-income countries by approximately six-fold, the per capita disparity in government support to populations is approximately 1,000-fold and loans and grants combined constitute less than \$10 per capita per year. ECOSOC President Akram called for “out-of-box thinking” to end world hunger and malnutrition in all its forms and FAO Director-General Qu Dongyu, PhD urged that, when money is scarce, you need more wisdom.⁶ I offer the perspective that regulations can expedite the proliferation and implementation of wise ideas.

In my considered view, this highlights the primacy of using regulatory and legislative reforms to modify incentives to better promote production and consumption of healthy diets. National governments have plenary and ample authority to change their own laws. They may lack relatively inexpensive technical support for legal drafting and assurances of litigation support if those laws are challenged by companies or exporting countries in national courts or international trade dispute resolution tribunals. My understanding is that United Nations institutions are generally reluctant to take sides in litigation between member states and in domestic courts except, for example, in supporting general improvements to general litigation and prosecution policy, for example, rights of children in criminal, adoption, and child protection proceedings.

Different approaches to provide such assistance are needed.

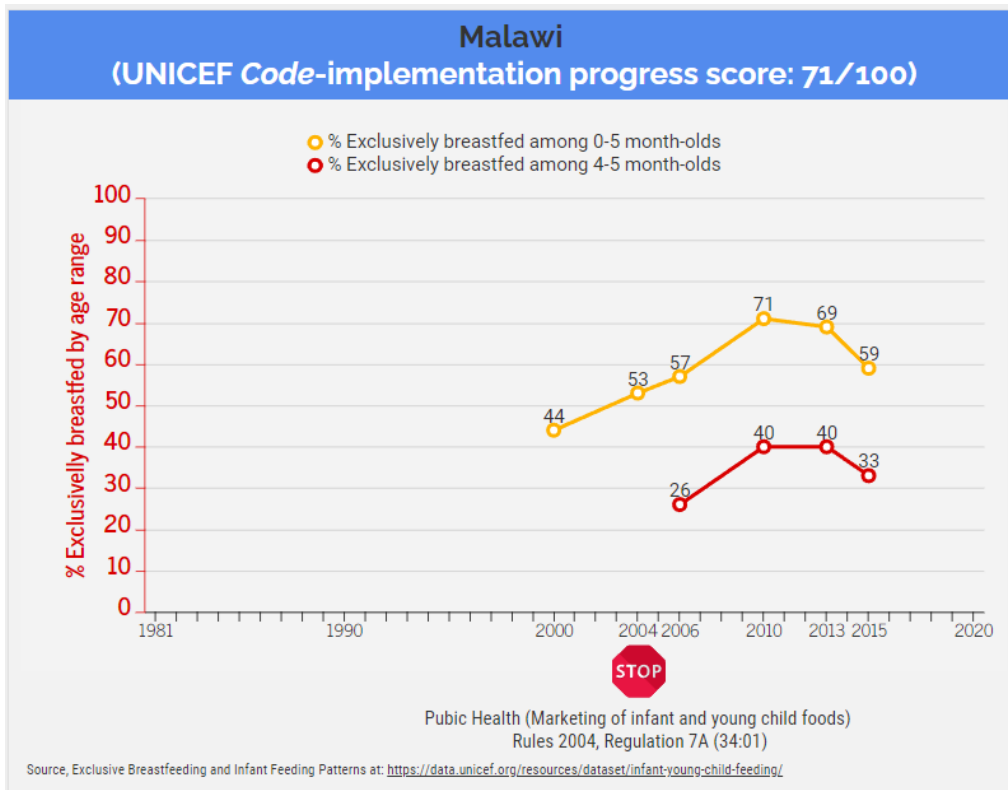
3. UNICEF, WHO and FAO need to ensure that descriptive statistics about the rates of breastfeeding are not misleadingly exaggerated, often by two-fold more successful.

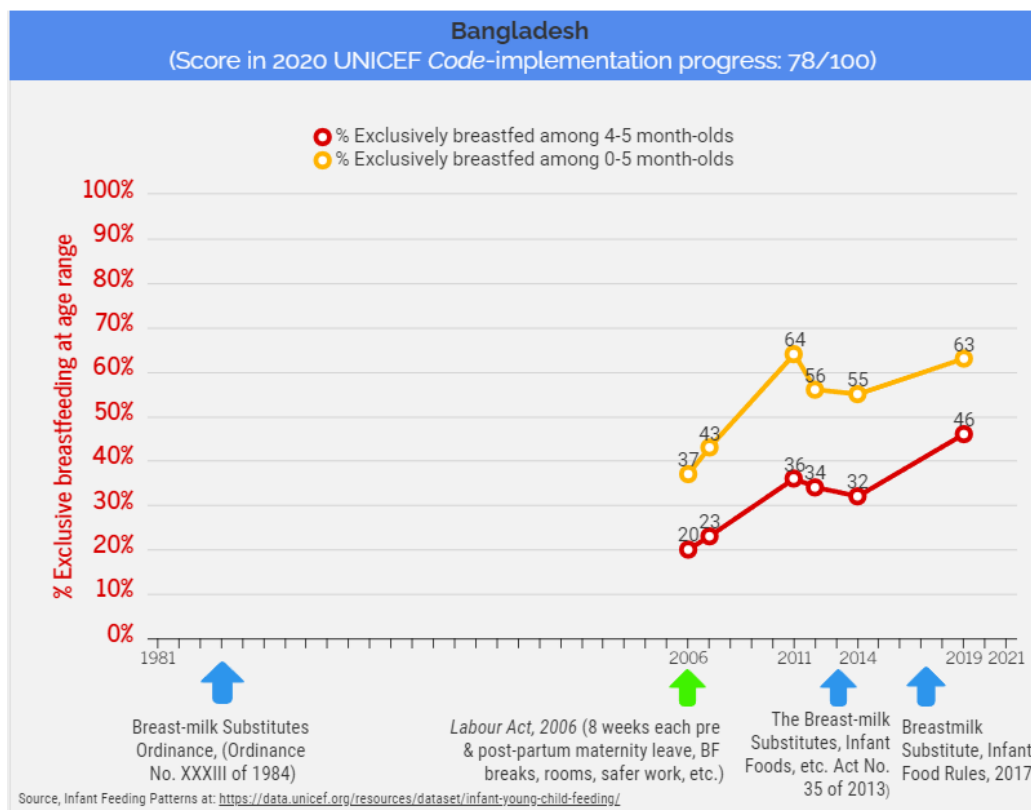
The report repeats a common misleading metric that 43.8% of infants under six months of age are breastfed worldwide (p. xiv and 170). The similar-sounding corresponding public health goal is that 90% to 95% of infants should be exclusively breastfed *until* age six months. However, the surveys conducted to arrive at the 43.8% figure use convenience samples of parents of children aged 0-6 months, not a survey of mothers of infants of who had attained the age of six months

recently enough to have clear memories of their feeding practices at that age. Because exclusive breastfeeding rates tend to decline from birth and it is difficult to resume breastfeeding even after ceasing for even a short period of time, the 43.8% figure is often a two-fold exaggeration of the attainment of the public health goal and probably better reflects the attainment of breastfeeding to age three months.

