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Marta Tuninetti[a,*], Luca Ridolfi[a], Francesco Laio[a]

[a] *Department of Environment, Land, and Infrastructure Engineering, Politecnico di Torino, Corso Duca degli Abruzzi 24, 10129, Turin, Italy.*

Abstract

The EAT-*Lancet* Commission has proposed a global benchmark diet to guide the shift towards healthy and sustainable dietary patterns. Yet, it is unclear whether consumers' choices are convergent with those guidelines. Applying an advanced statistical analysis, we mapped the diet gap of 15 essential foods in 174 countries over 1961-2018. We found that countries at the highest level of development have an above-optimal consumption of animal products, fats, and sugars, but a sub-optimal consumption of legumes, nuts, and fruits. Countries suffering from limited socioeconomic progress primarily rely on carbohydrates and starchy roots. A gradual change towards healthy and sustainable dietary targets can be observed for seafood, milk products, poultry, and vegetable oils. We show that if all countries adopted the EAT-*Lancet* diet, water footprint would fall by 12% at global level but increase for nearly 40% of the global population.

The EAT-*Lancet* Commission has set up scientific targets for achieving healthy diets from sustainable food systems [1]. This *healthy reference diet* primarily consists of vegetables, fruits, whole grains, legumes, nuts, and unsaturated oils (such as of olive, soybean, rapeseed, sun-

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*Corresponding author

Email address: marta.tuninetti@polito.it (Marta Tuninetti)

flower, and peanut oil). It also includes a low to moderate amount of seafood and poultry. Still, it limits to nearly zero the consumption of processed and unprocessed red meat (beef, pork, and lamb), added sugar, refined grains, and starchy vegetables (e.g., potatoes and cassava) [1]. This benchmark diet was based on the extensive literature on foods, dietary patterns, and health outcomes (e.g., the Mediterranean Diet, the New Nordic Diet [2]).

Though the healthy reference diet is described through the desirable intake of specified food groups, diet habits are more than the sum of nutrients and foods consumed or the dietary patterns associated with them [2]. Food systems across the globe are embedded in unique historical, religious, social, and cultural contexts. Notwithstanding, people generally eat what they can afford [3]. Moreover, considering the detrimental environmental impact of current food systems [4], and the concerns raised about their sustainability [5, 6, 7], there is an urgent need to promote diets that are healthy and have low environmental impacts.

The intrinsic diversity of diets worldwide, thus, calls for indicators to monitor and communicate the gap existing between the current food system and the benchmark diet. Of particular concern for policy-makers is to engage consumers in the transformation and revise the national Food-Based Dietary Guidelines [8] to promote healthy and sustainable diets. Sweden is a good example, having introduced sustainability in its dietary guidelines [9].

The existing accounting of the so-called *diet gap* (DG) between the current food system and the healthy reference diet at the regional scale [1] fails to address the heterogeneity of the diet patterns across countries and between different levels of socio-economic development [10]. Furthermore, what is not clear is how the healthy reference diet would affect country-specific environmental footprints. Indeed, the dietary footprint of final consumers is contributed on one hand by local production and on the other hand by the international trade market. The most significant effort in this direction has been made by Semba et al. [7]; this study shows a global net reduction of GHG emissions by 23% if all countries were to endorse the healthy diet, despite some increases that would occur in low -and middle-income countries.

Drawing upon two strands of analysis into the water-food nexus, this study maps the diet gap existing between the current and a healthy food system. Also, the evaluation of the dietary water footprint (WF) [11, 12, 13] that would be associated with the healthy and sustainable diet transition. The diet gap quantification is based on the study by Willet et al. [1], but it is carried out with a greater spatial and temporal resolution. Country diet gaps are evaluated over the period 1961-2018 for 15 essential food groups encompassing the whole food system. Results are interpreted in light of the level of socio-economic development of each country. This assessment is combined with the dietary WF [14, 15] associated with the adoption of the healthy reference diets in all countries (i.e., diet gap closure) to show the potentials for water-saving and the expected synergies and trade-offs among adopting the healthy diet while reducing WF. Closing the diet gap would imply a 12% net reduction in global WF, despite an increase in the WF of 55 low- and middle-income countries.

Results

Socioeconomic heterogeneity of the diet gap

The diet gap (DG) is evaluated as the ratio between the country food supply net of food waste (or net food supply) and the healthy reference diet recommended by the EAT-*Lancet* Commission [1]. Country net food supply is obtained by diminishing the FAO data on food supply [16] of the losses and waste at the household level [17, 18], in order to estimate the actual human consumption. The healthy reference diet is referred to a 30-years adult averagely consuming 2500 kcal per day. Hence, we annually harmonize this amount of energy for each country to account for the variability of the population's age, gender, and lifestyle (see Materials and Methods).

Figure 1 provides the summary statistics of the country diet gaps of 15 food groups (Table 1) across five Socio Demographic Index groups (SDI, Tables S2). These groups account for per-capita income, mean educational attainment of individuals aged 15 years or older, and the total fertility rate among women younger than 25 years [19, 20].

An expected pattern, described by the Bennett's Law [21], emerges in the analysis of the *DG*s across the low to high SDI groups: as incomes rise, people eat relatively fewer starchy staple foods and relatively more meats, oils, sweeteners, fruits, and vegetables [21, 14]. Despite this acknowledged pattern, significant heterogeneities appear in each SDI group. The vegetables and fruits only partially follow Bennett's Law, with several highly developed countries showing a smaller consumption of these products than high-middle and middle-income countries. In the following, we group products as in the EAT-*Lancet* study [1] to describe with greater details the diet gap patterns across diverse socio-economic classes. The maps of the country diet gap of each food group are provided for the year 2018 (see Figures 6-13 and Figure S1-S7).

Major protein sources According to the healthy reference diet, major protein sources should come primarily from plants (100 g/day of legumes including pulses, soy foods, and peanuts, and 25 g/day of tree nuts) and fish (28 g/day), and secondary from poultry (29 g/day) and eggs (13 g/day) [1]. Red meat intake should be limited to 14 g/day [1], as it appears to be linearly related to total mortality and risks of an increased incidence of Type 2 Diabetes Mellitus (T2DM) [22, 23]. Our results show that the global bovine meat supply is 2.5 times larger (DG=2.5) than the healthy reference value [1]. However, it reaches 23 in Argentina and nearly 11 in Uruguay, Uzbekistan, and Brazil (see Table S4). Globally, pig meat supply is almost nine times larger than the reference value (Figure 1). In contrast, the net supply of poultry meat nearly matches the reference value on a global average, as for seafood and milk, despite significant heterogeneities across countries (Figures 8, 9, 10).

Looking at the plant-based proteins, the global average DG is 0.26 for legumes and 0.12 for nuts (Figure 1). In the case of nuts, the current net supply is sub-optimal in all countries; Iran, Vietnam, and Greece are the only countries with a nut DG larger than 0.5 (Figure 13). Differently, legumes consumption is adequate in some of the lowest developed countries (e.g., Cameroon, Nicaragua, Tanzania, and Ethiopia), as shown in Figure 12.

Following Bennett's law [21], the average diet gap of animal-based foods increases moving from low to high SDI countries (Figure 1), as opposed to the pattern of legumes, and similarly to the one of nuts.

Major carbohydrates sources The healthy reference diet includes 232 g/day of whole cereals and 50 g/day of tubers and starchy vegetables [1]. Global cereals DG is around 1.50 (e.g., 348 g/day on average), exceeding 2.3 in Egypt, Mali, and Burkina Faso. It is sub-optimal, but always greater than 0.75, in few countries (e.g., the US, Canada, Germany, Rwanda, Central African Republic, Congo, and Uganda), as shown in Figure S1. Interestingly, nearly all the population in highly developed countries eat fewer cereals than the prescribed intake (Figure 1).

The supply of starchy roots is 3.56 times larger than the target value on a global average (Figure 1), but the diet gap overcomes 8 in the low and low-middle income countries. Cereals and starchy roots are mostly over-optimal in the least developed countries, where these staple products make up most of the calories requirement.

Fruits and vegetables Fruits and vegetables are essential sources of macro-and micronutrients [1], and they are crucial also for the prevention of cardiovascular diseases. The healthy reference diet includes on average 200 g/day of fruits and 300 g/day of vegetables. Results show that the current fruit consumption is sub-optimal globally ($DG = 0.73$, Figure 1). Instead, vegetables net supply is closer to the healthy target with a DG of 1.12. However, vegetables supply is sub-optimal in all the low and low-middle SDI countries (Figure S4), where fruits supply is half of the healthy value (Figure S3). On average, middle-high income countries have the most balanced consumption of fruits and vegetables.

Added fats Added fats should be limited to an average of 52 g/day with a mix emphasizing predominately unsaturated plant oils (47 g/day) [1]. The current food system appears to be upside-down: the average supply of vegetable oils is always sub-optimal -$DG = 0.8$- (Figure 1 and Figure S6), while the supply of animal fats exceeds the healthy threshold in the middle, high-middle, and high SDI countries where DG reaches 3.64. In this last group, many European countries are over-passing the target intake by ten times (Figure S5), with important implications for coronary diseases and T2DM [23].

Sugar and other sweeteners An average of 30 g/day of sugar and other sweeteners can be consumed according to the EAT-*Lancet* Commission [1]. According to our estimates, the sugar DG exceeds by twice this reference value. In particular, the sugar diet gap increases from 0.96 to 3.64, moving from low to high SDI countries. The US, Switzerland, New Zealand, and Colombia show the largest DG with values between 4.7-5 (Figure S7).

The remarkable heterogeneity across all the food groups analyzed, even among countries in similar socio-economic conditions, implies substantial potentials to reduce the diet gap and improve the diet composition. Indeed, for many products, diet gaps are skewed by consumers with exceptionally high supply compared to the healthy reference threshold. This creates opportunities for targeted diet shifts, from countries with larger supply to countries with lower individual supply.

Evolution of food systems

The transition to the healthy reference diet involves substantial changes in the food habits of millions of people. These changes may conflict with cultural and social norms [24], the political economy [25], and have related technological and environmental implications [1].

Figure 2 shows the dynamics of diet gaps along a long-term period (1961-2018) for each food group.

Recommended net supplies of legumes, nuts, fruits, and vegetable oils are the most critical to be reached for most countries (Figure 2), as proven through the annual sub-optimal DG since the Sixties. However, the DG of fruits and vegetable oils exhibit positive trends with few exceptions. The lowest developed countries show a nearly stabilized or decreasing sub-optimal DG for fruits supply (Figure 2,c). The situation is more dramatic for vegetables supply, whose DG in the lowest developed countries has been stabilized around 0.2-0.3, despite a small increase in the past decade. In these countries, the recommended levels of fruits and vegetables are often not affordable, especially in rural areas [26]. Also, in the case of legumes and nuts, to escape the diet gap stagnation seems very critical, especially for the environmental implications of tree nuts production [6].

Notwithstanding, an upward trend in aggregate per-capita meat consumption [16], differences in the diet gap patterns are evident when examined by meat category (Figure 2). Bovine meat DG slightly decreased over the past decades, despite remaining above the healthy threshold [1]. Conversely, pig meat and poultry meat supply increased significantly, and the global pig meat supply has exceeded by eight times the healthy threshold. We notice a downward trend of bovine meat supply in the highest developed countries (DG decreased 7 from to 4). In particular, in Europe, more recent data suggest a rise in low-meat diets [25].

Similarly, fish DG has linearly increased over the past decades, and if this trend continues, it is likely to achieve the target soon, at least on a global average. However, the lowest developed countries show a nearly constant DG of 0.45. On the other hand, highly developed countries over-consume fish by 20%, and this pattern has remained stable since the 90s (Figure 2). A possible explanation lies in the fact that supply from marine capture has stabilized over the past decades despite growing demand, as wild fisheries are approaching their ecological limit [27]. This may challenge the achievement of the EAT-*Lancet* diet, especially in some countries. However, recent literature [27] has shown the potential of boosting mariculture production, which is now far below its ecological limit.

The evidence presented in Figure 2, thus, supports the idea that most countries are likely to be off-track to reach the *Lancet*'s healthy diet soon if the food system proceeds along the same direction with the same trends. Hence, the food system calls for new solutions to boost the transition to the healthy reference diet. As shown in Figure 1, such solutions should be integrated across countries as the excess supply in high SDI countries can be devoted to filling the gap in the least developed countries.

Global production can sustain the EAT-*Lancet*'s diet for most foods

We build a hypothetical *healthy reference diet* scenario by assuming that all countries shift their diet habits toward the healthy one (see Materials and Methods). Then, we analyze whether current agricultural production would be able to meet the demand of food and feed required by the EAT-*Lancet* diet. This potential transition impacts both the food and feed sectors. We evaluate the target supply of plants and animal products for human supply for the food sector, including the associated losses and waste along the food supply chain. We assess the target farm animal production in each country and the corresponding target supply of crops for feeding livestock (see Materials and Methods). Finally, we compare these target supplies with the current global production.

Figure 3 shows the target (first box) and current (second box) domestic supply at the global scale and their partition across the food, feed, and other uses sectors. The demand for agricultural goods for other uses is kept constant in this analysis and equal to the one evaluated by the FAO ([16], see Materials and Methods).

Our results show that current crop production would not be sufficient to sustain the global demand for vegetable oils, legumes, fruits, and nuts risen by the adoption of the healthy reference diet globally (Figure 3, bold boxes). In particular, nut production should be increased by over four times compared to the 2018 value, with important implications for water resources [6], while legumes production should be increased by 40% compared to the current value, but pulses production in particular should be nearly doubled. However, for all the other food groups, current production is sufficient to meet the target demand. In particular, meat production can be substantially reduced (Figure 3, e.g., pig meat and bovine meat), with substantial cuts of feed and, thus, crop demand. The cereals supplied to the feed sector can be nearly halved under this scenario. Dairy products and vegetables show a good balance between current production and target demand, thus suggesting potential redistribution among countries to close the diet gaps associated with these products. Also, the unbalance found for the fruits group is smaller than that of legumes and nuts, hence suggesting a minor priority of intervention in terms of production boosting, but claiming for redistribution through the market to improve the current diet gap (Figure S3). Finally, the supply of fish and seafood exceeds the target demand, thus indicating possible reductions in seafood harvest and fishing.

Implications of adopting the EAT-*Lancet* diet for water footprint

Globally, if all countries adopted the healthy reference diet, the dietary water footprint would decrease by 736 km^3 of water (-12%) compared to the current value. In this new scenario, India would have the largest dietary WF, followed by the US and China. This pattern is explained by the coupled role of country population and water use efficiency.

Figure 5 shows the estimated percentage changes in the dietary water Footprint (WF) of final consumers associated with the adoption of the healthy reference diet (see Materials and Methods). The dietary WF accounts for the fact that the country's supply of food results from the sum of local production and imports, where imports may occur from producing or non-producing countries, the latter case testifying a re-export of goods produced elsewhere [13]. Therefore, the dietary WF is proportionally contributed by local production and trade (see Materials and Methods).

In most countries (119 countries, 60% of global population), the healthy transition (i.e., diet gap closure) would decrease the dietary WF, up to -2876 l/day/cap in Israel. In these countries, the diet gap closure would happen in a strong synergy with the reduction of water footprint, as similarly shown by Semba et al. [7] for the GHG footprint. The most considerable per-capita reductions (>50%) would happen in Israel and the US thanks to the decrease in the consumption of water-intensive foods, which are mostly meat- and sugar-based. The US, Brazil, China, Russia, and Mexico would exhibit the largest WF reduction in terms of the total annual volume (see Figure 8); these countries would be able to save up to 252 km^3 of water per year - estimated in the US - thanks to the diet shift.

Despite this, in 55 countries, the healthy transition would entail an increased dietary WF, primarily in Sub-Saharan African, South and South-East Asian countries (Figure 4), where significant diet gaps have been shown. The largest increases in volumes would happen in India (due to rise in meat products and vegetable oils, Table S4), Indonesia (due to the increase of dairy products and fats), and Nigeria (increases in poultry meat and dairy products) (Figure 8), where 38-196 km^3

of water would be additionally required each year to accomplish the transition. These countries would increase the daily WF of 430-844 l/day/cap on the per-capita values. The most significant per-capita increases would happen in Tajikistan, Sri Lanka, and Chad, where the dietary WF would more than double. These outcomes shed light on the possible trade-off that may arise in countries requiring more water-intense foods (e.g., meat products, vegetable oils; [13]) to close their diet gap.

Nevertheless, the heterogeneous pattern shown in Figure 8 with positive and negative WF gaps demonstrates the critical role of food trade in closing the diet gap. At the same time, virtual water trade [28] may redistribute water resources according to the gradient shown in the map (Figure 8), i.e., from countries that would reduce their WF to countries that would increase it through the adoption of the healthy reference diet. Notably, the comparison between the country average diet gap, obtained as a calories-weighted average of the DG values in Tables S5, and the percentage change in WF volumes (Figure S8) suggests that these two variables are related by a complex relation (Figure 5). An improvement toward the closure of the diet gap does not necessarily imply an increase in the water footprint. Indeed, many factors, e.g., the country food basket composition ([29]), the domestic WF typical of agricultural production, the structure of the international trade market, concur to characterize such a complex relation.

Conclusions

Unhealthy diets and malnutrition are among the top ten risk factors contributing to the global burden of disease. In addition, the way we produce and consume food is taking a toll on the environment and natural resource base [2]. The *healthy reference diet* introduced by the EAT-*Lancet* Commission [1] combines all the dimensions of sustainability, healthiness, and wellbeing, to improve the global food system.

To assess how healthy and sustainable is the current food system, we map the diet gap existing between country diet habits and the EAT-*Lancet* diet [1]. To this aim, we quantify and make available a new data set of diet gaps for 15 essential food groups, 174 countries, evaluated over 1961-2018. To complement the picture provided by Semba and colleagues [7] on the GHG emissions associated with the healthy reference diet, we also provide estimates of the associated dietary water footprint.

Results show that countries at the highest level of development show consolidated over-optimal consumption of animal products, fats, sugars, but a sub-optimal consumption of legumes, nuts, and fruits. On the other hand, countries suffering from limited socioeconomic progress primarily rely on carbohydrates and starchy roots. Nevertheless, some transformations toward healthy targets have been happening over the past decades for seafood, milk products, poultry, and vegetable oils. In synthesis, as incomes rise, people eat relatively fewer calorie-dense starchy staple foods and relatively more animal products, vegetable oils, sugars, and refined carbohydrates, thus following Bennett's Law [21]. However, our results show that vegetables and fruits only partially follow Bennett's Law, with some countries at the highest level of development consuming fewer fruits and vegetables than middle-income countries.

On a global scale, we find out that current production patterns [16] would be able to meet the *Lancet* recommendations for 11 out of 15 food groups, being the production of vegetable oils, legumes, fruits, and nuts not sufficient even on a global scale. Hence, targeted solutions need to be found to close the diet gaps in these two different situations. Globally, the adoption of this healthy diet would reduce the total WF by a net of 12%, despite WF would increase in 55 low- and middle-income countries where 40% of the global population lives. The patterns of WF changes nearly align with those of GHGs emissions found by [7], thus calling for integrated solutions to lessen the pressure on the environmental resources.

Approaches to promote the transition to the healthy reference diet can be based on a variety of interventions, including raising awareness and education, meal plans, portion size, economic incentives, and taxation (e.g., soda taxes, [30, 14]. In both urban and rural areas, the lack of physical access to food markets, especially to fresh fruit and vegetable markets, represents a formidable barrier to accessing a healthy diet (e.g., in food deserts [14]), especially for the poor. Possible actions to offset costs and generate new economic opportunities could include providing discounts to low-income households to purchase fruits and vegetables [24]. The improvement of refrigeration, food processing, and sustainable packaging may be a critical contribution in creating environmental and public health value [31].

Notably, consumers' choice about which foods to acquire and consume happen in a specific layer of the whole food system, which is called *food environment* [32]. The recent study by Downs and colleagues [33] has added the sustainability property as an element of the food environment to encourage consumers to make dietary choices that, in turn, are more sustainable. Sweden and Brazil are good examples of countries having proposed dietary guidelines inclusive of environmental sustainability (`http://www.fao.org/nutrition/education/food-dietary-guidelines/background/sustainable-dietary-guidelines/en/`).

Based on our results on annual diet gaps, solutions can be further tailored to each food group. For groups showing sufficient production, strategies should incorporate international cooperation through policies, prices, and by limiting restrictive trade policies as they tend to raise the cost of food, which is harmful to net-importing countries [34]. This cross-countries redistribution of food may turn the current trade-offs into synergies by adopting the healthy reference diet while reducing the water footprint. Trade re-orientation policies may play a critical role in boosting nutritious food flows from middle and high-income countries to low-income ones. However, current trade flows are dominated by cereals rather than micronutrient-rich food products [35]. Also, domestic taxes should be designed to sustain and accelerate the healthy transition by breaking the inertia of the food system that we have shown for many foods. Good examples include Chile's Law of Food Labeling and Advertising implemented in 2016 [36].

For products showing insufficient production, even on a global scale, strategies should primarily be devoted to increasing food production sustainably. The food system transformation will also impact producers as land management, waste reduction, and food storage improvements will come at some cost. Crop substitutions and production basket optimization [37] may enable for some land and water compensation between those products whose production can be diminished (e.g., cereals) and products whose production should be increased (e.g., legumes).

All the solutions for more sustainable and healthy food systems should be set in the complex context of countries' cultures, religions, social norms, and traditions. As suggested by the EAT-*Lancet* Commission, the diet has been conceived to be as much versatile as possible [1] to include and promote diverse culinary experiences as opportunities to learn new ways of preparing diets that are healthy and enjoyable (e.g., `https://eatforum.org/planetary-health-recipes/`).

Methods

Current status of food systems The country Food Balance Sheet (FBS) are available from the FAOSTAT dataset [16] along the period 1961-2018. First of all, we have checked the accordance between the variables provided through the Food Balance Sheet (FBS) evaluated with the old methodology (for the period 1961-2013) and the New Food Balance (period 2014-2018). The key difference between the two versions of the database is the absence of a balance variable in the most updated version. With the new methodology, a balancing mechanism proportionally spreads the imbalances among all the components of the

Table 1: **The EAT-*Lancet* healthy reference diet.** Association between the agricultural food groups defined by the FAO in the Food Balances [16] and the EAT-*Lancet* commission [1] for animal and vegetal products. The healthy reference intake (expressed in kcal/cap/day) defining the global benchmark diet is reported for each food group and it is referred to an average intake of 2500 kcal/day.

FAO nomenclature	**EAT-*Lancet* nomenclature**	**Healthy reference intake**
Animal fats	Dairy fats & Lard or tallow	36
Bovine Meat	Beef and Lamb	15
Eggs	Eggs	19
Fish, Seafood	Fish	40
Milk - Excluding Butter	Dairy foods	153
Pigmeat	Pork	15
Poultry Meat	Chicken and other poultry	62
Animal products		**340**
Cereals - Excluding Beer	(Whole) grains	811
Fruits - Excluding Wine	Fruits	126
Nuts and products	Tree nuts	149
Pulses, Soyabeans, and Groundnuts	Legumes	426
Starchy Roots	Tubers or starchy vegetables	39
Sugar & Sweeteners	Added sugars	120
Vegetable Oils	Palm oil and unsaturated oils	414
Vegetables	Vegetables	78
Vegetal products		**2163**
All products		**2503**

food balance. Conversely, according to the old methodology, one of the components of the FBS (often stocks or feed) takes on the unbalanced amounts, thus inheriting all the statistical errors. As pertain the supply variables, the two versions of the database are more than accurate in showing continuum and well-connected supply's dynamics.

We selected in the FBS the aggregated food categories ("items aggregated") matching the food groups available in the EAT-*Lancet* report [1]. We overall found a good match between the two nomenclatures of the FAO and Willett et al. [1], as shown in Table 1. For each food group, f, (e.g., cereals-excluding beer, legumes), we organized the country data pertaining to food supply [tonne], feed supply [tonne], per-capita food supply [kcal/cap/day], population, domestic supply [tonne], and production [tonne] into a coherent database. All the elements provided in tonne by the FAO are converted into the corresponding caloric contents using the average energy yield [kcal/g] of each food group [38]. Hence, we performed all the calculations using the caloric content to guarantee consistency when we aggregate commodities with different energetic yields.

Losses and waste at the household level The food supply (FS) data provided by the FAO [16] differ from the actual food supply, as they also include the losses and waste that happen at the household level during food preparation and supply.

Following the approaches proposed by Gustavsson et al. [39] and Kummu et al. [18], we assign to each country a supply waste factor ($w_{f,c}$) based on the regional estimates reported in Annex 4 of the study by Gustavsson et al. [17] for crops and animal products. This factor expresses the weight percentages of food that is wasted at the household stage. We notice that there still might be some differences between the net food supply and the actual food intake due to both the avoidable (e.g., attention to the label on the food expiration date) and unavoidable waste (e.g., bones, banana skins), which however we were not able to remove due to lack of data that are very peculiar of human lifestyles. Factors are provided as averages across eight main regions (Table S1-S2) and seven food categories that we couple with the 15 groups of our study (Table S3). In the case of meat, we use the same waste factors for all types of meat products. We calculate the current food supply net of food waste (or net food supply), $NFS_{f,c}$, of each food group, as

$$NFS_{f,c} = FS_{f,c} \cdot (1 - w_{f,c}). \quad (1)$$

The current food supply is then compared with the healthy reference intake proposed by the *Lancet* commission, to advance the diet gap indicator earlier introduced by Willett et al. [1].

Harmonization of the dietary energy requirement across countries

The healthy reference diet is referred to a globally average Daily Energy Requirement (DER) of 2500 kcal/day [1]. However, depending on age, gender, and lifestyle, the DER can be very different from country to country and over time (e.g., due to changes in the population age distribution). To harmonize it across countries, we combined two pieces of information on (i) the DER provided by the UN [40] for male and female of different age and (ii) the annual age distribution of country population available by gender over the period 1961-2018 [41].

The DER of infants from birth to 12 months is provided every month [40]. The DER in correspondence of 6-7 months (see Table 3.2 in the original report [40] for monthly DER values) is used in this study as representative of the first age of life.

The DER of children and adolescents (namely, all people younger than 18 years) are obtained from Table 4.5 [40] for boys and Table 4.6 [40] for girls, where they are provided for three levels of physical activity. In both cases, we consider moderate physical activity. Finally, the DER of adults is obtained from Tables 5.4-5.5-5.6 [40] for men and Tables 5.7-5.8-5.9 [40] for women. As for adolescents, DER values for adults are provided for six different lifestyles -sedentary to heavy- that are associated with a different energy requirement. We select the moderate lifestyle having an energy requirement 70% larger than the DER associated with basal metabolic activities. DER values are available on annual basis from the age of 1 to the age of 100 years (see Table S4).

The DER values obtained and shown in Tables S4 are used to evaluate the annual DER of each country, to scale the healthy reference diet accordingly.

Assessment of the diet gap indicator at country level

The annual diet gap, $DG_{c,f}$, is defined as the ratio between the net food supply $NFS_{c,f}$ and the healthy reference target, $NFS^T_{c,f}$ (T stands for target) [1] harmonized every year for each country (see the previous section), namely

$$DG_{c,f}(t) = \frac{NFS_{c,f}(t)}{NFS^T_{c,f}}, \tag{2}$$

with t going from 1961 to 2018. By definition (equation 2), a sub-optimal diet gap occurs when $DG_{c,f}$ is smaller than 1, meaning that the country should increase the supply of calories belonging to the f food group. Over-optimal diet gaps result from $DG_{c,f}$ larger than 1. We evaluate the diet gap on a country level, for each food group, and on an annual basis. Then we group countries estimates according to the SDI index [19] (see Table S1), and we calculate the diet gap statistics across these five consistent groups.

For each SDI group, we provide a statistical representation of the diet gap in 2018 through a population-weighted average and the population-weighted percentiles, to provide measures of the DG socio-economic heterogeneity within each SDI. The weighted percentiles have been obtained considering country diet gaps of each SDI in ascending order together with the relative cumulative population, and have been determined in correspondence to the 10, 25, 50, 75, and 90% of the total population (see Figure 1 in the main text).

Annual mean diet gaps are also evaluated over the period 1961-2018 and analyzed as proxies of the evolution of the national food sector compared to the EAT-*Lancet* guidelines. Such historical analysis allows one to assess whether countries' diet habits are on track to likely reach the healthy diet shortly if they continue along with the same pattern.

To understand whether the adoption of the healthy diet would be feasible worldwide without changing the current production, we build a hypothetical scenario by assuming that all countries would adopt the healthy diet. According to this scenario, we estimate the associated changes in food demand both for animal-based and plant-based products. Due to changes in the animal-based food demand, we provide measures also of the associated change in the feed demand.

Changes in countries' food supply due to the adoption of the reference diet The target domestic supply under the healthy reference diet scenario ($DS^T_{c,f}$) is evaluated with equation (1), where the food supply equals the healthy one (marked by the superscript T): i.e., $NFS_{c,f} = NFS^T_{c,f}$. Waste factors are assumed constant in this scenario.

The target food supply of animal products impacts the feed supply, by changing the crop demand for livestock in the countries producing meat products.

Changes in countries' feed supply due to the adoption of the reference diet To evaluate the target feed supply ($FeS^T_{c,f}$) under the healthy reference diet scenario, we adopt the approach proposed by Tuninetti et al. [42]. First, we aggregate the target national food supply of animal products ($FS^T_{c,f}$, where $f \in a$ with a indicating the sub-group of animal products) at the global level. This amount corresponds to the global production, $P^T_{f \in a}$, required under the healthy scenario. Then, we allocate $P^T_{f \in a}$ to the producing countries proportionally to their current share of the global production. The country share typical of each animal species is the ratio between country and global production and averaged over the most recent 10 years of the study period, i.e., 2009-2018. Thus, the target animal production of each country reads

$$P^T_{c,f\in a} = \frac{1}{10}\sum_{t=2009}^{t=2018} \frac{P_{c,f\in a}(t)}{P_{f\in a}(t)} \cdot P^T_{f\in a}. \tag{3}$$

The country feed supply depends on $P^T_{c,f\in a}$ and on the animal efficiency to transform the feed supply into edible animal calories. Hence, we calculate the annual feed efficiency (fe_c) for each country, as

$$fe_c(t) = \sum_f \frac{P_{c,f\in a}(t)}{FeS_{c,f}(t)}, \tag{4}$$

and we use the time average of $fe_c(t)$ over the period 2009-2018. Notice that the country feed efficiency may vary in time as a function of different parameters related to changes in the feed composition, animal yield (i.e., hectogram of meat, milk, or eggs obtained per tonne of slaughter animal; [16]), and livestock practices (i.e., intensive *versus* extensive livestock [43]). We remark that the feed efficiency evaluated in this study does not account for the non-crops plants, such as roughage or pasture, that constitute important components of the animal diets in some cases, especially for the bovine farming [43]. In these cases, the current feed efficiency may be lower than the one estimated in equation (4).

The final feed supply reads

$$FeS^T_{c,f} = P^T_{c,f\in a} \cdot fe_c \cdot \frac{FeS_{c,f}}{\sum_f FeS_{c,f}}. \tag{5}$$

The resulting demand for crops and animal products is obtained by summing up the demand of the food sector and the demand of the feed sector. We include in the estimates of this final demand the waste and losses typical of each agricultural product, using the current waste factors. We notice that the demand for agricultural products may be higher than the one estimated due to some avoidable and unavoidable waste connected to the lifestyle of the final consumer.