Many, but not all, surveys of breastfeeding also estimate exclusive breastfeeding rates among 4-5-month-olds, which is certainly a closer approximation of the extent to which populations reach the public health goal, though it is still, obviously, an over-estimate of goal-achievement. See the following charts illustrating the difference between, exclusive breastfeeding rates for children “0-6-months-old” and “4-5-months-old.”

This is important because exaggerating the success of programs and regulations aimed at promoting breastfeeding may diminish by 50% the enthusiasm of governments for improving and enforcing restrictions on the advertising and promotion of breastfeeding, maternity leave laws, and laws protecting breastfeeding for mothers at work. This exaggeration may be a vestige of outdated guidance on breastfeeding which, until 2010, recommended exclusive breastfeeding only to age four months.





- 4. FAO analysis makes standard econometric assumptions about a free market that seem tone-deaf to the realities of food supplies in low-income, largely agrarian economies (and not because of market-distorting policies) that largely, but barely feed themselves; promoting the purchase of food that can only be imported until after the subsequent national harvest seems foreseeably economically harmful to national food systems.**

Repurposing subsidies from farmers to consumers may make sense in places where most food is purchased in the marketplace, produced by a small number of suppliers in a diverse economy (or imported), and where early adopters of the nutritious food diets that are so-promoted can easily purchase more, different nutritious foods from a readily available global marketplace where the domestic adequacy of foreign currency reserves is not a concern. Likewise, the report approach emphasizes trade-based solutions.

Instituting consumption incentives to choose more fruits and vegetables in the marketplace that commercial farmers (and back-year-gardeners) are unable to plant until after the end of the next growing season (or for several years in the case of new fruit trees), will foreseeably harm domestic agriculture. The role of food imports in diet is very low in many Low-Income Countries. For instance, in FAO Trade Statistics indicate that Malawians import approximately 5.5 grams of food per capita, per day (slightly more than a teaspoon of food) costing 2.6 US cents or 21 kwacha,⁷ FAO's *Statistical Yearbook 2021* reports imports of US\$241 million or 3.5 U.S. cents per day in 2020.⁸ By contrast, for instance, while Canada has a small trade surplus in food, according to FAO Statistical Yearbook, it imports approximately \$US 2.45 per capita per day.

In these circumstances, emphasizing the creation of an import finance facility might be perceived as ignoring opportunities for improving productivity of local agriculture and exploiting opportunities to undermine domestic markets with subsidized products from high-income countries, i.e., generally reinforcing colonial relationships.

According to FAO's *Statistical Yearbook* and other sources, low-income countries mainly feed themselves with very little imported food except in years of famine. Countries with more than 50% of their populations employed in agriculture typically feed themselves, largely from their own gardens and from farms within national borders. If a country's agricultural system is not efficient enough to feed its own population, it cannot confidently devote human and financial resources to other areas of economic activity and public service. Though nutritional self-sufficiency is not an essential precondition for food security, self-sufficiency for low-income developing countries is a bigger worry for countries with foreign currency reserves ([dozens of governments hold only a few hundred dollars or less, per capita](#)) that are too small to pay for food imports and inadequate infrastructure to store and distribute it efficiently.⁹ Food price inflation would exacerbate the currency exchange problems.

In many Low-Income Countries, households often produce most of the food they consume. For instance, one survey found that 84% of households in Bangladesh own livestock, mostly poultry.¹⁰ A 2011 survey of nearly 3,000 randomly selected respondents in Bangladesh found that 80% reported owning livestock (an average of nine animals) and 52% kept homestead vegetable gardens.¹¹

Likewise, a 2021 landscape analysis found that, in Malawi:

- a) While urban households purchase 90% of their food, rural households (where 83% of Malawians live) purchase only 30% of their food;
- b) 70% of households cultivate maize while approximately 25% and 45% farm fruits and livestock, respectively;
- c) Poor home storage practices result in rodents and weevil infestations and/or rotting leading to farmers losing up to half of yields;
- d) While the highest quintile of income earners consume double the calories of the lowest income earners, the vast majority of Malawians spend 2/3 of their income on food.¹²

And in Zimbabwe:

*households' own production was the main source of vegetables (81.5%), eggs (80.5%), nuts and pulses (77.3%), and cereals (72.6%), whereas, oils and fats, sugars and sweets, condiments and spices, fish and milk products were mainly acquired through purchasing.*¹³

A group of 26 African, European, and American agricultural economists observed in a 2016 analysis entitled, *Can sub-Saharan Africa feed itself?*:

"[there are] no examples of low income countries that successfully industrialized in the second half of the 20th century while importing major shares of their food supply. Essentially, all success stories started with an economic revolution in the agricultural

sector...Indeed, the African Development Bank explicitly highlights self-sufficiency in food production as a principal goal of its Action Plan for an African agricultural transformation.¹⁴

They concluded:

“Therefore, the path to self-sufficiency will likely require, in addition to yield gap closure, increased cropping intensity and expansion of irrigated production area in regions that can support these options in a sustainable manner. Failure to achieve these intensification options will result in increasing dependence on cereal imports and vast expansion of rainfed cropland area, especially because population in SSA is projected to further increase between 2050 and 2100 by a factor 1.9 and anticipated climate change will make the situation even more challenging.”¹⁵ [emphasis added]

5. FAO estimates of the costs of food for many countries may seem tone-deaf to actual prices paid by the vast majority of citizens.

Table A3.1 “The Cost and Affordability of a Healthy Diet By Region, Subregion, Country and Country Income Group, 2017–2020” (pp. 185-9) estimates the average cost of a healthy diet to be approximately US\$10/capita per day with very little regional or national variation (though outliers like Japan and Jamaica are nearly double the global average and the United Kingdom is approximately half the price).

These figures require explanation because they seem to be based on prices at only urban, western-style grocery stores that serve affluent consumers highly processed and expensive foods, not the basic ingredients that most of the world’s low-income people use to prepare food from scratch at home, especially from their own gardens and livestock. These figures, in some cases, exceed the average GDP per capita by 10-fold. Some explanation of the average amount (and range) of family resources spent on growing and purchasing foods would be helpful.

Corrective policy reforms styled after high-income-country models of front-of-pack nutrition labelling may be most beneficial to the financial elite in those countries who can afford to shop for imported foods in expensive shops. Banning partially hydrogenated oils and advertising to children—especially if based on the Quebec/Sweden approaches which ban all child-directed ads, not creating complex nutrition criteria—could be easier to implement and could help ensure some primordial prevention. However, they might be less effective in the short term than in countries where children and families consume more processed and restaurant food, more exposure to advertising, and more discretionary spending on food.