Water Footprint Water Footprint (WF) measures the amount of water required to produce or consume a given commodity along the whole supply chain [44]. Along the farm-to-fork path, it is possible to quantify two main water footprints, expressing (i) the direct water amount used to produce food at the farm level (production WF) and (ii) the indirect water amount that is used at the household level (dietary WF) through food supply.

In this assessment, we quantify the dietary WF resulting from adopting the healthy reference diet worldwide compared to the current water footprint (i.e., year 2018). The dietary WF quantifies the total amount of water that has been used, both locally and globally (thus, originating in countries different from the one where supply happens), to produce the foods making up the daily supply. The amount of food supply in each country is obtained from the FBS for each food group, and it is expressed as tonne per year. The unit WF ($m^3 \cdot ton^{-1}$) of supply is provided by Tamea et al. ([45]) for single crop and animal items. Differently from the production uWF, the supply uWF traces the real origin of each food product using production data and bilateral trade matrices of international trade [46].

We associate to each food group the average uWF of all the products belonging to it according to the FAO [16]. The dietary WF (m^3) of each group is calculated as the product between the food supply and the associated uWF. Finally, we sum the WF of each group to obtain the WF of the typical diet. We notice that due to the lack of more recent data we use the uWF of year 2016 [13].

We repeat the same procedure for the healthy reference diet by considering the target food supply evaluated in the previous section.

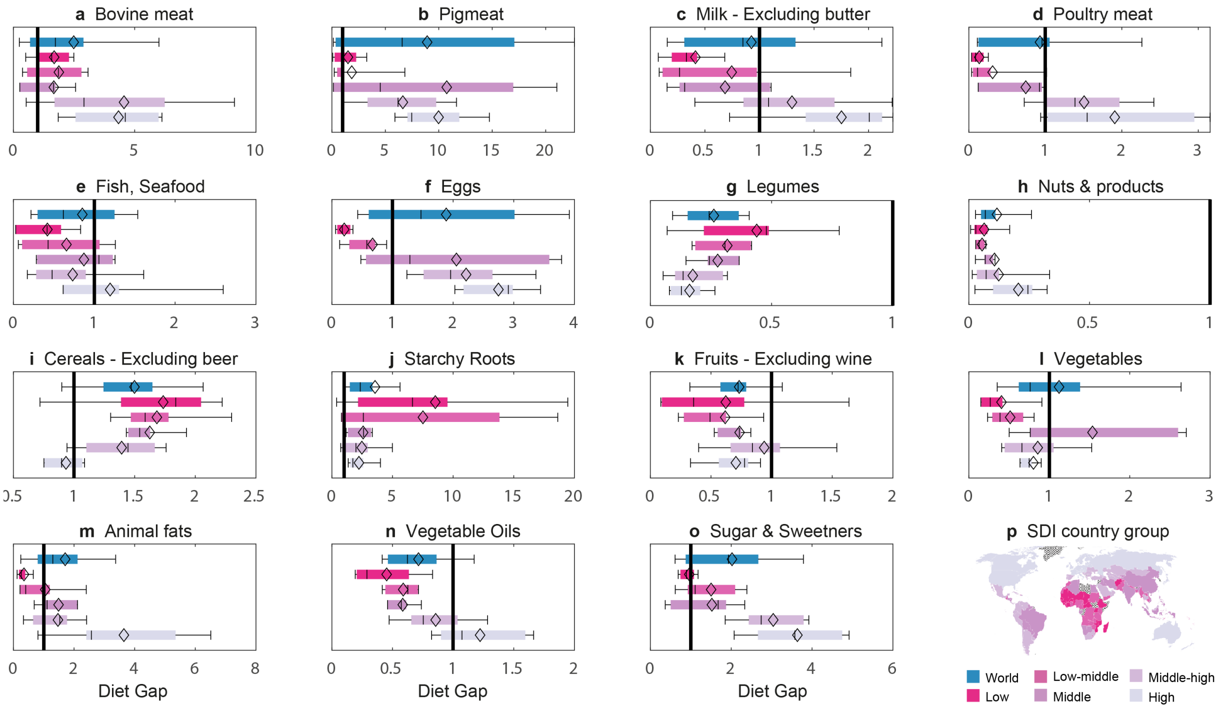

Fig. 1: **Diet gap of the global food system compared to the healthy reference diet recommended by the EAT-*Lancet* Commission.** Each box plot shows on the x-axis the diet gap associated with the 25, 50 and 75% of the *SDI* population, while whiskers highlight the *SDI* of the 10% and 90% of population; black diamonds refer to the population-weighted average *DG*. The bottom-right map shows the country belonging to each SDI: light to dark purple colors indicate high to low SDI countries, blue color identifies the global statistics. The black line marks the perfect match between the current and the healthy diet [1]. Countries lacking data on current food supply [16] are shaded with straight lines in the map.

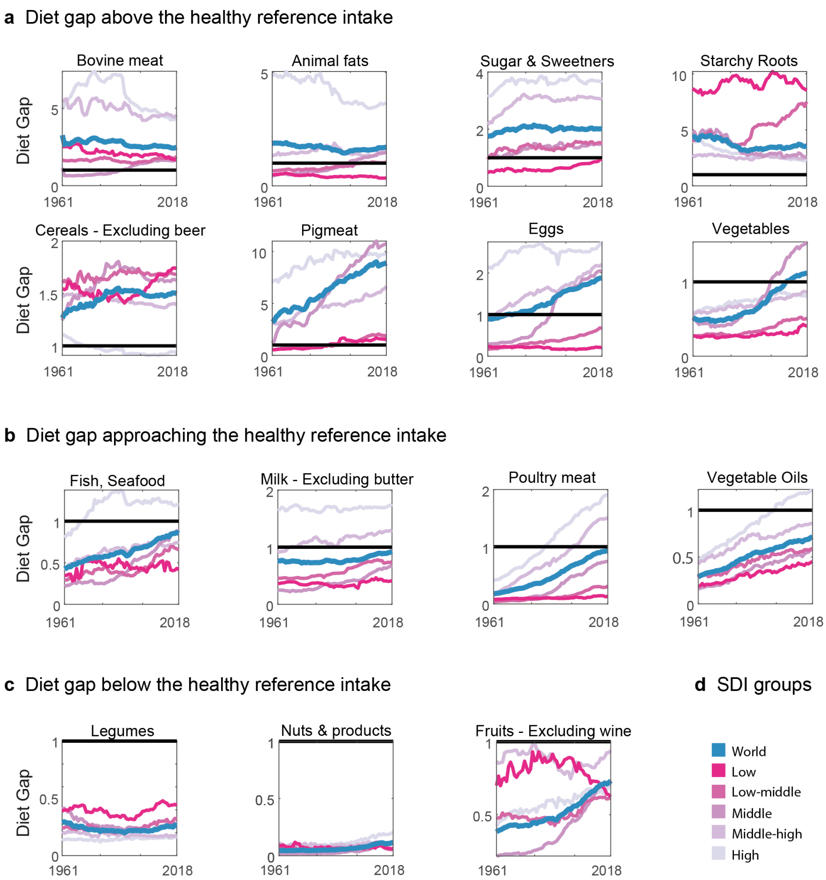

Fig. 2: **Time series of the population-weighted average diet gap along the period 1961-2018.** Food groups are split in three panels according to their temporal evolution. The black line marks the perfect match between the current and the healthy diet [1]. Colors from light to dark purple indicate the high to low *SDI* groups (see the map in Figure 1). The blue line shows the global average diet gap.

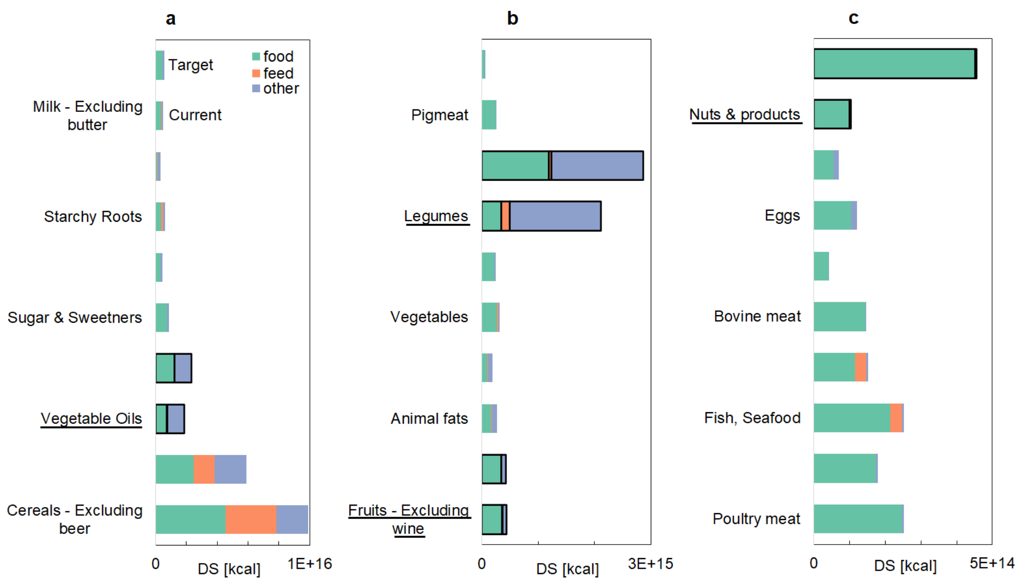

Fig. 3: **Target and current domestic supply of each food group.** Each box couple corresponds to a food group, where upper (lower) box refers to the target (current) domestic supply. The target domestic supply refers to the healthy reference diet scenario, the current supply refers to year 2018. The domestic supply is split according to the food (green), feed (orange), and other uses (i.e., non-food, purple) agricultural sectors according to the FAOSTAT definition [16]. Bold boxes and texts highlight food groups whose current supply is lower than the target one.

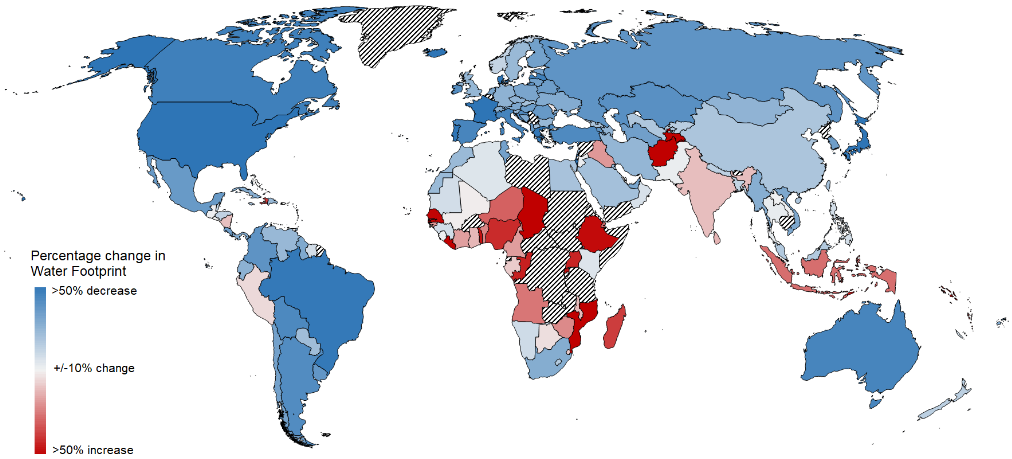

Fig. 4: **Percentage change in per-capita Water Footprint associated with the transition to the EAT-*Lancet* healthy reference diet.** Countries lacking data on food supply or water footprint values are shaded with straight lines. Notice that the color bar is similar to that used in the study by Semba et al. [7], in order to foster comparison between WF and GHGs emissions changes.

Acknowledgments

We are grateful to Lorenza Mistura and Francisco Javier Comendador for their valuable comments on the manuscript.

Data availability

All data used in this study are from publicly available sources. Country data on food supply are from the FAOSTAT, available at `http://www.fao.org/faostat/en/#data`. Country data on agricultural water footprint are from the CWASI database, available for download at `https://www.watertofood.org/download/`. The datasets generated in the current study are available from the corresponding author on reasonable request.

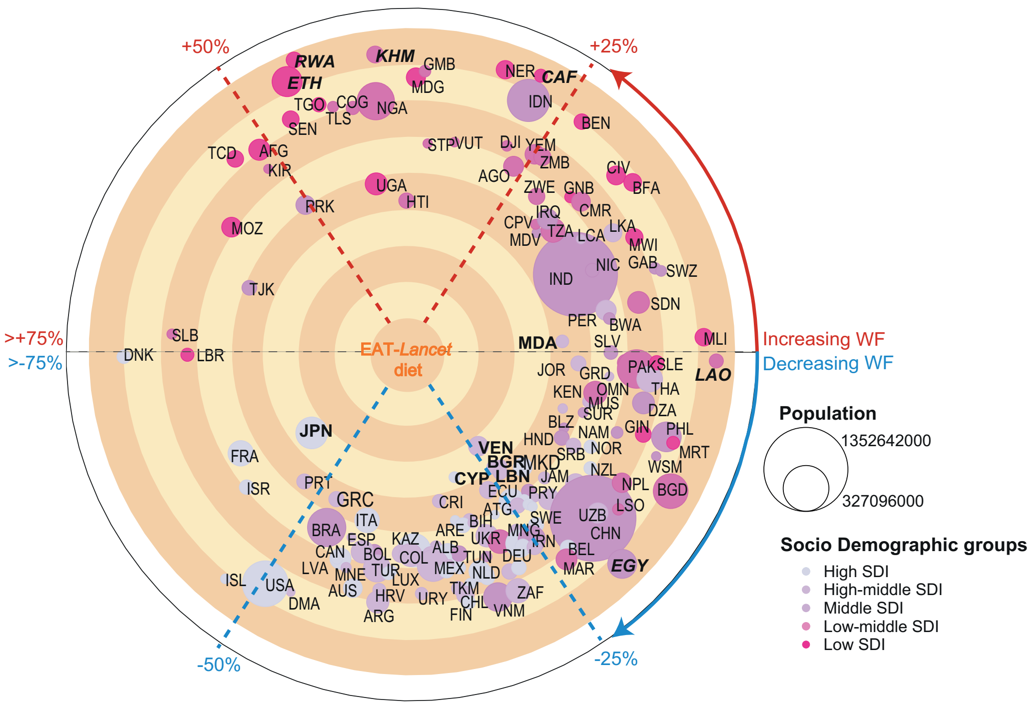

Fig. 5: **Water footprint implications of the adoption of the EAT-*Lancet* reference diet.** The orange inner circle shows the target diet, i.e. the healthy reference diet. Countries are represented in a polar plot, where the radius shows the average distance of the current diet from the target and the (positive or negative) angle show the (positive or negative) change of the dietary Water Footprint. Positive (Negative) changes are shown in red (blue). Countries are grouped according to their Socio Demographic Index [19] and their size is proportional to the population. The closest countries to the target are shown in bold font and the furthest countries are underlined.

Code availability

The codes developed for the analyses and to generate results are available from the corresponding author on reasonable request.