6. The FAO report advances two radically different and incompatible understandings of the meaning of “nutritious foods and healthy diets.”

The definition of “nutritious foods and healthy diets” in Box 10 at page 71 provides a generally science-based account of what constitutes a healthy die (subject to the nuances qualification described in this section):

“include wholegrains, legumes, nuts and abundance and variety of fruits and vegetables; can include moderate amounts of eggs, dairy, poultry and fish, and small amounts of red meat;¹⁶ ... include safe and clean drinking water as the fluid of choice and exclusive breastfeeding for the first six months of infants lives and partial feeding to two years or¹⁷ beyond. (pp. 71 and 203¹⁸).

However, economists often hold deeply entrenched views about nutrition and food quality that are disconnected from health science. This nutrition-science disconnect is illustrated in Box 13 (at p. 94) which states:

“Classifying food products for their contribution to a healthy diet is critical in the scenario design. At the same time, there are no unique and objective criteria to define such classification.” (p. 94, emphasis added)

The report reveals other indications of misinformation about the meaning of nutritious in describing additional “indicators” at page 93, namely:

- *“Per capita consumption of dairy products (i.e. raw milk, processed milk, cheese)*
- *Per capita consumption of animal fats and vegetable oils”*

Quite the contrary, “raw milk” is a synonym for “unpasteurized milk” which is widely regarded in the public health community as posing serious risks of acute illness and death due to microbiological pathogens; pasteurization is a heat process designed to kill dangerous pathogens. There is a fringe social movement that rejects pasteurization-science and asserts special health benefits of “raw milk” similar to COVID-19 anti-mask ideologues.

Cheese is a highly processed form of milk that is typically high in saturated fat and sodium; consuming enough cheese to meet US/Canadian daily requirement for calcium (1,100 mg in Canada) would entail consuming 70%-1,500% of the DV for saturated fat and to 800-4,000 mg of sodium (i.e., up to double the maximum amount recommended by the World Health Organization for low-fat cheddar and regular cream cheese, respectively, according to the Health Canada’s [Nutrient Values for Some Common Foods](#). The WHO recommends much less calcium (500 mg per day)—an [amount that the Harvard School of Public Health indicates is better justified by the evidence](#)—but, the fact remains that cheese contains high and widely varying amounts of damaging saturated fat and sodium.

Although most vegetable oils are more nutritious than animal fats, vegetable oils are not uniformly nutritious; these distinctions are not explained in the report. Coconut oil, palm oil, and palm kernel oil, for instance, are very high in saturated fat, and the most nutritious oils are highest in polyunsaturated fats. The Institute for Health Metrics and Evaluation,¹⁹ the World Health Organization,²⁰ the United Kingdom Scientific Advisory Committee on Nutrition, the 2015 US Dietary Guidelines Advisory Committee²¹ and a 2017 expert analysis²² agree that polyunsaturated fat is the most effective replacement for saturated fat, a superior choice to replacing saturated fat with sugar, carbohydrates, or monounsaturated fat.²³

Likewise, Figure A on page 94 entitled “Classification of Food Groups based on per Capita Consumption relative to Regional Dietary Guidelines” excerpted from a forthcoming paper²⁴ seems to indicate that consumption of cattle meat and pork is health-promoting (which is generally not true) and that consumption of dairy products, rice, wheat and maize are generally nutritious which is in fact heavily dependent on the manner of processing and type of oilseed (which depends on the plant species).

Moreover, Box 14 on page 105 describes a modelling estimate of the impact of subsidy repurposing in Ethiopia that appears to recommend dramatically reducing subsidies to sugar and increasing them to fruit and vegetables (both other which seem to make sense) but also inexplicably recommends:

- dramatically increasing subsidies for extension cereals;
- dramatically reducing investments in irrigation cereals;
- dramatically increasing extension livestock;
- dramatically increasing subsidies to cattle and coffee;
- eliminating R&D on cereals and non-cereals;

to achieve either affordability alone or affordability with a healthy diet objective.

Possibly the most significant defect in the African diet is that it is based nearly exclusively on variations of sticky porridge. And, studies indicate that much of agriculture in Sub-Saharan Africa is vulnerable due to dependence on rainwater, which makes removing subsidies for irrigation surprising.

Similarly, the greenhouse-gas-emitting potential of cattle, goats, and sheep is too great to be non-specific about what additional (non-cattle) species are recommended for support; likewise, if populations in Low- and Middle-Income Countries ate as much beef, lamb, and goat meat as people in High-Income Countries do now (and HIC consumers do not reduce consumption of ruminant livestock) the climate-warming consequences may become unbearable. (See next section.)

If the FAO—or influential FAO authors of this flagship report—believes there is no reliable definition of nutritious, and the WHO, UNICEF agree, then there is no point in repurposing any policies to improve the healthfulness of the food supply. I submit to you that this is a scientifically unversed opinion of economists that needs to be better informed immediately to make progress in the coming eight years. If FAO is ambivalent about what constitutes “nutritious,” how can it provide technical assistance to national governments?

7. Scant attention to the environmental impact by and on food systems should be rectified in the 2023 FAO reports.

The report devoted very little attention to how food systems contribute to the climate emergency, and how they, in turn, could be harmed by a warming planet.

The United Nations Intergovernmental Panel on Climate Change indicated that the vast majority of food-related contributions to harmful greenhouse gas emissions emanate from cattle. The IPCC estimated that food systems contribute 21–37% of total global greenhouse gas (GHG) emissions—rivaling the energy sector’s contribution of 35% in 2010²⁵—and that climate change will have important negative impacts on food security.²⁶

In one analysis of the greenhouse gas emissions per kilogram of 94 foods sold in the United Kingdom, Oxford University researchers found that meat and fat from cattle and goats emitted 35–64 kgCO₂e per kg of food. Coffee, at approximately 10 kgCO₂e/kg was a distant second place, however, even this was calculated on the basis of the weight of coffee beans and was reduced to 0.6 kg CO₂e per kg of prepared coffee (i.e., a litre of coffee).²⁷ Other foods ranged from near-zero to 5 kgCO₂e per kilogram of food.²⁸ And some of those foods would generally be consumed in very small amounts (such as honey, much smaller than 100 grams in a sitting), further underscoring that beef and goat-related foods are much more GHG-emission-intensive than the rest of the food supply. Likewise, a recent study published in the prestigious scientific journal *Nature Food* estimated that 57% of GHG emissions from the food system comes from livestock.²⁹

The risk of these cattle-related GHG may be even higher now and in the future. A recent study conducted by researchers at Johns Hopkins University and New York University concluded that the conventional method for calculating methane gas contributions by livestock underestimate its impact on climate in High-Income Countries like Canada and the United States to the extent that true methane contributions of meat and dairy production may be 39% to 90% higher.³⁰ Methane accounts for 14% of total global greenhouse gas emissions and is 67 times more potent than CO₂ in temperature change potential after 20 years according to the UN IPCC.³¹ Furthermore, while there are some downward shifts in beef consumption in some demographic groups in high-income countries including North America and Europe, they are still consuming high levels of red and processed meat. Also worrisome, consumption in Low- and Middle-Income Countries is rising, especially in highly populated China and Brazil, and in urban areas.³²

Fortunately, there is great potential for improvement. A 2016 systematic review found that—of 14 common sustainable dietary patterns across reviewed studies—reductions in greenhouse gas emissions from food by as much as 70–80% is possible by adopting sustainable dietary patterns and that reductions in environmental footprints were generally proportional to the magnitude of animal-based food restriction. Dietary shifts modelled also yielded modest benefits in all-cause mortality risk.³³

8. Nutrition-sensitive Value Added Tax (VAT) reforms are consistent with the overarching report guidance, but strangely not explored as a potentially high-leverage law reform interventions to improve diet and reduce greenhouse gas emissions.

In recent years, most analysis and law-form enthusiasm for food tax reform has been focussed on the narrow issue of sugar-sweetened beverages. This could be due to:

- the absence of a national sales tax in the United States (only Japan and the US have no national consumption tax) which spurred calls for a very narrow bases for a new food tax to increase political palatability and focussed on a nutritionally defenseless target food: sugar-water;

- sugar consumption being the highest per capita in the world, more than two-fold higher than most countries according to the *FAO Statistical Yearbook*.
- the concomitant numerous deliberations and dramatic legal and political challenges to soft drink taxes proposals at the state and local levels in the United States which generated perennial headlines, and
- the dominance of American health and economic research in the chiefly English-language global scientific, development, and economics literature.

However, the public health impact of relatively small, uncommon municipal taxes on a single food group can promise very little public health impact, even if they are effective at reducing sugar consumption in pop drinkers; a [high of 10% of all nutrition-related deaths in Mexico and 5% in the United States \(according to the Institute for Health Metrics and Evaluation\)](#) of which a 10% reduction (less than 1% of all nutrition-related deaths) could be expected from a 10% tax. Sugar consumption levels in some countries are negligible.

This FAO report underscores not just the need to reflect on all food taxes in all nations, but that subsidies to farmers should be converted to consumer subsidies:

“Repurposing existing fiscal subsidies is found to provide the largest improvement in the affordability of a healthy diet, particularly if they are shifted from producers to consumer.” (p. 87, 90)

The report makes only passing reference to value-added taxes that are in place in nearly every country and at least half of which apply to some or all foods. Exempting all foods from value-added taxes deprives governments of the opportunity to increase the price gradient in a manner that would likely substantially improve nutrition and health.³⁴ Places where all foods are taxed or exempted (or zero-rated) have the greatest potential to benefit from nutritionally delimited food taxes.

The one analytical reference to value added taxes seemed dismissive of a reduction of tax on fruits and vegetables in Latvia because only 88% of it was passed along to consumers. This seems like a low threshold for disappointment and, ironically, a disappointment that could discourage governments from using powerful tools to influence diet. (See p. 112.) Value added taxes are transparent incentives and can serve educational purposes about good nutrition if applied on consistent science-based nutritional justifications, especially if labels announce the taxability.

9. Modelling interventions that do not promise double-digit percentage improvements over the eight years to 2030 should be redesigned to increase population health impact.

The report estimated that USD630 billion of public funds is currently being provided to support food systems. Much of that does not support nutritious or environmentally sustainable foods, but instead:

“staple foods, dairy and other animal source protein-rich foods, especially in high- and upper-middle-income countries. Rice, sugar and meats of various types are the

foods most incentivized worldwide, while fruits and vegetables are less supported overall, or even penalized in some low-income countries.” (page xv) (pp. xv and 55).

Rectifying this failure of government policy—a central message of the report—is essential.

However, despite the report’s aspiration to improve the global situation meaningfully, many of the proposed measures modelled at pages 96-106 (i.e., repurposing border controls, producer subsidies and consumer subsidies) are estimated to produce one-time reductions of harms by fractions of a single percentage point (and conferring no more than a 3.5% benefit collectively). Those benefits are short of the large improvements expected by the Sustainable Development Goals. For instance, SDG #2 to eradicate hunger and eliminate malnutrition in all its forms by 2030 requires an ambitious 100% reduction.

One-time baby-step remedies are insufficient to make meaningful progress toward achieving the Sustainable Development Goals. Solutions proposed in the report promise one-time reductions in risk of fractions of 1% (Table 9, p. 97 and Table 10, p. 98; Table 12, p. 100) and some are even predicted to increase greenhouse gas emissions in low- and middle-income countries (Table 10, page 98 and Table 12, p. 100), increase sugar consumption in high-income countries (Table 13, p. 101), and marginally increase the price of a healthy diet in low-income countries (Table 13, p. 101). These seem like unacceptable, but fixable, intervention design flaws. Innovations like mandating label notices to alert consumers to the taxability of low-nutrition foods could amplify the effectiveness of nutrition-sensitive taxes.

Surely, the goal should be to advise governments on how to optimize the impact of subsidies on diet. It is unclear what metric for healthy eating is employed in any of these charts because they all cite the same FAO analysts cited in Box 13 where the view that there is no accepted definition of nutritious is articulated. As a starting point, many studies indicate that applying, for instance, a 10% tax on a nutrition-poor foods with acceptable nutritious substitutes decreases consumption by 10% of the former and increases consumption of the latter by 10% (i.e., a unitary price elasticity).

In the 2023 report, consider modelling and recommending law reform solutions that, if adopted, could help governments reach the SDG food- and nutrition-related Sustainable Development Goal targets on time. If the FAO recommends only low-yield baby-steps, it puts the onus on national governments or other UN agencies to design much more effective solutions to achieve SDG Goal targets.

10. Codex Alimentarius Commission guidance on nutrition labelling was not recommended.

The reference to promulgating regulations mandating interpretive front-of-pack nutrition labelling on page 111 of the report omits reference to specific guidance from the Codex Alimentarius Commission, entitled [Guidelines on Front-Of-Pack Nutrition Labelling](#), that was finalized in November 2021.

As you know, the Codex Alimentarius Commission is a joint commission of the Food and Agriculture Organization and the World Health Organization that sets standards for international

trade in food that act as a semi-permeable ceiling standards for national food-related health protection standards, including for nutrition labelling.

From 2016 to 2021, the Codex Committee on Food Labelling negotiated guidance on front-of-pack nutrition labelling, culminating in standards finalized in a November-December 2021 Commission meeting in Rome. This guidance was not noted in the discussions on front-of-pack labelling on pages 111-112 or in the description of Codex standards on pages 117 and 122. Also, the characterization of Codex standards as generally being higher than domestic standards) is not consistently true. Likewise, claiming that Codex standards apply to international trade, but not local trade is incorrect and misleading. (See p. 117.)