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Extended Data

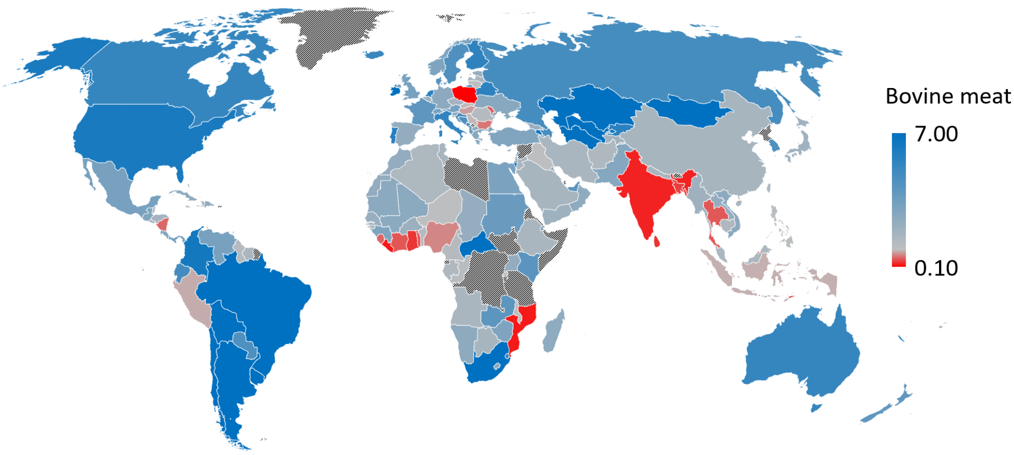


Fig. 6: **Diet gap of bovine meat supply in 2018.**

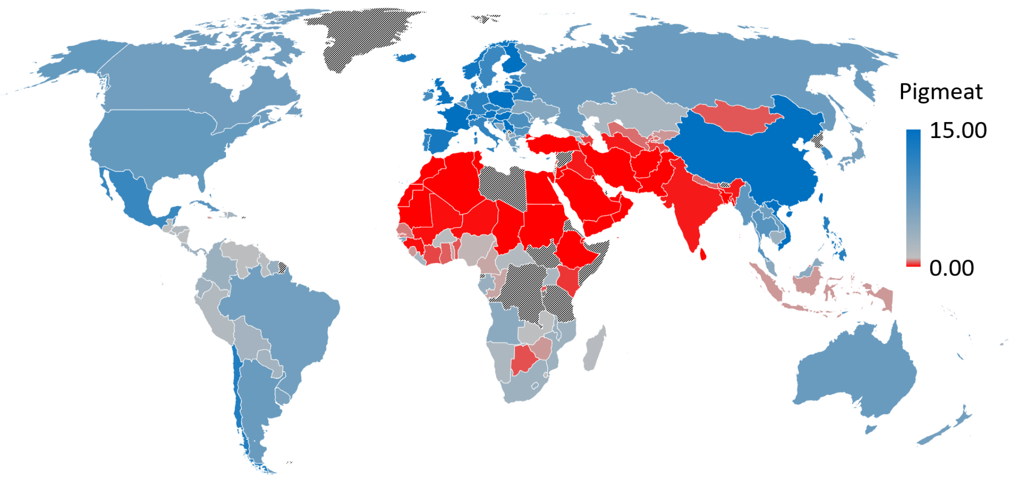


Fig. 7: **Diet gap of pig meat supply in 2018.**

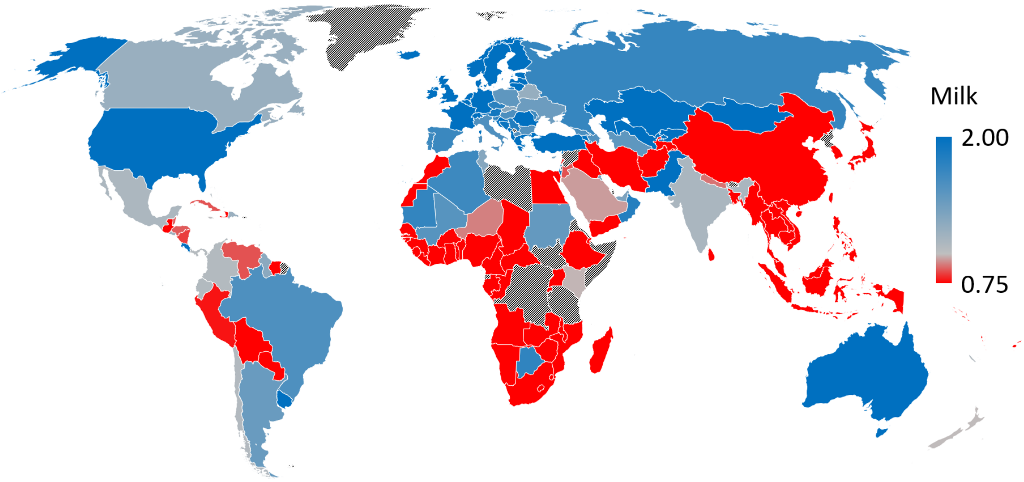


Fig. 8: **Diet gap of milk products supply in 2018.**

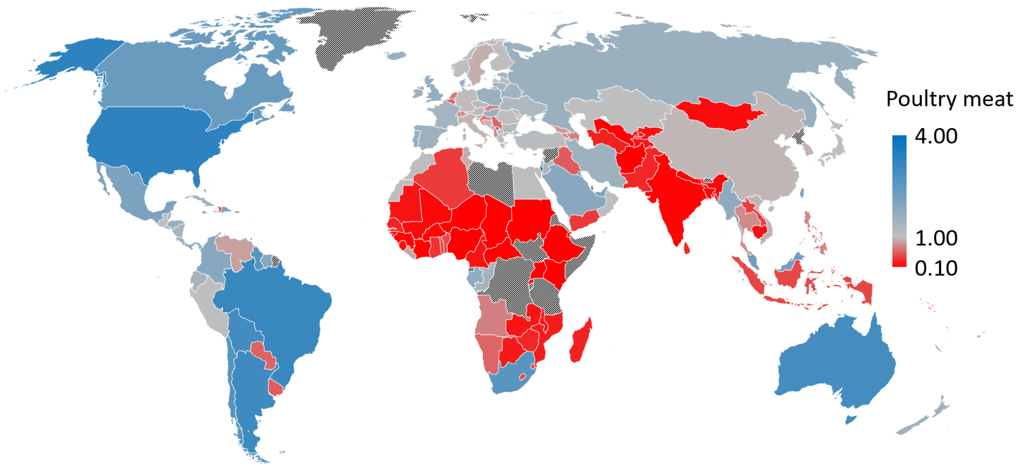


Fig. 9: **Diet gap of poultry meat supply in 2018.**

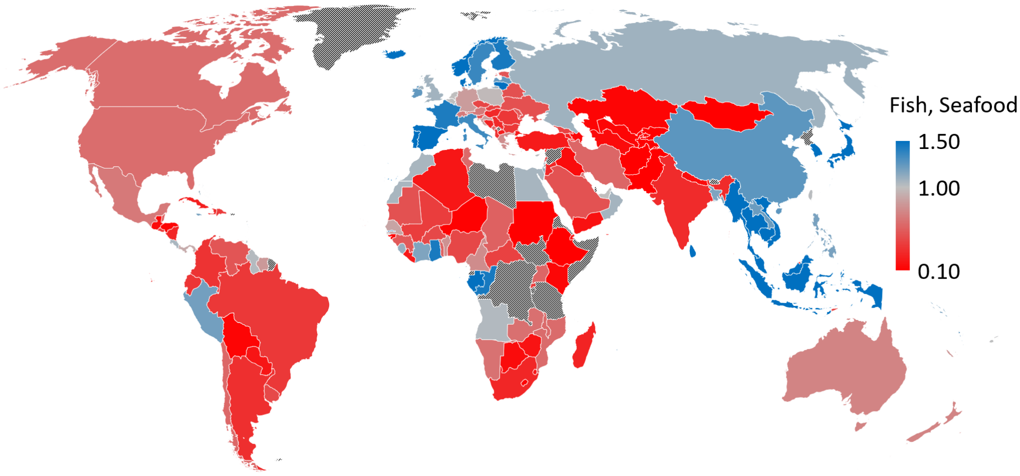


Fig. 10: **Diet gap of fish and sea food supply in 2018.**

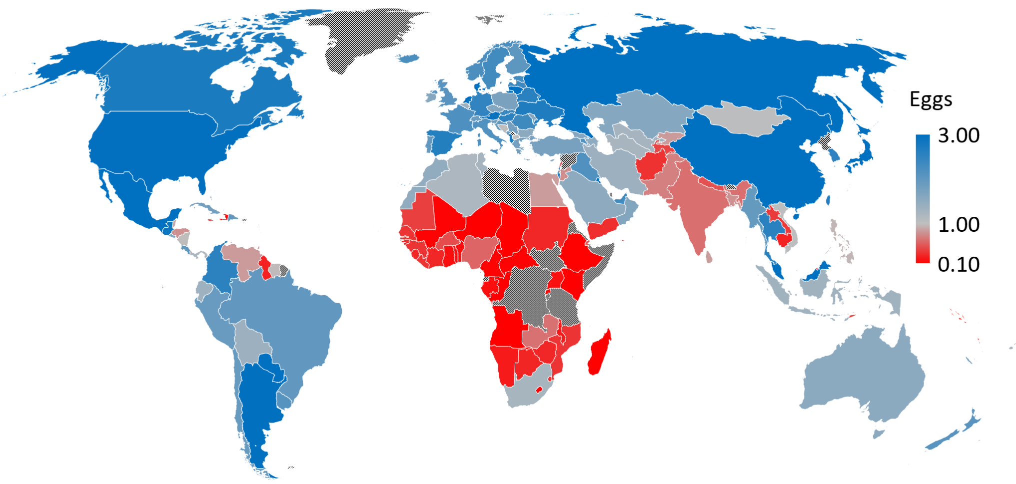


Fig. 11: **Diet gap of eggs supply in 2018.**

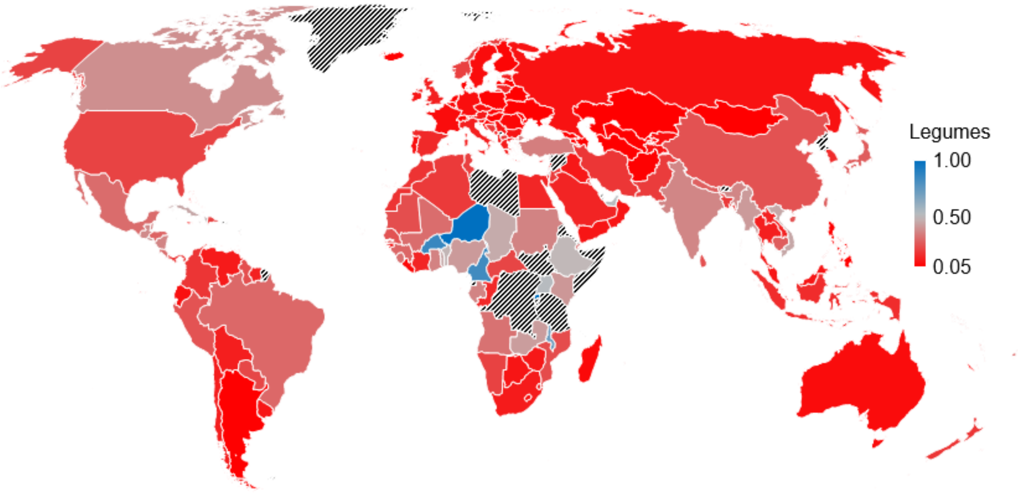


Fig. 12: **Diet gap of legumes supply in 2018.**

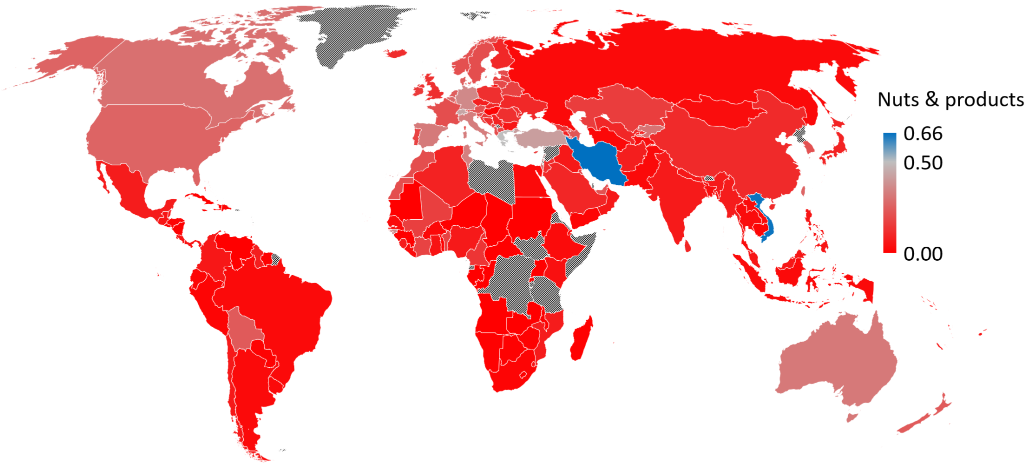
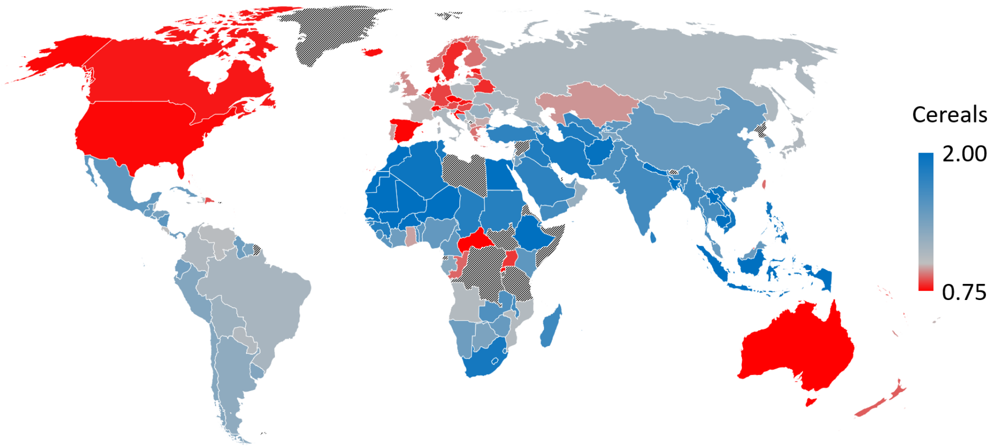


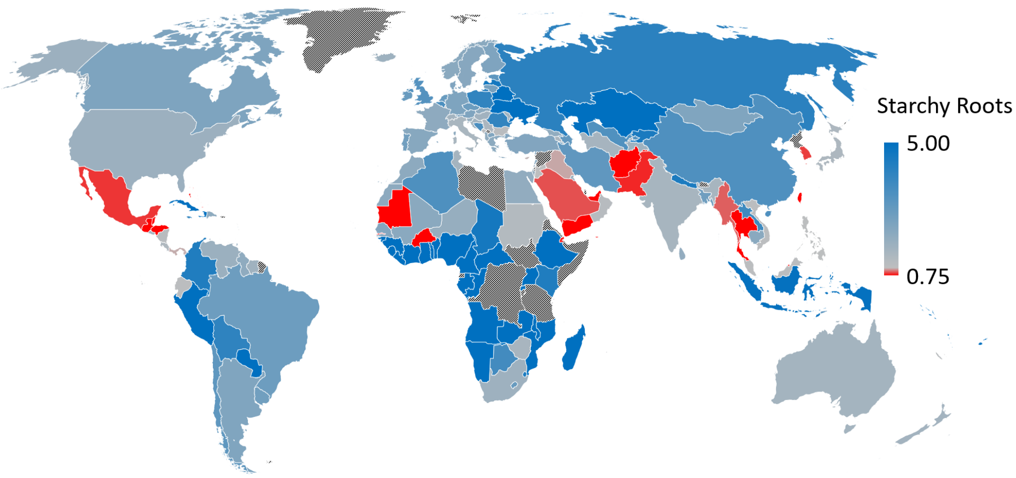
Fig. 13: **Diet gap of nuts and products supply in 2018.**

Supporting Information for "Compliance with EAT-*Lancet* dietary guidelines would reduce global water footprint but increase it for 40% of the world population"

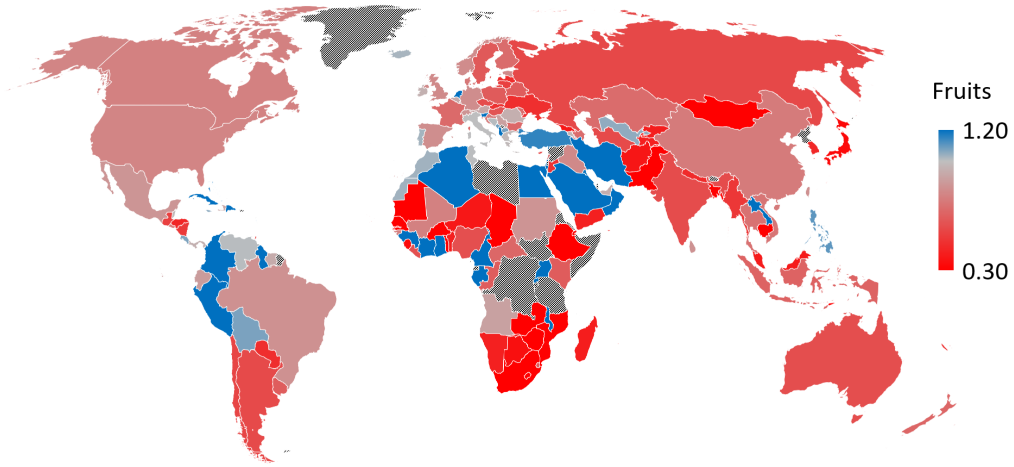
1. Supplementary Figures



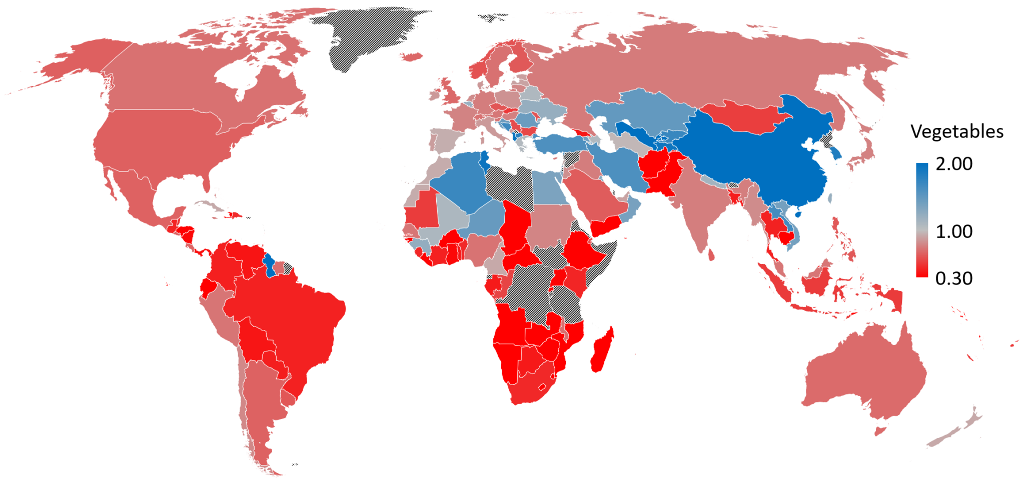
Suppl. Fig. 1: **Diet gap of cereals supply in 2018.**



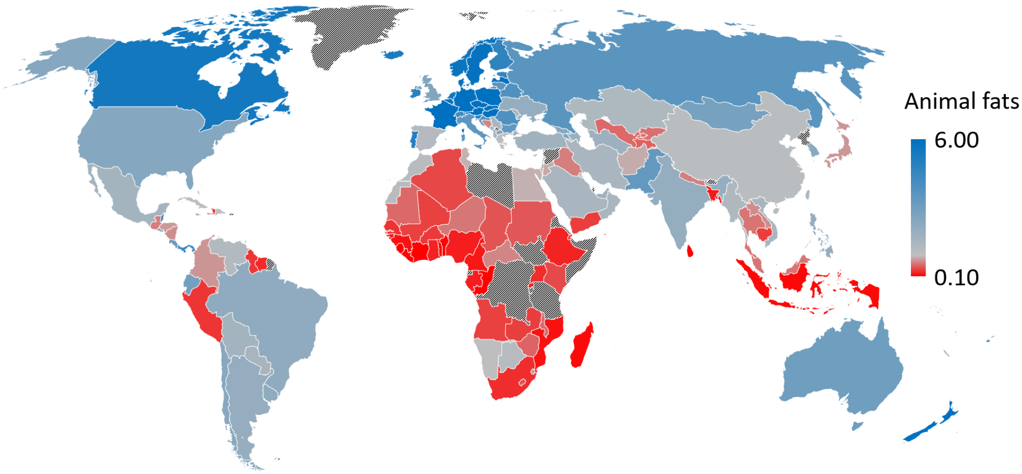
Suppl. Fig. 2: **Diet gap of starchy roots supply in 2018.**



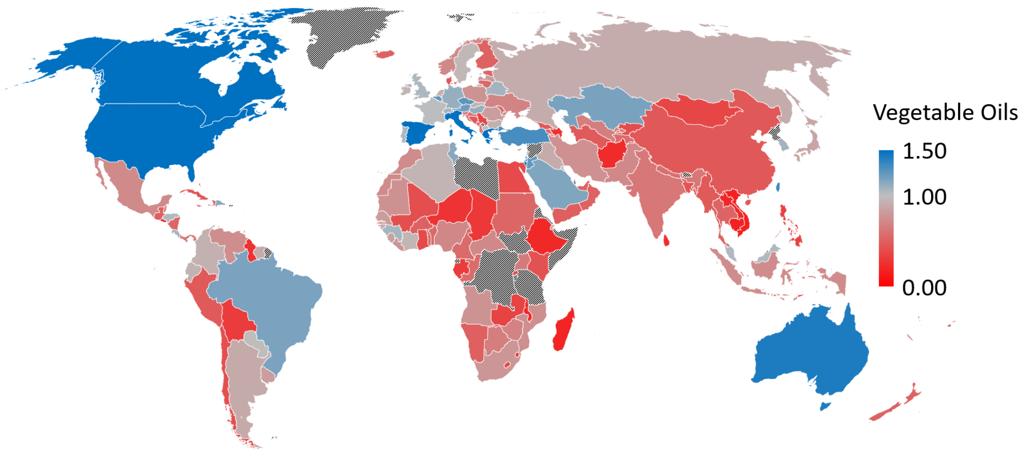
Suppl. Fig. 3: **Diet gap of fruits supply in 2018.**



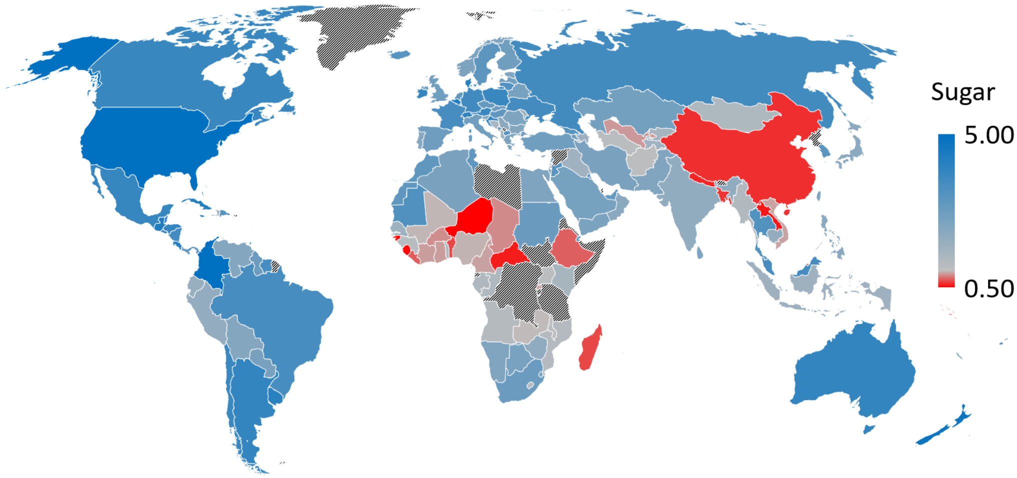
Suppl. Fig. 4: **Diet gap of vegetables supply in 2018.**



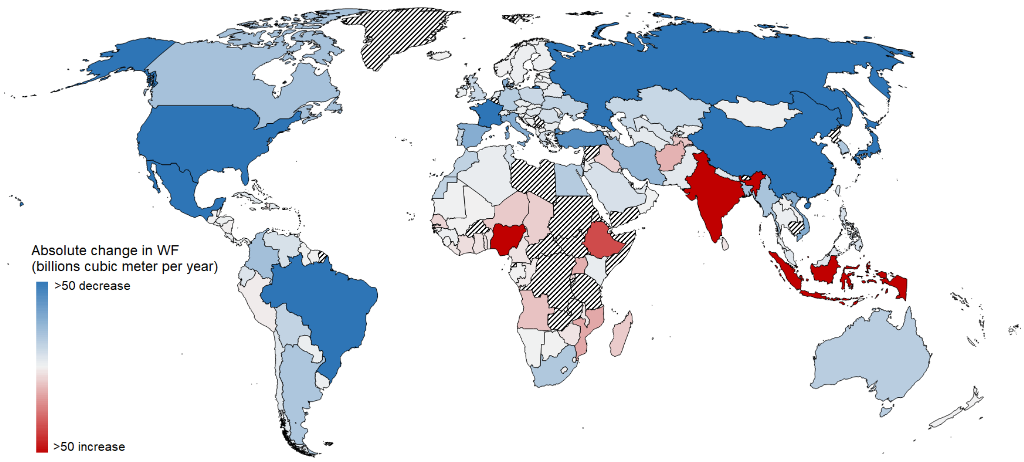
Suppl. Fig. 5: **Diet gap of animal fats supply in 2018.**



Suppl. Fig. 6: **Diet gap of vegetable oils supply in 2018.**



Suppl. Fig. 7: **Diet gap of sugar and sweeteners supply in 2018.**



Suppl. Fig. 8: **Change in Water Footprint volumes associated with the adoption of the healthy reference diet.** Countries lacking data on food supply or water footprint values are shaded with straight lines.

2. Supplementary Tables

Suppl. Table 1: **Regional food waste at the household level.** Percentage of food supply that is wasted at the household level for each food group and region according to Gustavsson et al. [17]. See also Tables S1,S2.

region	**region code**	**Cer**	**Leg**	**Oil**	**Nut**	**StR**	**Frt**	**Veg**	**Fat**	**Bov**	**Egg**	**Pig**	**Plt**	**Mlk**	**Sea**
Europe incl Russia	**1**	25	4	4	4	17	19	19	11	11	11	11	11	7	11
North America & Oceania	**2**	27	4	4	4	30	28	28	11	11	11	11	11	15	33
Industrialized Asia	**3**	20	4	4	4	10	15	15	8	8	8	8	8	5	8
sub-Saharan Africa	**4**	1	1	1	1	2	5	5	2	2	2	2	2	0.1	2
North Africa, West and Central Asia	**5**	12	2	2	2	6	12	12	8	8	8	8	8	2	4
South & South East Asia	**6**	3	1	1	1	3	7	7	4	4	4	4	4	1	2
Latin America	**7**	10	2	2	2	4	10	10	6	6	6	6	6	4	4

Suppl. Table 2: Country grouping according to the Socio Demographic Index (SDI) [19] and according to the 7 regions (see Table S2) defined by Gustavsson et al. [17] for the evaluation of the food waste at the household level.

country name	**SDI**	**region code**
Afghanistan	Low SDI	6
Albania	High-middle SDI	1
Algeria	Middle SDI	5
Angola	Low-middle SDI	4
Antigua and Barbuda	High SDI	7
Argentina	High-middle SDI	7
Armenia	High-middle SDI	1
Australia	High SDI	2
Austria	High SDI	1
Azerbaijan	High-middle SDI	1
Bahamas	High SDI	7
Bangladesh	Low-middle SDI	6
Barbados	High-middle SDI	7
Belarus	High SDI	1
Belgium	High SDI	1
Belize	Middle SDI	7
Benin	Low SDI	4
Bermuda	High SDI	7
Bolivia	Middle SDI	7
Bosnia and Herzegovina	High-middle SDI	1
Botswana	Middle SDI	4
Brazil	Middle SDI	7
Brunei Darussalam	High SDI	6
Bulgaria	High-middle SDI	1

Suppl. Table 2: Country grouping according to the Socio Demographic Index (SDI) [19] and according to the 7 regions (see Table S2) defined by Gustavsson et al. [17] for the evaluation of the food waste at the household level.

country name	**SDI**	**region code**
Burkina Faso	Low SDI	4
Cambodia	Low-middle SDI	6
Cameroon	Low-middle SDI	4
Canada	High SDI	2
Cape Verde	Low-middle SDI	4
Central African Republic	Low SDI	4
Chad	Low SDI	4
Chile	High-middle SDI	7
China	Middle SDI	3
Colombia	High-middle SDI	7
Congo	Low-middle SDI	4
Costa Rica	High-middle SDI	7
Ivory Coast	Low SDI	4
Croatia	High-middle SDI	1
Cuba	High-middle SDI	7
Cyprus	High SDI	1
Czech Republic	High SDI	1
Democratic Republic of Congo	low SDI	4
Denmark	High SDI	1
Djibouti	Low-middle SDI	4
Dominica	High-middle SDI	7
Dominican Republic	High-middle SDI	7
Ecuador	High-middle SDI	7
Egypt	Middle SDI	5

Suppl. Table 2: Country grouping according to the Socio Demographic Index (SDI) [19] and according to the 7 regions (see Table S2) defined by Gustavsson et al. [17] for the evaluation of the food waste at the household level.

country name	**SDI**	**region code**
El Salvador	Middle SDI	7
Estonia	High SDI	1
Ethiopia	Low SDI	4
Fiji	High-middle SDI	2
Finland	High SDI	1
France	High SDI	1
French Polynesia	[]	2
Gabon	Middle SDI	4
Gambia	Low SDI	4
Georgia	High SDI	1
Germany	High SDI	1
Ghana	Low-middle SDI	4
Greece	High-middle SDI	1
Grenada	High-middle SDI	7
Greenland	High-middle SDI	-
Guatemala	Low-middle SDI	7
Guinea	Low SDI	4
Guinea-Bissau	Low SDI	4
Guyana	Middle SDI	7
Haiti	Low-middle SDI	7
Honduras	Middle SDI	7
Hong Kong	High SDI	3
Hungary	High SDI	1
Iceland	High SDI	1

Suppl. Table 2: Country grouping according to the Socio Demographic Index (SDI) [19] and according to the 7 regions (see Table S2) defined by Gustavsson et al. [17] for the evaluation of the food waste at the household level.

country name	**SDI**	**region code**
India	Middle SDI	6
Indonesia	Middle SDI	6
Iran Islamic Republic of	Middle SDI	6
Iraq	Middle SDI	5
Ireland	High SDI	1
Israel	High SDI	5
Italy	High SDI	1
Jamaica	High-middle SDI	7
Japan	High SDI	3
Jordan	High-middle SDI	5
Kazakhstan	High-middle SDI	5
Kenya	Low-middle SDI	4
Kiribati	Low-middle SDI	2
Korea, Republic of	High SDI	3
Kuwait	High SDI	5
Kyrgyzstan	Middle SDI	5
Lao Peoples Democratic Republic	Low-middle SDI	6
Latvia	High SDI	1
Lebanon	High-middle SDI	5
Lesotho	Low-middle SDI	4
Liberia	Low SDI	4
Libya	Middle SDI	-
Lithuania	High SDI	1
Luxembourg	High SDI	1

Suppl. Table 2: Country grouping according to the Socio Demographic Index (SDI) [19] and according to the 7 regions (see Table S2) defined by Gustavsson et al. [17] for the evaluation of the food waste at the household level.