However, the underuse of national regulatory and statutory authority to achieve public health nutrition goals is certainly indicative of untapped potential, even if Codex standards do not have many answers with regard to restricting harmful advertising, reformulating foods, or reducing the production or consumption of salt and trans fat, etc.

11. Conflict-of-Interest Safeguards

The foreword signed by the heads of the five concerned UN agencies invited public private partnerships (p. vii), but much of the analysis catalogues the risks of such interactions. For instance:

“Attention must also be given to the private sector, not just farmers but agribusiness and also enterprises in other sectors that constitute the food industry, as their actions can enable or go against the intended objectives of repurposing support in practice. Ignoring the interlinkages between agrifood systems and other systems can produce unintended and uncompensated costs and consequences.” (p. 109)

“[A] study in the Pacific Islands shows that there are opposing views on policy framing when addressing diet-related NCDs due to conflicts of interest. Though governments have identified policy intervention options, implementation has been slow due to diverging perceptions and priorities. For instance, there are disagreements between the need to prioritize public health and decrease imports of highly processed foods versus support for increased trade underlying the need for policy coherence across sectors.” (p. 122)

“It has been observed in some cases when implementing regulations in the food industry to promote healthy diets, that the power of the most important industry stakeholders has been enhanced in the context of multistakeholder governance arrangements, including public-private partnerships. This is the result of expanded corporate influence in policy decision-making. For example, by procuring in-house expertise, food companies have expanded their capacity to engage in these activities and thereby influence food policy and regulation-setting processes. As a result, some structural policy changes have been omitted from the policy agenda.” (p. 125)

An observation that 245 interventions were made at the World Trade Organization by exporting Member States between 1995 and 2019 for the marketing of breastmilk substitutes does not acknowledge that such regulations have never been formally challenged though [612 formal complaints have been brought to the WTO on a range of trade issues](#). Without this context, the FAO report appears to foment the regulatory chill that it condemns in the same paragraph:

“Such challenges contribute to policy inertia and generate a “regulatory chill” that impedes national governments from taking action to repurpose food and agricultural policies...Food industry actors exerted influence on the Codex process on the front-of-pack nutrition labelling and on setting the Codex standard for follow-up formula. Food industry responses to WHO consultations on diet-related NCD policies have tended to promote voluntary or non-statutory approaches instead of legislative measures.” (p. 111)

The report noted that even the one exemplar it proposed as illustrative of the potential for multi-stakeholder platforms it conceded had controversial impacts (p. 125).³⁵ Furthermore, putting expectations on (inexplicably) businesses themselves (SMEs) and civil society rather than government to prevent and manage conflicts of interest seems imprudently optimistic and counter-intuitive. Asking small companies and community groups to offset the influence of comparatively gigantic companies seems unconvincing on its face. Also, expecting small- and medium-sized companies to advocate measures that limit the harms of big companies seems unrealistic because it expects them to be narrowly self-serving (favouring smaller businesses over big ones) or generally self-defeating (curbing practices of big and small companies alike). The report asks SMEs and CSOs to lead “balancing out unequal powers within agrifood systems” (p. xxiii and 88) but much of the analysis expressed concern about the risks that commercial actors that have a track record of impeding the adoption of public health policies or distorting them to suit their commercial objectives.

12. Recommendations:

CHSL does not have the confidence in the potential to raise meaningful amounts of funds from governments and public interest donors to finance scalable nutrition-promotion programs interventions. The nutritional perils of succumbing to foreign debt and food commodity price shocks for countries where citizens spend a large proportion of household income on food are worrisome, but beyond the scope of this submission.

Though, as for tobacco taxation, there is much government revenue-generation potential for shifting food taxes and subsidies from nutritious foods (like fruits, vegetables, and plant-based proteins and non-red meat, and polyunsaturated-fat-rich vegetable oils) to foods high in saturated fat, sodium, and red meat, etc. or to convenience foods, generally.

However, to expedite reforms, I recommend the following, all of which are premised on the understanding that domestic *hard-law* reforms can be implemented with a relatively inexpensive modicum of legal drafting technical assistance using the ample law-making authority of national governments in Low- and Middle-Income Countries. Technical assistance can also help

governments prepare WTO-compliant and constitution-compliant justifications for such reforms to elicit the support of opposition party or coalition MPs or justify executive regulations in courts and before trade dispute resolution panels.

- A. **Breastfeeding:** Proactively draft statutory and/or regulatory reforms to fully implement the WHO *International Code of Marketing of Breast-milk Substitutes* and incorporate maternity leave measures into national social insurance systems and employments standards guaranteeing workplace breastfeeding supports. **Rationale:** While national governments retain full decision-making control over reforms, providing *WHO Code*-compliant solutions tailored to each country can be an important consultation starter. Moreover, the corpus of guidance has been repeatedly reaffirmed in the WHO *International Code of Marketing of Breast-milk Substitutes* and World Health Assembly resolutions for decades; this is the starting point for regulatory reform guidance. Governments may also value ensuring effective enforcement tools, mandating local languages on labels, stipulating adequate font size, and other types of formatting emphasis, etc. Waiting for grossly over-extended government officials to signal readiness to begin considering reforms can needlessly delay progress. The mere act of negotiating contractual arrangements to provide this specialized legal assistance may take longer than providing the technical assistance itself.
- B. **Nutrition Labelling:** Proactively draft model front-of-pack nutrition labelling reforms that are suited to the unique dietary shortcomings of the vast majority of people in Low-Income Countries that, for instance, typically consume far less free sugars, saturated fat, and processed foods than wealthier countries where most front-of-package nutrition labelling systems currently operate. **Rationale:** In many Low-Income Countries, tubers and (often) non-whole grains dominate diets, while fruits, vegetables, and proteins are conspicuously lacking. Where populations in such countries mainly produce much of the food they consume, labels on the few packaged foods they purchase can help regularly disseminate key public health nutrition messages, such as, for example, “Add less salt at home, and eat at least 2-3 cups of fruits, vegetables, and beans daily and use [name of national food-based dietary guidance].”
- C. **Food Tax and Subsidy Reforms:** Proactively draft nutrition-promoting food tax and subsidy measures (including for school food programs) to be inserted in national budget bills. **Rationale:** In most, possibly all, national parliaments, budget implementation bills are recurring annual opportunities to repurpose nutrition-promoting fiscal measures. Proactively drafting language to implement effective reforms, including revisions to VAT rules can help spur reforms. See for instance: [Ernst & Young’s Worldwide VAT, GST and Sales Tax Guide 2022](#) which summarizes and updates rules in more than 150 countries.
- D. **Actionable Food-Based Dietary Guidance for Producer/Consumers:** Proactively draft food-based dietary guidance worksheets to help people who produce most of their own food in homestead gardens to select enough nutrition-sensitive and drought-resistant seeds. **Rationale:** While nearly [100 countries have developed food-based dietary guidance](#), only eight African countries have done so, and even some of those are detailed technical documents, not consolidated to actionable tools to inform annual planting decisions for homestead gardens. Converting nutrition advice to planting and purchasing plans could be important.