country name	**SDI**	**region code**
Macao	High SDI	3
Macedonia	High-middle SDI	1
Madagascar	Low SDI	4
Malawi	Low SDI	4
Malaysia	High-middle SDI	6
Maldives	Middle SDI	6
Mali	Low SDI	4
Malta	High-middle SDI	1
Mauritania	Low SDI	4
Mauritius	High-middle SDI	6
Mexico	High-middle SDI	7
Moldova	High-middle SDI	1
Mongolia	High-middle SDI	5
Montenegro	High-middle SDI	1
Morocco	Low-middle SDI	5
Mozambique	Low SDI	4
Myanmar	Low-middle SDI	6
Namibia	Middle SDI	4
Nepal	Low-middle SDI	6
Netherlands	High SDI	1
New Caledonia	High-middle SDI	2
New Zealand	High SDI	2
Nicaragua	Middle SDI	7
Niger	Low SDI	4

Suppl. Table 2: Country grouping according to the Socio Demographic Index (SDI) [19] and according to the 7 regions (see Table S2) defined by Gustavsson et al. [17] for the evaluation of the food waste at the household level.

country name	**SDI**	**region code**
Nigeria	Low-middle SDI	4
North Korea	Middle SDI	3
Norway	High SDI	1
Oman	High-middle SDI	5
Pakistan	Low-middle SDI	6
Panama	High-middle SDI	7
Paraguay	Middle SDI	7
Peru	High-middle SDI	7
Philippines	Middle SDI	6
Poland	High SDI	1
Portugal	High-middle SDI	1
Romania	High-middle SDI	1
Russia	High SDI	1
Rwanda	Low SDI	4
Saint Lucia	High-middle SDI	7
Saint Vincent and the Grenadines	High-middle SDI	7
Samoa	Middle SDI	2
Sao Tome and Principe	Low-middle SDI	4
Saudi Arabia	High-middle SDI	5
Senegal	Low SDI	4
Serbia	High-middle SDI	1
Sierra Leone	Low SDI	4
Slovakia	High SDI	1
Slovenia	High SDI	1

Suppl. Table 2: Country grouping according to the Socio Demographic Index (SDI) [19] and according to the 7 regions (see Table S2) defined by Gustavsson et al. [17] for the evaluation of the food waste at the household level.

country name	**SDI**	**region code**
Solomon Islands	Low-middle SDI	2
Somalia	low SDI	-
South Africa	High-middle SDI	4
South Sudan	Low-middle SDI	4
Spain	High-middle SDI	1
Sri Lanka	High-middle SDI	6
Sudan	Low-middle SDI	4
Suriname	High-middle SDI	7
Swaziland	Middle SDI	4
Sweden	High SDI	1
Switzerland	High SDI	1
Taiwan	High SDI	3
Tajikistan	Middle SDI	5
Tanzania	Low-middle SDI	4
Thailand	High-middle SDI	6
Timor-Leste	Low-middle SDI	6
Togo	Low SDI	4
Trinidad and Tobago	High SDI	7
Tunisia	Middle SDI	5
Turkey	High-middle SDI	5
Turkmenistan	High-middle SDI	5
Uganda	Low SDI	4
Ukraine	High-middle SDI	1
United Arab Emirates	High SDI	5

Suppl. Table 2: Country grouping according to the Socio Demographic Index (SDI) [19] and according to the 7 regions (see Table S2) defined by Gustavsson et al. [17] for the evaluation of the food waste at the household level.

country name	**SDI**	**region code**
United Kingdom	High SDI	1
United States	High SDI	2
Uruguay	High-middle SDI	7
Uzbekistan	High-middle SDI	5
Vanuatu	Low-middle SDI	2
Venezuela	High-middle SDI	7
Vietnam	Middle SDI	6
Yemen	Low-middle SDI	5
Zambia	Low-middle SDI	4
Zimbabwe	Low-middle SDI	4

Suppl. Table 3: **Global average energy requirement.** Daily energy requirement by age and gender according to the guidelines provided by the "Human energy requirement" report [40].

Age	**Female** DER **[kcal/day]**	**Male** DER **[kcal/day]**
0	636	584
1	850	950
2	1050	1125
3	1150	1250
4	1250	1350
5	1325	1475
6	1425	1575
7	1550	1700

Suppl. Table 3: **Global average energy requirement.** Daily energy requirement by age and gender according to the guidelines provided by the "Human energy requirement" report [40].

Age	**Female** DER **[kcal/day]**	**Male** DER **[kcal/day]**
8	1700	1825
9	1850	1975
10	2000	2150
11	2150	2350
12	2275	2550
13	2375	2775
14	2450	3000
15	2500	3175
16	2500	3325
17	2500	3400
18-29	2539	3056
30-59	2406	2950
>59	2183	2450

Suppl. Table 4: **Country diet gaps in 2018.** Country diet gaps are evaluated for each food group as the ratio between the 2018 individual food supply and the healthy reference diet proposed by the EAT-*Lancet* Commission and harmonized for each country depending on the population gender and age distribution. Countries are sorted according to the most close to the less close food system compared to the healthy reference diet.

	Cer	**Leg**	**StR**	**Sug**	**Oil**	**Frt**	**Veg**	**Nut**	**Fat**	**Bov**	**Egg**	**Sea**	**Mlk**	**Pig**	**Plt**
VEN	✓1.03	↑0.11	↓1.75	↓2.23	↑0.75	✓1.01	↑0.37	↑0	↓1.34	↓3.21	↑0.83	↑0.50	↑0.86	↓1.24	↑0.85
JPN	✓1.07	↑0.27	↓1.37	↓2.09	↑0.86	↑0.33	↑0.78	↑0.09	↑0.81	↓1.94	↓3.91	↓2.96	↑0.76	↓6.27	✓1.03
CYP	↓1.13	↑0.12	✓0.99	↓2.12	↑0.90	↑0.55	↑0.75	↑0.16	✓1.00	↓2.10	↓1.47	✓1.01	↓1.33	↓10.02	↓1.32
BGR	✓0.97	↑0.10	✓1.11	↓2.25	✓0.93	↑0.68	↑0.56	↑0.06	↓3.46	↑0.67	↓1.53	↑0.36	↓1.56	↓8.90	↓1.25
MKD	✓0.93	↑0.18	↓2.31	↓3.19	✓0.97	✓1.07	↓1.79	↑0.20	↓2.41	↓2.47	✓1.00	↑0.25	↓1.58	↓4.81	✓0.98
LBN	✓1.04	↑0.47	↓6.76	↓1.65	↑0.52	✓0.91	↑0.22	↑0.00	↑0.33	↓1.80	↑0.11	↑0.31	↑0.27	↓1.93	↑0.48
MDA	↓1.34	↑0.18	↓2.22	↓3.56	✓1.00	↑0.74	✓0.95	↑0.43	✓1.01	↓3.69	↑0.50	↑0.40	↑0.81	↑0.51	✓0.95
HTI	✓1.01	↑0.32	↓1.33	↓4.29	✓1.06	✓1.07	↑0.67	↑0.05	↓3.18	↓2.76	↓2.02	✓1.06	↓1.99	↓2.76	↓1.44
CRI	✓0.90	↑0.02	↓1.59	↓1.61	↑0.55	↑0.71	↑0.61	↑0.12	↓1.70	↑0.54	↓1.61	↑0.52	↓1.67	↓7.20	✓0.93
ECU	↓1.39	↑0.09	✓1.08	↓1.80	✓0.94	↑0.87	↑0.28	↑0.01	↓2.95	↓4.85	↓1.35	↑0.35	✓1.06	↓3.21	↓1.40
TWN	↑0.89	↑0.28	↑0.62	↓2.32	↓1.33	↑0.83	↓1.20	↑0.26	↓1.51	↓1.41	↓2.62	✓1.01	↑0.46	↓16.85	↓2.01
NCL	✓0.92	↑0.04	✓1.09	↓2.54	↑0.74	↑0.47	↑0.50	↑0.07	↓1.95	↓6.21	↓1.68	↑0.81	✓1.07	↓8.46	↓1.78
GRC	↓1.40	↑0.19	✓1.02	↓3.16	↓1.24	↑0.49	↑0.83	↑0.12	↑0.89	↓1.63	↑0.77	↑0.28	↑0.86	↑0.00	↓1.35
JOR	↑0.82	↑0.52	↓9.06	✓1.07	↑0.64	↓1.81	↑0.32	↑0.00	↑0.31	↓2.37	↑0.18	↑0.58	↑0.56	↓2.52	↑0.09
PRT	↑0.90	↑0.11	↓2.05	↓2.41	↓1.51	✓0.98	✓1.07	↑0.50	✓1.08	↓2.71	↓1.76	↑0.77	↓2.55	↓7.36	✓1.01
BLZ	↓1.31	↑0.63	↓11.37	✓1.02	↑0.63	✓0.94	↑0.35	↑0.05	↑0.61	↓2.78	↑0.29	↑0.38	↑0.63	↑0.22	↑0.09
UGA	✓0.96	↑0.08	↓2.60	↓2.21	✓1.05	✓1.03	↑0.88	↑0.18	↓5.08	↓5.86	↓1.96	↓2.15	↓1.68	↓11.54	↓1.65
HND	↓1.13	↑0.36	↑0.75	↓3.88	↑0.64	✓0.98	↑0.48	↑0.08	↓4.24	↓1.44	↑0.88	↑0.55	↑0.87	↓8.14	↓1.76
MDV	↓1.46	↑0.51	↑0.66	↓2.87	↑0.51	✓0.94	↑0.90	↑0.22	↓1.83	↓4.05	↓2.33	✓1.00	↓1.34	↑0.00	↓2.03
PYF	↓1.15	↑0.05	✓0.95	↓1.95	↑0.11	↑0.65	↑0.78	↑0.42	↓1.41	↓1.69	↓2.72	↓4.61	✓1.08	↑0.50	↑0.68
ITA	↓1.38	↑0.29	↑0.41	↓3.91	✓1.03	↑0.44	↑0.28	↑0.01	↑0.82	↓1.84	↑0.78	↑0.13	↑0.87	↓1.98	↓1.59
TJK	↑0.86	↑0.07	↓2.07	↓1.79	↑0.76	↑0.36	↑0.43	↑0.09	↓2.71	↓5.95	↓1.53	↓1.63	↑0.89	↓8.32	↓2.53
SVN	✓1.08	↑0.12	↓1.45	↓2.67	↓1.49	✓1.00	↑0.87	↑0.33	↓3.55	↓5.49	↓2.14	↓1.34	↓1.58	↓11.47	✓0.95

Suppl. Table 4: **Country diet gaps in 2018.** Country diet gaps are evaluated for each food group as the ratio between the 2018 individual food supply and the healthy reference diet proposed by the EAT-*Lancet* Commission and harmonized for each country depending on the population gender and age distribution. Countries are sorted according to the most close to the less close food system compared to the healthy reference diet.

	Cer	**Leg**	**StR**	**Sug**	**Oil**	**Frt**	**Veg**	**Nut**	**Fat**	**Bov**	**Egg**	**Sea**	**Mlk**	**Pig**	**Plt**
BIH	↓1.34	↑0.09	↓1.66	↓1.64	↑0.57	↑0.42	↓1.92	↑0.04	↑0.56	↓1.87	↑0.42	↑0.03	↑0.73	↑0.33	↑0.19
CPV	↓1.13	↑0.08	↓1.81	↓2.32	↑0.68	↓1.20	↑0.73	↑0.21	↓4.93	↓2.67	↓1.82	↑0.50	↓1.75	↓8.37	↓1.19
GBR	↓1.28	↑0.18	↓3.45	↓1.49	↑0.47	✓1.01	↓1.67	↑0.12	↑0.73	↓4.57	✓1.00	↑0.27	↓1.95	↓5.11	✓0.96
IND	✓0.93	↑0.13	↓3.24	↓2.64	✓1.05	↑0.81	↑0.68	↑0.13	↓2.59	↓3.23	↓2.07	✓1.07	↓2.09	↓14.33	↓1.68
ARE	↓1.56	↑0.30	↓2.51	↓1.59	↑0.53	↑0.56	↑0.75	↑0.02	↓1.16	↑0.75	↑0.81	↑0.46	↓1.15	↓6.33	✓1.00
SUR	↓1.34	↑0.13	↓1.64	↓3.49	↑0.89	✓0.93	↑0.70	↑0.01	↑0.30	↓1.63	✓0.98	↑0.82	↑0.37	↓3.91	↓1.89
FJI	✓0.99	↑0.30	↓6.12	↓2.96	↑0.59	↑0.29	↑0.50	↑0.05	↓3.59	↓1.56	↓1.23	✓1.00	↑0.25	↓2.81	↓1.25
PRY	✓1.07	↑0.11	↓3.96	↓4.39	↑0.62	✓1.05	↑0.76	↑0.01	↓1.99	↓1.49	↑0.51	↓1.19	✓1.02	↑0.78	↓2.80
PRK	↓1.65	↑0.37	↓1.49	↓1.94	↑0.62	↑0.58	↑0.76	↑0.07	↓2.12	↑0.26	↑0.63	↑0.30	✓1.11	↑0.13	↑0.13
ATG	↓1.64	↑0.26	↓1.20	↓2.75	↓1.11	↑0.43	↑0.64	↑0.03	✓0.94	↓1.61	↓1.12	↓1.31	✓1.07	↓1.81	↓2.11
JAM	↑0.83	↑0.09	✓1.07	↓2.23	↑0.55	↓1.31	↑0.70	↑0.03	↓3.55	↓2.45	↑0.56	↓2.20	✓0.96	↓3.55	↓3.88
MUS	✓1.07	↑0.22	↓10.28	↓2.49	✓0.99	↑0.47	↑0.41	↑0.01	↓1.58	↓4.53	↓3.42	↑0.20	↑0.56	↓3.02	↑0.57
OMN	↓1.26	↑0.29	↓3.06	↑0.28	↑0.33	↑0.47	↑0.88	↑0.02	↑0.21	↑0.31	↑0.89	↑0.38	↑0.03	↓2.82	↑0.12
TZA	↓1.21	↑0.10	↓1.17	↓2.11	↑0.52	↓2.76	↓1.37	↑0.06	↓1.57	↓2.48	↓1.63	✓1.07	↓1.80	↑0.00	✓1.03
KWT	✓1.06	↑0.10	↓1.41	↓2.09	↑0.37	↑0.89	↑0.58	↑0.09	↓1.59	✓0.97	↓1.76	↑0.29	↓1.82	↓17.69	↑0.58
DOM	↑0.85	↑0.21	↓2.01	↓3.20	↓1.14	↓3.44	↑0.46	↑0.02	✓1.01	↓2.42	↓1.96	↑0.38	↓1.19	↓2.88	↓2.08
SRB	↓1.53	↑0.14	↓1.75	↓3.18	✓1.00	↓1.19	↓1.30	↑0.18	✓1.09	↓2.38	↓4.00	↑0.67	↓1.35	↑0.00	↓2.39
KEN	✓0.95	↑0.23	↓2.39	↓4.68	↑0.65	↑0.80	↑0.71	↑0.13	↓1.68	↓3.32	↓1.56	↓2.25	↓1.19	↓3.26	↓3.20
IRQ	↓1.50	↑0.41	↓4.32	↓1.49	↑0.43	↑0.64	↑0.44	↑0.04	↑0.44	↓4.12	↑0.06	↑0.13	✓0.99	↑0.28	↑0.03
BRB	✓0.93	↑0.10	↓1.38	↓2.26	✓1.11	↑0.42	✓1.06	↑0.23	↓2.20	↓3.60	↓4.46	↓2.16	↑0.71	↓25.43	↓2.10
MAC	↓1.22	↑0.26	↓1.87	↓4.62	↑0.79	↑0.56	↑0.52	↑0.08	↓1.82	↓1.48	↑0.71	✓1.03	↓1.12	↓3.28	↓3.42
TTO	↓1.83	↑0.11	✓0.97	↓1.63	↑0.90	↑0.81	↑0.76	↑0.06	↑0.69	✓1.07	↓2.16	↑0.16	↑0.56	↑0.13	↑0.53
PAN	↓1.41	↑0.19	✓0.98	↓2.97	↑0.59	✓0.95	↑0.35	↑0.05	↓4.47	↓3.34	↓1.19	✓0.90	✓1.05	↓3.34	↓1.85

Suppl. Table 4: **Country diet gaps in 2018.** Country diet gaps are evaluated for each food group as the ratio between the 2018 individual food supply and the healthy reference diet proposed by the EAT-*Lancet* Commission and harmonized for each country depending on the population gender and age distribution. Countries are sorted according to the most close to the less close food system compared to the healthy reference diet.