- E. **Water management:** Propose measures to help explore opportunities for coordinating and crowd-sourcing labour to expand water purification and distributions systems for crop irrigation, household drinking water, cooking, sanitation, hydroelectric power generation, and domestically manufacturing water infrastructure (e.g., pipes, sinks, and toilets). **Rationale:** Ready access to a safe water supply is an essential building block for food production, consumption, hygiene, electric power generation, and sustainable development. In some, perhaps many, countries, multiple water management efforts are stove-piped in different government ministries, leaving untapped potential for synergy if extra-ministerial leadership is forthcoming.
- F. **Continue articulating the right to food:** Consider articulating model legislation and examples of domestic legislation informed by relevant national constitutional guarantees to health, and child protection. **Rationale:** In recent years there has been growing interest in elaborating and domestically implementing the elements of the right to food, much of which has been aided by reports of United Nations Special Rapporteurs on the Right to Food, Right to Health, and hopefully soon in several expert mechanisms committed to drafting a *Convention on the Right to Development* and a *Legally Binding Instrument to Regulate, in International Human Rights Law, the Activities of Transnational Corporations and Other Business Enterprises*. In many countries, children comprise nearly half of total populations. Children are especially vulnerable and protections that transform the nutritional wellbeing of citizens from a young age can create lasting population-level prevention dividends in physical health, cognitive development, workforce productivity, and less dependence on fragile health care systems. Legal rights to food are powerful justifications for implementing nutrition-enhancing regulatory and fiscal measures. They can also be useful for grounding important civil rights (e.g., to be free from the exploitation of commercial advertising, or exposure to pre-salted foods or trans fat, or freedom from taxes on fruits and vegetables). It can also serve as a doctrinal basis for protective social spending such as publicly funded school food programs, maternity leave, and subsidies on fruits and vegetables. Though some programs can be justified on other human rights grounds, such as protecting the rights of women and children or gender equality. Interesting developments in Malawi and Nepal are on-going and International Development Law Organization projects in Uganda, Tanzania, and Kenya may offer some fresh insights.
- G. **Explore useful areas for additional analytical work.** Consider the above-noted concerns about the need to clarify the meaning of nutritious, optimizing food tax and subsidy amounts and inclusions/exclusions, and better understanding what people currently eat and where they source their food—including their backyards—and track often enough to assess the effectiveness of nutrition interventions. **Rationale:** Elaborating this and other analysis can help inform and justify legal and fiscal measures to help reach sustainable development goals. Many Low-Income Country governments have not conducted general dietary intake surveys frequently or at all which makes designing effective public health nutrition law reforms more challenging and monitoring their success difficult. Some have conducted surveys that focus only on breastfeeding, maternal nutrition, and micronutrient fortification, which might draw attention away from the value of nutrition-sensitive agriculture and other population health measures that can make enduring systemic improvements to nutrition status. Population health approaches are also generally less expensive than continuously identifying and specially treating subpopulations of people that are put at risk by food system deficiencies. The FAO

Statistical Yearbook 2021 and the Institute for Health Metrics and Evaluation estimate many dietary parameters, but it is important to ensure that those numbers comport with the lived reality of local circumstances and that they are considered in adapting and continuously fine-tuning policy interventions to suit local circumstances.

Consider modifying future issues of the FAO *Statistical Yearbook* and *The State of Food Security and Nutrition in the World* to:

- i. **Global nutrition adequacy analysis:** Comment on the fact that the global food supply generally—in rich *and* poor countries—does not correspond to the nutritionally recommended diet, even in countries like Japan where protein and fatty acid consumption is adequate, obesity is relatively low, and life expectancy relatively high. This suggests that there is much room for improvement in health, food security, and healthy longevity everywhere.
- ii. **National nutritional adequacy analysis:** Note that governments of countries where agricultural systems produce mainly grains and tubers, and few fruits, non-starchy vegetables, and plant- and non-red-meat sources of protein should not be surprised that their population nutrition is sub-optimal.
- iii. **Nutritionally delimited food commodities per capita per day:** Add an indicator adapted from “TABLE 42. DIETARY ENERGY SUPPLY BY COMMDITY GROUP, 2018 (KCAL PER CAPITA PER DAY)” but expressed in grams of each commodity per capita per day because using grams is most relatable to dietary guidance. To the extent possible, amounts of foods that are often nutritionally depleted during processing should be disaggregated (i.e., refined vs. whole grains and fruit vs. fruit juice). Grams-per-day is much more relatable to dietary guidance.
- iv. **Nutritional Supply Adequacy:** Add an indicator that properly accounts for national food supply’s sufficiency to meet quantitative minimum and maximum recommended intake of dietary components, e.g., like fruit, protein, and sodium. “TABLE 44. AVERAGE DIETARY SUPPLY ADEQUACY (PERCENT)” is defined as mainly focused only on caloric intake, not on a comprehensive and non-misleading indicator of nutrition. The FAO *Statistical Yearbook 2021* defines “Average Dietary Supply Adequacy” as:

“a country’s average supply of calories for food consumption by the average dietary energy requirement estimated for its population, to measure the adequacy of food supply in terms of calories. Analysed together with the prevalence of undernourishment, it helps identify the cause of undernourishment as mainly due to insufficient food supply or to particularly bad distribution.” (at p. 32)

While there are many contributors to life expectancy—including access to healthcare—nutrition is important. However, for example, Malawi’s [“Dietary Supply Adequacy”](#) (at [page 285](#)), in Malawi is 120, compared to 113 in Japan where the prevalence of obesity is nearly identical and life expectancy is 20 years longer.

- v. **Imports per capita per day:** Represent the food in TABLE 30. FOOD IMPORTS, 2019 (USD MILLION) (CONTINUED) in the units of USD-per-capita-per-day or dependency-per-capita-per-day to make the imports relatable to average dietary intake, dietary guidance, and national per capita production.
- vi. **Nutrition in grams per capita per day:** Represent the amounts of fruits, vegetables, eggs and milk produced and consumed in grams per capita per day by country to connect them to dietary guidance and estimated average consumption;
- vii. **Expand the analysis of human nutrition and nutrition-sensitive agriculture:** Expand analysis of human nutrition and nutrition-sensitive agriculture in future editions of the *FAO Statistical Yearbook*. Agriculture and food systems can play a key role in improving the health of people, but this objective is not served well by reciting standard economic descriptive statistics about grain output, calories, and disease outcomes disconnected from specific dietary shortcomings.
- viii. **Alcohol:** Consider the role of alcohol consumption in nutrition. WHO estimates that alcohol is responsible for 3 million deaths annually (compared to 11 million deaths due to poor nutrition and 823,000 due to for sub-optimal breastfeeding). In many low-income countries, alcohol is primarily produced at home, not at commercial breweries and distilleries, so marketplace restrictions on labelling, advertising, and compositional standards would need to be adapted to effectively achieve public health goals.
- ix. **Climate-change solution modelling:** Consider the role of cattle and other ruminant animals in and the impact of solutions in both *The State of Food Security and Nutrition in the World 2023* and *FAO's Statistical Yearbook 2023*.

Next Steps

My intention is to begin preparing some proof-of-concept examples of these drafting solutions in the fall of 2022 to explore the possibility of uptake by national governments. I will make inquiries then to help ensure that I am not duplicating efforts. I will monitor the non-financial work of the Global Alliance for Food Security that was recently launched by the G-7, and FAO's Committee on World Food Security that was formed, as you know, in 2010. My approach will favour:

- granularity over abstraction,
- amending national hard-law over global guidelines, and
- standard-setting over deliberation and reflection.

Respectfully submitted,



Bill Jeffery, BA, LLB
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Endnotes

¹ The Centre for Health Science and Law is a founding member of the Geneva Global Health Hub (G2H2) and a member of the International Association of Consumer Food Organizations. CHSL is one of the few health-focused Canadian NGOs accredited by the UN Economic and Social Council (ECOSOC). CHSL's executive director, Bill Jeffery, has been personally active in international standard-setting advocacy and expert deliberations at the Codex Alimentarius Commissions (since 1998), World Health Organization (since 2005), UN General Assembly (since 2011), several UN Human Rights Council committees (since 2018), and UNICEF regulatory reform in Sub-Saharan Africa (since 2018). He has advocated mandatory back-of-pack nutrition labelling at the Codex Committee on Food Labelling 1998-2012 and proposed front-of-pack nutrition labelling and advocated its adoptions 2016-2021 and participated in the WHO's first implementation consultation event on the Global Strategy on Diet Physical Activity and Health in 2005. In Canada, he has advocated nutrition labelling reforms, advertising restrictions, sodium reduction measures, a ban on trans fat, and a national, publicly funded school food program. CHSL, like UNICEF, is a member of the global School Meals Coalition and I, on behalf of CHSL, provided technical assistance to 10 national governments and intergovernmental organization in Africa to implement the WHO *International Code on the Marketing of Breast-milk Substitutes* and other nutrition-related regulations 2018-2022. These regulatory interventions are all cited at pp. 111-112, and 132-33, and 170-71 and elsewhere in the report. I currently serve as one of five voting members of the International Development Law Organization's "Healthy Diets and Human Rights Research Initiative Advisory Board" (focusing on Kenya, Tanzania, and Uganda) along with a former Special Rapporteur on the Right to Food, current Executive Secretary of the UN Nutrition Committee, and ex officio reps of UNICEF, WHO, and FAO.

² FAO, IFAD, UNICEF, WFP and WHO. 2022. *The State of Food Security and Nutrition in the World 2022. Repurposing food and agricultural policies to make healthy diets more affordable*. Rome, FAO. Available at: <https://www.fao.org/3/cc0639en/cc0639en.pdf>

³ Launch event of *The State of Food Security and Nutrition in the World 2022* July 6, 2022, New York. Available at: <https://www.fao.org/webcast/home/en/item/5880/icode/>

⁴ At time: 1:34.

⁵ Foreign aid rose to an all-time high when the world faced a widely acknowledged common foe: COVID-19. Official Development Assistance rose closer than ever to the pre-pandemic decades-long, widely ignored call by the [World Bank and United Nations](#) that countries contribute 0.7% of GDP. However, the uptick in funding for Low- and Middle-Income-Countries from High-Income-Countries paled in comparison to the dramatic rise in government assistance from governments of High-Income-Countries to their own residents within their own borders—despite the widely acknowledge rhetoric of solidarity—outstripping foreign COVID-specific aid, in some cases by approximately 1,000-fold (\$10,000 per citizen in Canada (at p. 4 of the [Nov 2020 Economic Statement](#)) compared to the sum mustered for all foreign aid for from all countries of approximately \$6 billion to support 6.5 billion residents in Low- and Middle Income Countries.

⁶ Launch event of *The State of Food Security and Nutrition in the World 2022* July 6, 2022, New York. Available at: <https://www.fao.org/webcast/home/en/item/5880/icode/>

⁷ See: <https://www.fao.org/faostat/en/#data/TM>

⁸ See page 219 at <https://www.fao.org/3/cb4477en/cb4477en.pdf>

⁹ van Ittersum MK, van Bussel LG, Wolf J, Grassini P, van Wart J, Guilpart N, Claessens L, de Groot H, Wiebe K, Mason-D'Croz D, Yang H, Boogaard H, van Oort PA, van Loon MP, Saito K, Adimo O, Adjei-Nsiah S, Agali A, Bala A, Chikowo R, Kaizzi K, Kouressy M, Makoi JH, Ouattara K, Tesfaye K, Cassman KG. Can sub-Saharan Africa feed itself? *Proceedings of the National Academy of Sciences*. U S A. 2016 Dec 27;113(52):14964 and14969. doi: 10.1073/pnas.1610359113. Epub 2016 Dec 12. PMID: 27956604; PMCID: PMC5206509. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5206509/pdf/pnas.201610359.pdf>

¹⁰ See: <https://en.banglapedia.org/index.php/Livestock>

¹¹ Harris-Fry H, Azad K, Kuddus A, Shaha S, Nahar B, Hossen M, Younes L, Costello A, Fottrell E. Socio-economic determinants of household food security and women's dietary diversity in rural Bangladesh: a cross-sectional study. *Journal of Health Population and Nutrition*. 2015 Jul 10;33:2. doi: 10.1186/s41043-015-0022-0. PMID: 26825273; PMCID: PMC5026026. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5026026/pdf/41043_2015_Article_22.pdf

¹² Source: Malawi Integrated Household Survey from 1997–1998. Available at <https://www.urban.org/sites/default/files/publication/31436/411604-An-Urban-Rural-Focus-on-Food-Markets-in-Africa.PDF> and According to [FS-TIP Malawi Food System Diagnostic and Landscaping Analysis, August 2021](#)

¹³ Murendo C, Nhau B, Mazvimavi K, Khanye T, Gwara S. Nutrition education, farm production diversity, and commercialization on household and individual dietary diversity in Zimbabwe. *Food and Nutrition Research*. 2018 May 17;62. doi: 10.29219/fnr.v62.1276. PMID: 29849533; PMCID: PMC5965157.

¹⁴ van Ittersum MK, et al. at 14964-5.

¹⁵ van Ittersum MK, et al. at 14969.