	Cer	**Leg**	**StR**	**Sug**	**Oil**	**Frt**	**Veg**	**Nut**	**Fat**	**Bov**	**Egg**	**Sea**	**Mlk**	**Pig**	**Plt**
VCT	↑0.79	↑0.06	↑0.70	↓3.03	↑0.63	↓1.27	↑0.79	↑0.05	↓1.87	↓2.37	↓1.21	✓1.10	✓1.06	↓12.28	↓3.42
BRA	↓1.52	↑0.36	↓1.14	↓3.57	↑0.54	↑0.51	↑0.33	↑0.01	↑0.77	↑0.59	✓0.99	↑0.28	↑0.83	↓1.12	↓1.40
BHS	↓1.49	↑0.83	↓12.09	✓0.93	↑0.56	↓1.80	✓0.92	↑0.14	↑0.21	↓1.31	↑0.11	↑0.76	↑0.17	↑0.87	↑0.19
ALB	✓1.00	↑0.22	↓3.65	↓3.66	↑0.58	↓1.75	↑0.56	↑0.05	↑0.48	↓4.94	✓0.91	↑0.88	↑0.82	↓6.09	↓3.83
NIC	↓1.12	↑0.30	↓2.72	↓3.48	↓1.18	↑0.83	↑0.42	↑0.03	↓2.21	↓10.05	↓1.97	↑0.37	↓1.59	↓6.59	↓3.11
ARM	↓1.46	↑0.11	↓1.48	↓1.98	↑0.69	↑0.21	↑0.14	↑0.01	↑0.58	↓2.98	↑0.29	↑0.19	↑0.33	↑0.80	↑0.28
PER	✓1.06	↑0.13	↓1.94	↓1.63	↑0.65	↓1.78	↓1.94	↑0.20	↓1.60	↓3.61	↓2.71	↑0.34	↓3.93	↓2.95	↑0.73
RUS	✓1.09	↑0.09	↓4.09	↓3.61	✓0.90	↑0.57	↑0.75	↑0.03	↓3.63	↓4.79	↓3.05	✓1.08	↓1.72	↓7.12	↓1.56
GRD	✓0.99	↑0.08	↓2.02	↓3.51	✓1.01	↑0.69	↑0.78	↑0.21	↓6.25	↓4.04	↓2.18	↓1.42	↓2.03	↓14.94	↓1.41
SLV	↓1.17	↑0.06	↓1.41	↓2.70	↑0.54	✓0.95	↓1.41	↑0.09	↓2.82	↓6.76	↓2.14	↑0.25	↓2.38	↓3.32	↑0.76
UKR	↓1.31	↑0.25	↓10.23	↓1.92	↑0.47	↓1.45	↑0.73	↑0.01	↑0.35	✓0.91	↓1.90	↓1.20	↑0.78	↓1.89	✓0.99
ZWE	↓1.12	↑0.05	↓5.56	↓3.56	↑0.70	↑0.47	↓1.21	↑0.11	↓2.08	↓2.73	↓2.69	↑0.48	↓1.43	↓5.29	↓1.25
FRA	↓1.42	↑0.42	↓1.60	↓3.60	↑0.25	↑0.73	↑0.66	↑0.01	↓2.05	↓1.77	↓1.66	↑0.38	↓1.16	↓1.90	↓1.33
SVK	↑0.78	↑0.05	↓2.03	↓2.69	✓0.94	↑0.49	↑0.51	↑0.10	↓8.30	✓0.97	↓2.38	↑0.41	↓1.29	↓9.90	↑0.72
BWA	↑0.65	↑0.14	↓1.45	↓3.04	↑0.54	↓1.13	↓2.48	↑0.01	↓1.24	↓1.17	↓1.79	↓1.37	✓1.05	↓3.96	↓2.84
SAU	↓1.35	↑0.10	↓3.58	↓2.47	↑0.66	↑0.36	↑0.39	↑0.01	↓1.23	↓1.75	↑0.28	↑0.16	↓1.74	↑0.42	↑0.22
NOR	✓0.90	↑0.20	↓2.11	↓2.37	↑0.72	↑0.81	↑0.60	↑0.21	↓5.73	↓3.03	↓2.20	↓2.38	↓2.38	↓13.81	✓1.04
KAZ	↓1.76	↑0.14	↑0.86	↓2.52	↓1.16	↓1.54	↑0.64	↑0.10	↓1.53	↓1.74	↓1.52	↑0.49	✓0.95	↑0.00	↓1.84
LCA	✓0.95	↑0.04	↓5.13	↓2.56	↓1.18	↑0.70	↓1.48	↑0.16	↓1.44	↓9.67	↓1.60	↑0.13	↓3.08	↓2.61	✓1.00
COL	✓0.90	↑0.17	↓1.74	↓3.17	↑0.33	↑0.82	↑0.30	↑0.08	↓1.74	↓1.46	↑0.70	↓1.58	✓1.01	↓11.14	↓4.00
BOL	↑0.80	↑0.21	↓7.87	✓1.10	↑0.34	↑0.69	↑0.30	↑0.01	✓0.94	↓4.14	↑0.51	↓1.24	↑0.26	↓9.13	↑0.66
ROU	✓1.08	↑0.18	↓4.32	↓5.04	✓0.92	↓2.06	↑0.41	↑0.06	↑0.80	↓6.37	↓2.54	↑0.34	✓1.06	↓3.60	↓1.87
ESP	↓1.17	↑0.12	↓4.00	↓2.23	↑0.32	✓1.07	↑0.38	↑0.24	↓1.68	↓7.68	↓1.36	↑0.13	↑0.47	↓2.98	↓2.93

Suppl. Table 4: **Country diet gaps in 2018.** Country diet gaps are evaluated for each food group as the ratio between the 2018 individual food supply and the healthy reference diet proposed by the EAT-*Lancet* Commission and harmonized for each country depending on the population gender and age distribution. Countries are sorted according to the most close to the less close food system compared to the healthy reference diet.

	Cer	**Leg**	**StR**	**Sug**	**Oil**	**Frt**	**Veg**	**Nut**	**Fat**	**Bov**	**Egg**	**Sea**	**Mlk**	**Pig**	**Plt**
KOR	↓1.68	↑0.41	↑0.88	↓1.29	↑0.47	↑0.50	↑0.81	↑0.08	↓1.41	↓1.99	↓1.94	↓2.71	↑0.42	↓8.02	↓1.76
MNG	↓1.20	↑0.07	↓3.95	↓2.35	↑0.83	✓0.94	↓1.44	↑0.12	↓3.96	↓1.33	↓2.34	↑0.36	↓2.71	↓9.50	✓1.01
TUN	↑0.76	↑0.15	↓2.16	↓2.68	↓1.67	↑0.82	✓0.94	↑0.32	↓1.28	↓2.35	↓2.62	↓1.92	↓1.69	↓13.39	↓1.53
BLR	↓1.37	↑0.15	↑0.83	↓3.06	✓1.07	↑0.45	↓1.83	↑0.21	↓2.38	↓4.54	↓2.52	↓2.58	↑0.31	↓10.74	✓0.94
MMR	✓1.06	↑0.32	↓19.28	↓1.20	↑0.77	↑0.89	↑0.22	↑0.00	↑0.40	↓1.64	↑0.00	✓1.03	↑0.17	↓4.69	↑0.70
STP	↓1.17	↑0.01	↓2.31	↓1.34	↑0.37	↑0.12	↑0.53	↑0.04	↓2.89	↓7.84	✓1.03	↑0.03	↓2.19	↑0.46	↑0.16
MYS	↓1.89	↑0.20	↓1.53	↓2.98	↓1.14	✓1.00	↓1.94	↑0.34	✓0.93	↓1.72	↓1.26	↑0.60	↓1.29	↑0.00	✓0.91
AGO	↑0.81	↑0.03	↓7.33	↓2.51	✓1.07	↑0.64	✓1.08	↑0.17	↓3.86	↓5.61	↓2.55	↑0.48	↓1.21	↓12.45	↓1.45
GEO	↑0.87	↑0.18	↓1.57	↓4.72	↑0.52	↑0.68	✓0.92	↑0.24	↓6.24	↓3.97	↓2.07	↑0.72	✓1.00	↓6.54	↓1.52
NZL	↓1.46	↑0.10	✓1.07	↓3.53	✓1.04	↑0.40	↑0.73	↑0.06	↑0.66	↓1.57	↓3.73	↓2.53	↑0.46	↓4.85	↓2.22
SWE	↓1.29	↑0.10	↓3.28	↓1.42	↑0.60	↓3.38	↑0.30	↑0.00	↑0.27	↑0.43	↑0.17	↓1.57	↑0.27	↓3.10	↑0.58
GTM	↓1.31	↑0.02	↓1.94	↓3.20	↑0.46	↑0.39	↑0.39	↑0.13	↓2.46	↓2.15	↓1.60	↑0.42	↓1.61	↓2.95	↑0.82
ISR	↑0.80	↑0.08	↓2.17	↓3.07	✓0.96	↑0.63	↑0.72	↑0.21	↓5.82	↓4.52	↓2.31	↓1.35	↓2.43	↓10.68	✓0.92
VUT	↓1.33	↑0.20	↓1.82	↓2.25	↓1.58	↓1.33	↓1.29	↑0.31	✓0.98	↓9.63	↓2.72	↓1.12	↓1.98	↑0.85	↓3.69
MEX	↓1.49	↑0.31	↑0.82	↓3.86	↑0.73	↑0.85	↑0.66	↑0.08	↓1.68	↓3.26	↓3.71	↑0.67	✓1.10	↓10.82	↓2.07
MLT	↓1.45	↑0.38	↑0.45	↓4.33	↑0.51	↑0.53	↑0.43	↑0.06	↑0.70	↓2.94	↓2.85	↑0.15	↑0.48	↓1.27	✓1.04
HKG	↑0.78	↑0.39	↓2.34	↓3.80	↓1.59	↑0.77	↑0.71	↑0.30	↓5.47	↓5.32	↓2.72	↑0.61	↓1.19	↓6.71	↓2.34
GUY	✓1.10	↑0.13	↓1.26	↓3.76	↑0.51	↑0.70	↓1.49	↑0.18	↓3.37	↓3.80	↓2.24	↓1.88	↓2.13	↓9.42	↓1.46
CAN	✓0.93	↑0.13	↓1.17	↓2.42	↑0.61	↑0.58	↓1.34	↑0.40	↓3.22	↓6.98	↓4.53	↓2.27	↓1.11	↓26.25	↓2.37
TUR	↓1.43	↑0.24	↓2.00	↓2.76	↑0.26	↓1.36	↓2.52	↑0.08	↑0.35	↓1.31	↑0.26	✓1.03	↓1.27	↓1.50	↓2.63
DEU	↓1.75	↑0.35	↓2.27	↓2.66	↓1.31	↓1.15	↓1.59	↑0.42	↓1.77	↓2.92	↓1.75	↑0.22	↓2.23	↑0.00	✓1.11
MOZ	↑0.84	↑0.08	↓2.36	↓3.64	✓1.10	↑0.82	↑0.76	↑0.36	↓7.20	↓2.60	↓2.48	↑0.84	↓2.37	↓12.08	✓0.98
LVA	↓1.71	↑0.12	↓5.09	↑0.38	↑0.88	↑0.77	↑0.19	↑0.36	↑0.21	↓1.53	↑0.29	↑0.08	↑0.31	↓5.09	↑0.12

Suppl. Table 4: **Country diet gaps in 2018.** Country diet gaps are evaluated for each food group as the ratio between the 2018 individual food supply and the healthy reference diet proposed by the EAT-*Lancet* Commission and harmonized for each country depending on the population gender and age distribution. Countries are sorted according to the most close to the less close food system compared to the healthy reference diet.

	Cer	**Leg**	**StR**	**Sug**	**Oil**	**Frt**	**Veg**	**Nut**	**Fat**	**Bov**	**Egg**	**Sea**	**Mlk**	**Pig**	**Plt**
NAM	↑0.85	↑0.03	↓4.55	↓2.57	↑0.81	↑0.46	✓0.90	↑0.17	↓6.48	↓1.72	↓2.37	↓1.24	↓2.11	↓13.23	✓1.07
LUX	✓1.06	↑0.23	↓18.01	↓1.21	↑0.75	↑0.31	↑0.25	↑0.07	↑0.18	↑0.22	↑0.35	↑0.61	↑0.09	↓3.46	↑0.23
LTU	↑0.87	↑0.04	↓1.33	↓2.31	↑0.60	↑0.89	↑0.85	↑0.02	↓4.57	↓8.70	↓3.13	↓1.19	↓2.08	↓18.53	✓1.04
HUN	✓1.10	↑0.13	↓2.49	↓3.28	↑0.55	↑0.53	↑0.80	↑0.19	↓3.65	✓1.10	↓3.37	↓1.51	↓2.03	↓16.93	↓1.46
GNB	↓1.42	↑0.21	↓8.41	↓2.27	↑0.50	↑0.42	↑0.29	↑0.01	✓1.01	↓2.55	↑0.22	↑0.64	↑0.70	↓2.34	↑0.58
IRN	✓1.03	↑0.10	↓2.82	↓3.90	✓0.95	✓0.95	↑0.86	↑0.15	↓4.91	↓7.00	↓1.60	↓1.24	↓3.28	↓9.70	↓1.51
IRL	↑0.85	↑0.06	↓1.63	↓3.02	✓1.11	↑0.61	↑0.77	↑0.01	↓8.64	↑0.85	↓2.53	↑0.29	↓1.60	↓17.35	↓1.56
CZE	↓1.89	↑0.18	↓2.99	↓2.44	↑0.76	↓1.51	↓1.59	↑0.66	↓1.57	↓1.66	↓1.36	↑0.58	↑0.48	↑0.00	↓1.52
PAK	↓1.80	↑0.36	↓1.24	↓2.78	↑0.54	↑0.85	↑0.79	↑0.00	↑0.51	↓3.66	↑0.28	↑0.05	↓1.47	↑0.00	↑0.09
MNE	↑0.72	↑0.08	↓2.70	↓2.88	↓1.26	↑0.58	↑0.62	↑0.09	↓6.09	↓1.82	↓1.63	↑0.43	↓1.78	↓12.44	↓1.22
CMR	↓1.59	↑0.42	↓5.74	✓0.99	↑0.35	↑0.08	↑0.22	↑0.00	↑0.40	↓4.10	↑0.64	↑0.63	↑0.12	✓1.10	↑0.19
DJI	✓1.02	↑0.12	↓1.11	↓2.67	↑0.51	✓1.08	↑0.88	↑0.20	↓2.02	↓4.98	↓1.92	↑0.57	↓3.54	↓22.09	↑0.85
LBR	↓1.59	↑0.19	↑0.80	↓2.29	↑0.72	↑0.28	↑0.29	↑0.03	↓3.37	↓2.81	↑0.70	↑0.08	↓2.19	↑0.00	↑0.28
POL	↓1.53	↑0.07	↓9.66	↑0.74	↑0.79	↑0.60	↑0.31	↑0.03	↑0.12	↑0.22	↑0.34	↑0.22	↑0.06	↓2.74	↑0.89
AZE	↓1.64	↑0.71	↓7.47	✓1.08	↑0.21	↓1.91	↑0.71	↑0.01	↑0.61	✓1.02	↑0.23	↑0.60	↑0.05	↓3.71	↑0.19
SDN	↓1.89	↑0.30	↑0.79	↓3.09	↑0.86	↑0.32	↑0.58	↑0.00	↑0.40	↓2.79	↑0.54	↑0.20	↑0.67	↑0.07	↑0.18
YEM	✓1.07	↑0.06	↓3.97	↓3.81	↑0.77	↑0.64	↑0.84	↑0.12	↓6.07	↑0.06	↓1.72	✓0.98	↓1.50	↓20.80	↓1.57
KIR	↓1.66	↑0.02	↓2.93	↓1.73	↑0.26	↑0.70	✓1.07	↑0.23	↓1.92	↓4.72	↓1.50	↑0.14	↓1.57	↑0.31	↑0.70
LKA	↓1.65	↑0.10	↑0.58	↓2.42	↑0.50	↑0.42	↑0.22	↑0.01	↑0.39	↓2.01	↑0.32	↑0.18	↑0.23	↑0.00	↑0.37
NLD	✓1.03	↑0.01	↓4.50	↓4.58	↑0.31	↑0.71	↑0.29	↑0.13	↑0.40	✓1.03	↑0.51	↓2.84	↑0.06	↓5.96	↑0.87
ZMB	↑0.75	↑0.05	↓2.80	↓2.96	✓0.92	↓1.23	↑0.82	↑0.25	↓5.50	↓5.69	↓3.25	✓1.00	↓2.91	↓11.56	↑0.66
DZA	↓1.80	↑0.24	↓1.92	↓2.36	↑0.25	↑0.84	↑0.65	↑0.10	↑0.08	↑0.33	↑0.84	↓1.56	↑0.61	↑0.00	↑0.29
KGZ	↓1.82	↑0.29	↓10.67	↓1.15	✓1.06	↓1.22	↓1.23	↑0.00	↑0.18	↓3.00	↑0.35	↑0.52	↑0.26	↑0.07	↑0.12