¹⁶ Red meat must be consumed in small amounts because it is high in saturated fat and is classified as a probable carcinogen at high consumption levels by the WHO's International Agency for Research on Cancer. However, cattle, sheep, and goats are significant contributors to greenhouse gas emissions, likely more than the remainder of the food supply combined, especially due to methane emissions and rivalling the impact of fossil fuels.

¹⁷ The WHO guidance was incorrectly characterized as urging rather than supporting continued breastfeeding beyond two years.

¹⁸ See: <https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding>

¹⁹ GBD 2017 Diet Collaborators. Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. Vol 393 May 11, 2019 at p. 1960.

²⁰ WHO. *Health effects of saturated and trans-fatty acid intake in children and adolescents: systematic review and meta-analysis*. 2017. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5693282/pdf/pon0186672.pdf> which concluded: “Reduced intakes of SFA have been shown to be associated with significant reduction in risk of CVD in meta-analyses of both prospective cohort studies and randomised controlled trials (RCTs), with the strongest associations seen when SFA are replaced by polyunsaturated fatty acids (PUFA).”

See also, Mensink, Ronald P. & World Health Organization. (2016). Effects of saturated fatty acids on serum lipids and lipoproteins: a systematic review and regression analysis. World Health Organization. <https://apps.who.int/iris/handle/10665/246104> which concluded: “For total and LDL cholesterol and triglycerides in particular, the most favourable effects were observed for cis-PUFA.”

UN Food and Agriculture Organization: Fats and fatty acids in human nutrition — Report of an expert consultation. 2010. Available at: <https://www.fao.org/3/i1953e/i1953e00.pdf> which concluded that: “Replacing SFA (C12:0–C16:0) with polyunsaturated fatty acids (PUFA) decreases LDL cholesterol concentration and the total/HDL cholesterol ratio. A similar but lesser effect is achieved by replacing these SFA with monounsaturated fatty acids (MUFA).”

²¹ UK Scientific Advisory Committee on Nutrition, Saturated Fats and Health. 2019. London. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/814995/SACN_report_on_saturated_fat_and_health.pdf

²² Wang DD, Hu FB. Dietary Fat and Risk of Cardiovascular Disease: Recent Controversies and Advances. *Annual Review of Nutrition*. 2017 Aug 21;37:423-446. doi: 10.1146/annurev-nutr-071816-064614. Epub 2017 Jun 23. PMID: 28645222. Available at: <https://www.annualreviews.org/doi/pdf/10.1146/annurev-nutr-071816-064614?download=true>

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- ²³ US Dietary Guidelines: 2015-2020 state: “Strong and consistent evidence shows that replacing saturated fats with unsaturated fats, especially polyunsaturated fats, is associated with reduced blood levels of total cholesterol and of low-density lipoprotein-cholesterol (LDL-cholesterol). Additionally, strong and consistent evidence shows that replacing saturated fats with polyunsaturated fats is associated with a reduced risk of CVD events (heart attacks) and CVD-related deaths....However, the evidence base for monounsaturated fats is not as strong as the evidence base for replacement with polyunsaturated fats.”
- ²⁴ Glauber, J. & Laborde, D. (forthcoming). *Repurposing food and agricultural policies to deliver affordable healthy diets, sustainably and inclusively: what is at stake?* Background paper for *The State of Food Security and Nutrition in the World 2022*. FAO Agricultural Development Economics Working Paper 22-05. Rome, FAO.
- ²⁵ Intergovernmental Panel on Climate Change. Energy Systems. 2020. Available at: https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter7.pdf
- ²⁶ Intergovernmental Panel on Climate Change (IPCC). Special Report: Special Report on Climate Change and Land, CH05, Food Security. Executive Summary. 2019. Available at: <https://www.ipcc.ch/src/cl/chapter/chapter-5/>
- ²⁷ Personal email communication from the principal investigator on April 25, 2022 confirming the greenhouse gas impact of 190 of prepared coffee.
- ²⁸ Scarborough P, Appleby PN, Mizdrak A, Briggs AD, Travis RC, Bradbury KE, Key TJ. Dietary greenhouse gas emissions of meat-eaters, fish-eaters, vegetarians and vegans in the UK. *Climate Change*. 2014;125(2):179-192. 2014 Jun 11. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4372775/pdf/10584_2014_Article_1169.pdf
- ²⁹ Xu, X., Sharma, P., Shu, S. *et al.* Global greenhouse gas emissions from animal-based foods are twice those of plant-based foods. *Nature Food* 2, 724–732 (2021). <https://doi.org/10.1038/s43016-021-00358-x> Available at: <https://www.fao.org/3/cb7033en/cb7033en.pdf>
- ³⁰ Matthew N Hayek, Scot M. Miller. Underestimates of methane from intensively-raised animals could undermine goals of sustainable development. *Environmental Research Letters*, 2021; DOI: [10.1088/1748-9326/ac02ef](https://doi.org/10.1088/1748-9326/ac02ef) Available at: <https://iopscience.iop.org/article/10.1088/1748-9326/ac02ef/pdf>
- ³¹ Intergovernmental Panel on Climate Change. *Climate change 2014: Synthesis report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva: Intergovernmental Panel on Climate Change, 2014 at page 87. Available at: https://www.ipcc.ch/site/assets/uploads/2018/05/SYR_AR5_FINAL_full_wcover.pdf
- ³² Clonan A, Roberts KE, Holdsworth M. Socioeconomic and demographic drivers of red and processed meat consumption: implications for health and environmental sustainability. *Proceedings of the Nutrition Society*, Cambridge University Press. 2016 Aug;75(3):367-73. 2016 Mar 29. PMID: 27021468; PMCID: PMC4974628. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4974628/pdf/S0029665116000100a.pdf>
- ³³ Aleksandrowicz L, Green R, Joy EJ, Smith P, Haines A. The Impacts of Dietary Change on Greenhouse Gas Emissions, Land Use, Water Use, and Health: A Systematic Review. *Public Library of Science (Public Library of Science One)*. 2016 Nov 3;11(11):e0165797. doi: 10.1371/journal.pone.0165797. PMID: 27812156; PMCID: PMC5094759. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5094759/pdf/pone.0165797.pdf>
- ³⁴ Jeffery B. Food Taxes. chapter in *World Encyclopedia of Food Policy*. 2015. Sage. Los Angeles. Ernst & Young. Worldwide VAT, GST and Sales Tax Guide 2022. New York. Available at: https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/tax/tax-guides/2022/ey-vat-gst-and-sales-tax-guide-25-may-2022.pdf?download
- ³⁵ Michéle, L., Prato, S., Rundall, P. & Valente, F. 2019. When the SUN casts a shadow. The human rights risks of multi-stakeholder partnerships: the case of Scaling up Nutrition (SUN). Geneva, Switzerland, FIAN International, IBFAN (International Baby Food Action Network) and Society for International Development. Available at: https://www.fian.org/files/files/WhenTheSunCastsAShadow_En.pdf
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