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	Cer	**Leg**	**StR**	**Sug**	**Oil**	**Frt**	**Veg**	**Nut**	**Fat**	**Bov**	**Egg**	**Sea**	**Mlk**	**Pig**	**Plt**
AUT	↑0.85	↑0.11	↓2.33	↓3.79	↓1.21	✓0.91	↑0.74	↑0.22	↓9.77	↓3.25	↓2.90	↑0.68	↓1.90	↓14.34	✓0.96
THA	↓1.28	↑0.36	↓11.80	↓1.31	↑0.32	↓2.48	↑0.40	↑0.00	↑0.24	↓1.49	↑0.17	↓1.49	↑0.39	↓3.77	↓1.72
EST	↓1.93	↑0.19	↓3.37	↓2.42	✓0.94	↓1.57	↓1.70	↑0.09	↑0.44	↓1.50	↓1.19	↑0.20	↓1.68	↑0.00	↑0.38
CUB	↓1.43	↑0.45	↓6.56	↓4.23	↑0.45	↓1.54	✓0.92	↑0.00	✓1.09	↓2.48	↓1.81	↑0.24	↑0.86	↓8.32	↓1.51
HRV	↓1.50	↑0.08	↓4.45	↓1.53	↑0.41	↑0.41	↓1.71	↑0.30	↑0.63	↓5.66	↑0.83	↑0.08	↓2.49	↑0.79	↑0.19
CHE	↓1.47	↑0.24	↓3.34	↑0.62	↑0.46	↑0.75	↓2.77	↑0.11	↓1.11	↓1.74	↓3.92	↓1.26	↑0.31	↓23.05	✓0.96
TKM	↓1.61	↑0.12	↑0.71	↓3.27	↑0.53	↑0.72	↑0.42	↑0.03	↑0.65	↑0.52	↓2.56	↓1.61	↑0.29	↓8.62	↑0.75
SLB	↑0.76	↑0.05	↓1.61	↓3.90	↑0.58	↑0.75	↓1.43	↑0.15	↓3.76	↓4.60	↓1.96	↑0.84	↓2.08	↓13.14	↑0.63
URY	↑0.78	↑0.12	↓3.04	↓2.30	↑0.54	↑0.81	↑0.89	↑0.20	↓4.68	↓2.26	↓2.31	↑0.50	↓3.56	↓10.98	↓1.34
AUS	↓1.60	↑0.32	↓13.18	↑0.52	↑0.84	↑0.34	↑0.44	↑0.07	↑0.06	↑0.57	↑0.28	✓1.10	↑0.06	↑0.79	↑0.17
SLE	↓1.32	↑0.10	↓2.62	↓4.10	↑0.83	↑0.64	↑0.62	↑0.03	↓2.24	↓10.67	↓2.09	↑0.45	↓2.27	↓5.95	↑0.53
GIN	↑0.71	↑0.06	↓1.58	↓4.00	✓1.07	↑0.84	↑0.72	↑0.43	↓4.25	↓3.20	↓1.91	↑0.68	↓2.88	↓17.28	↑0.79
CHN	↑0.69	↑0.08	↓1.55	↓3.92	↓1.42	↑0.59	↑0.69	↑0.32	↓3.08	↓5.31	↓1.54	↑0.72	↓2.08	↓7.27	↓2.91
UZB	↓1.85	↑0.00	↓1.51	✓1.09	↑0.48	↑0.57	✓0.97	↑0.02	↓1.90	↓9.92	↓1.24	↑0.15	↓1.51	↑0.13	↑0.25
NPL	↑0.81	↑0.23	↓16.07	↑0.76	↑0.32	↑0.35	↑0.09	↑0.02	✓1.01	✓0.98	↑0.21	↓1.18	↑0.10	↓2.81	↑0.32
CHL	↓1.81	↑0.45	↓4.55	↑0.86	↑0.30	↑0.12	↑0.07	↑0.00	↑0.50	↓2.30	↑0.06	↑0.56	↑0.24	↑0.00	↑0.04
MWI	↓1.73	↑0.00	↓3.32	✓0.90	↑0.67	✓1.05	↓2.32	↑0.10	↑0.59	↓11.33	↓1.27	↑0.13	↓2.12	↑0.58	↑0.11
BEL	↓1.30	↑0.12	↓2.99	↓3.78	↑0.42	↑0.55	↑0.80	↑0.07	↓2.43	↓7.42	↓1.92	↑0.59	✓1.06	↓12.42	↓2.66
COG	↓1.48	↑0.41	↓19.26	✓0.97	↑0.71	↑0.59	↑0.72	↑0.07	↑0.24	↑0.73	↑0.58	↑0.44	↑0.09	✓0.95	↑0.04
ARG	↑0.88	↑0.15	↓21.64	↓1.32	↑0.57	↑0.64	↑0.55	↑0.00	↑0.09	↓1.16	↑0.06	↓1.44	↑0.07	↑0.87	↓1.43
NGA	↓2.15	↑0.28	↓4.40	↑0.60	↑0.59	↑0.46	↓1.14	↑0.06	↑0.70	↓1.69	↑0.48	↑0.15	✓0.90	↑0.54	↑0.11
AFG	↑0.86	↑0.06	↓3.43	↓4.23	↓1.26	✓0.92	↓1.19	↑0.28	↓10.78	↓2.19	↓1.35	✓1.00	↓2.64	↓6.94	↑0.59
GAB	↓1.92	↑0.45	✓1.08	✓0.93	↑0.17	↑0.73	↓1.39	↑0.65	↓1.59	↓2.57	✓1.04	↓1.54	↑0.25	↓24.40	✓0.94

Suppl. Table 4: **Country diet gaps in 2018.** Country diet gaps are evaluated for each food group as the ratio between the 2018 individual food supply and the healthy reference diet proposed by the EAT-*Lancet* Commission and harmonized for each country depending on the population gender and age distribution. Countries are sorted according to the most close to the less close food system compared to the healthy reference diet.

	Cer	**Leg**	**StR**	**Sug**	**Oil**	**Frt**	**Veg**	**Nut**	**Fat**	**Bov**	**Egg**	**Sea**	**Mlk**	**Pig**	**Plt**
FIN	↓1.25	↑0.05	↓2.31	↓3.93	↑0.89	↑0.57	↑0.66	↑0.03	↓2.10	↓22.60	↓2.99	↑0.33	↓1.45	↓7.25	↓3.00
TLS	↓1.84	↑0.26	↓2.93	↓1.35	↑0.44	↑0.20	↑0.26	↑0.00	↑0.58	↑0.48	↑0.38	↑0.42	↑0.15	↓8.09	↑0.23
MAR	↓2.10	↑0.50	↑0.54	↓2.77	↑0.62	↑0.07	↑0.25	↑0.04	↑0.12	✓1.03	↑0.17	↓1.52	↑0.62	↑0.15	↑0.23
LSO	↓2.40	↑0.85	↑0.40	↑0.87	↑0.51	↑0.05	↑0.16	↑0.02	↑0.37	↓2.13	↑0.46	↑0.44	↑0.37	↓1.40	↑0.14
VNM	↓1.97	↑0.06	↑0.38	✓1.08	↑0.23	↑0.38	↑0.29	↑0.08	✓0.91	↓1.48	↑0.33	↑0.00	↑0.67	↑0.00	↑0.09
ZAF	↑0.53	✓1.01	↓19.85	✓0.92	↑0.35	↓2.27	↑0.33	↑0.00	↑0.21	✓1.00	↑0.06	↑0.38	↑0.32	↑0.43	↑0.07
SWZ	↓2.21	↑0.25	↓2.22	↓1.70	↑0.83	↑0.20	↑0.74	↑0.03	↑0.33	↓2.19	↑0.35	↑0.88	↑0.20	↑0.66	↑0.27
TCD	↑0.90	↑0.06	↓2.34	↓2.64	↑0.52	↑0.70	↑0.63	↑0.11	↓4.77	↓5.54	↓2.02	↓1.44	↓3.12	↓21.91	✓1.03
SEN	↓2.22	↓1.36	↓1.84	↑0.00	↑0.27	↑0.39	↓1.46	↑0.00	↑0.66	✓1.06	↑0.06	↑0.11	✓0.92	↑0.08	↑0.07
TGO	↓1.74	↑0.17	↓4.40	↓2.54	↑0.28	↑0.65	↑0.30	↑0.06	↑0.82	↓5.51	↑0.33	↑0.21	↑0.60	↓1.13	↑0.39
WSM	↓1.58	↑0.45	↓15.11	↓1.30	↑0.58	↑0.08	↑0.39	↑0.00	↑0.12	↑0.50	↑0.17	↑0.57	↑0.07	↑0.86	↑0.42
PHL	↓2.27	↑0.17	↓2.04	↓2.97	↑0.73	✓1.03	✓0.93	↑0.21	↓1.18	↓2.38	↓1.47	✓1.06	↑0.50	↑0.00	✓1.06
DMA	↓1.95	↑0.10	↓2.81	↓1.21	↑0.37	↑0.20	↑0.23	↑0.00	↑0.49	↓2.64	↑0.11	↑0.10	↑0.69	↓3.96	↑0.44
CIV	↓1.89	↑0.11	↓1.69	↓2.75	↑0.79	↑0.24	↑0.45	↑0.01	↑0.31	↓7.13	↓1.24	↑0.28	↑0.59	↓3.36	↓2.57
USA	↑0.65	↑0.03	↓6.08	↓2.24	↑0.46	↓1.38	↑0.20	↑0.01	↓3.16	↓3.44	↑0.26	↓1.90	↑0.51	↓11.74	↓3.34
MDG	↓1.42	↑0.14	↓23.25	✓0.91	✓0.95	↓1.29	↑0.42	↑0.18	↑0.06	↑0.51	↑0.29	↓1.17	↑0.07	↑0.36	↑0.10
MRT	↓1.91	↑0.05	✓1.05	↓2.09	↑0.34	✓1.10	↑0.63	↑0.06	↓2.08	↓1.14	✓0.96	↓1.19	↑0.16	↓12.18	↑0.73
IDN	↑0.76	↑0.21	↓1.73	↓5.03	↓1.71	↑0.79	↑0.65	↑0.26	↓2.51	↓6.21	↓2.98	↑0.62	↓2.13	↓7.54	↓3.28
BFA	↑0.76	↑0.12	↓9.08	↓3.48	↑0.45	↓2.82	↑0.75	↑0.01	↓1.53	↓3.40	↑0.67	↓1.53	↓1.35	↓4.32	↓2.87
GMB	↓2.17	↑0.15	↓4.90	↓1.67	↑0.73	↑0.67	↑0.52	↑0.03	↑0.14	✓0.93	↓1.31	↓2.13	↑0.13	↑0.80	↑0.43
BEN	↓1.51	↑0.48	↓21.79	↑0.69	↑0.55	↑0.42	↑0.45	↑0.18	↑0.12	↓1.31	↑0.17	↑0.79	↑0.20	↑0.44	↑0.46
DNK	↓1.68	↑0.07	↓8.18	↑0.69	↑0.19	↑0.41	↑0.15	↑0.01	↑0.15	↓2.52	↑0.11	↑0.27	↑0.27	↓1.58	↑0.26
MLI	↓2.14	↑0.24	↑0.55	↓3.31	↑0.76	↑0.29	↑0.52	↑0.00	↑0.60	↓2.59	↑0.40	↑0.49	↓1.73	↑0.00	↑0.19

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	Cer	**Leg**	**StR**	**Sug**	**Oil**	**Frt**	**Veg**	**Nut**	**Fat**	**Bov**	**Egg**	**Sea**	**Mlk**	**Pig**	**Plt**
BGD	↑0.76	↑0.05	↓2.32	↓4.18	↑0.45	↑0.74	↑0.86	↑0.25	↓8.51	↓4.24	↓3.16	↓1.70	↓2.55	↓12.36	↓1.49
ISL	↓2.57	↑0.31	↓2.09	✓0.98	↑0.41	↑0.77	✓1.10	↑0.17	↑0.40	↓2.61	↑0.12	↑0.39	↓1.54	↑0.07	↑0.14
NER	↓2.08	↑0.49	↓7.01	↑0.75	↑0.21	↑0.10	↑0.16	↑0.03	↑0.27	↓1.65	↑0.11	↑0.03	↑0.37	↑0.00	↑0.03
ETH	↑0.77	↑0.05	↓1.70	↓3.17	↑0.51	✓1.02	↑0.68	↑0.12	↓5.28	↓5.24	↓2.21	↓4.32	↓3.97	↓12.92	↓1.58
EGY	↓2.35	↑0.19	↓2.65	↑0.64	↑0.44	↑0.27	↑0.41	↑0.04	↑0.22	↑0.40	↑0.78	↓1.17	↑0.26	↑0.00	↑0.11
KHM	↓2.43	↑0.14	↓1.92	↓2.34	↑0.39	↓1.32	↓1.35	↑0.03	✓0.94	↓3.11	↑0.84	✓1.06	↑0.50	↑0.00	✓1.06
LAO	↓2.11	↑0.27	↓2.11	↓1.90	↑0.18	↑0.21	↑0.29	↑0.01	↑0.40	↓1.49	↑0.27	↓2.26	↑0.07	↓3.59	↑0.18
CAF	↓2.05	↑0.13	↓3.68	↑0.56	↑0.20	↓1.83	↓1.64	↑0.03	↑0.76	↓2.37	↑0.37	↓1.22	↑0.07	↓6.97	↑0.38
RWA	↑0.31	↑0.21	↓19.26	↑0.57	↑0.71	↑0.68	↑0.15	↑0.00	↑0.73	↓8.14	↑0.11	↑0.41	↑0.21	↓1.82	↑0.12
GHA	✓0.96	↑0.36	↓34.32	✓0.91	↑0.39	↓3.25	↑0.33	↑0.05	↑0.27	↑0.35	↑0.17	↓1.43	↑0.08	↑0.50	↑0.34