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IN BRIEF

THE STATE OF FOOD AND AGRICULTURE

**VALUE-DRIVEN TRANSFORMATION
OF AGRIFOOD SYSTEMS**

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COUNTRY NOT SPECIFIED. Variety of healthy foods for filling arepas, a typical Latin American dish

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CORE MESSAGES

1 Using true cost accounting (TCA), *The State of Food and Agriculture 2023* presented preliminary estimates of the global hidden costs of agrifood systems and stressed the urgent need to address them. This edition refines these estimates, confirming that the global quantified hidden costs of agrifood systems exceed 10 trillion dollars at 2020 purchasing power parity (PPP). Strategic actions are needed by all actors to enhance the value of agrifood systems to society.

2 Unhealthy dietary patterns related to non-communicable diseases account for 70 percent of all quantified hidden costs. The biggest global risk factors are low intake of whole grains, high intake of sodium, and low intake of fruits. Due to data constraints, undernutrition costs (wasting, stunting, and micronutrient deficiency) were not calculated, making these figures for health hidden costs a lower bound.

3 This report adopts an agrifood systems typology with six categories – protracted crisis, traditional, expanding, diversifying, formalizing and industrial. Based on this typology, it analyses the quantified hidden costs for 153 countries, covering 99 percent of the world’s population. Industrial and diversifying agrifood systems account for the highest global quantified hidden costs (amounting to 5.9 trillion 2020 PPP dollars), and these are dominated by health hidden costs.

4 No single transformational strategy exists, given the diversity of possible policy interventions and investments. In the historical transition from traditional to industrial agrifood systems, both outcomes and hidden costs vary. While there is scope for improving efficiency and safety, care must be taken to avoid exacerbating power imbalances, environmental and social hidden costs, and unhealthy dietary transitions.

5 Environmental hidden costs are largest in diversifying agrifood systems (720 billion 2020 PPP dollars), followed by formalizing and industrial. However, countries in protracted crisis are the most burdened by environmental hidden costs, when considered as a share of their gross domestic product (GDP) (20 percent).

6 Social hidden costs are prevalent in traditional and protracted crisis agrifood systems, accounting for 8 and 18 percent of GDP, respectively. These costs – driven by undernourishment and poverty – emphasize the importance of raising livelihoods and bridging the humanitarian–development–peace nexus.

7 Health hidden costs are relevant across all agrifood systems categories. The leading dietary risk related to non-communicable diseases is low consumption of whole grains in all agrifood systems except protracted crisis and traditional, where the greatest risk is low intake of fruits and vegetables.

8 In countries and territories with formalizing and industrial agrifood systems, diets high in red and processed meat as well as sodium are significant. Food-based dietary guidelines need to take into account such patterns to more effectively promote healthy diets that decrease health hidden costs.

9 Transforming agrifood systems to reduce hidden costs will improve well-being. However, the distribution of benefits and costs will be uneven across different stakeholders, countries and time frames.

10 Everyone has a role to play in driving agrifood systems transformation. It is crucial to integrate efforts made within agrifood systems – such as those made by the public and private sectors, research institutions and civil society.

11 In increasingly global food supply chains, power imbalances often shift the burden of change onto vulnerable parties such as producers, who end up facing higher regulatory costs and downward price pressures. In contrast, the benefits of change may be reaped by parties who avoid or pass on additional costs. It is possible to minimize business disruption by staying ahead of anticipated regulatory change and adopting early on sustainable and fair practices.

12 Consumers can influence agrifood systems through their purchasing decisions by choosing products that are sustainably produced and healthy. Financial incentives, information and educational programmes, and regulations can support this shift, ensuring that even vulnerable households can participate in and benefit from these changes.

13 The significant purchasing power of institutions can be leveraged to reshape food supply chains and improve food environments. By encouraging consumption of sustainable and nutritious foods, these institutions can influence consumption patterns over generations. This impact can be further enhanced when paired with comprehensive food and nutrition education.

14 Targeted TCA assessments of agrifood systems carried out across varying levels – from product and value chain to national – can help public and private decision-makers assess priorities and manage trade-offs. Strong consultative engagement of agrifood systems stakeholders identifies effective and fair actions.

FOREWORD

Global agrifood systems feed us and sustain the livelihoods of many. However, these systems are at a pivotal moment, facing unprecedented challenges that demand innovative solutions and collective action. The 2024 edition of *The State of Food and Agriculture* builds on the groundbreaking work of the previous edition, delving deeper into the hidden costs of our agrifood systems and charting a course for transformative change.

In 2023, we revealed that the global hidden costs of agrifood systems exceeded 10 trillion US dollars at purchasing power parity in 2020. This year, we refine our understanding of these costs, particularly in the realm of health, and explore how they manifest in different agrifood system types worldwide. Our findings underscore the urgency of action. From the burden of non-communicable diseases in formalizing and industrial agrifood systems, to the persistent challenges of undernourishment in traditional ones, the hidden costs of our agrifood systems touch every corner of the globe.

Agrifood systems, which employ an estimated 1.23 billion people globally, are deeply interconnected, yet all actors do not share equally the burden of hidden costs and the transformation that is needed. Despite their critical role in providing employment, agrifood systems do not always ensure an acceptable standard of living and quality of life. Vulnerable populations, including the poor and food insecure, small-scale value chain actors, women, youth, persons living with disabilities, and Indigenous Peoples, often bear the greatest burden of social hidden costs in these systems. Inequalities and power imbalances are deeply embedded in our agrifood systems.

Addressing these challenges requires tailored solutions for diverse agrifood systems. The innovative agrifood systems typology adopted for this report reveals that different systems face unique challenges and require targeted interventions. It is crucial to address the double burden of malnutrition in transitioning agrifood systems and to tackle the health and environmental hidden costs of industrial agrifood systems with context-specific strategies. Agrifood systems in countries and territories in protracted crisis stand out for their significant burdens of environmental and social hidden costs, underlining the importance of incorporating long-term solutions into exit strategies and/or crisis response.

The importance of true cost accounting (TCA) and stakeholder engagement cannot be overstated. By applying TCA and fostering inclusive stakeholder dialogue, we can identify effective levers for reducing hidden costs and creating more efficient, inclusive, resilient, sustainable and healthy agrifood systems. This approach enables us to make informed decisions that benefit both people and the planet.

Transforming our agrifood systems also requires unprecedented collaboration between policymakers, producers, consumers and financial institutions. Producers, who are on the front line of the impacts of the climate crisis, bear a significant share of the burden while facing challenges to adopt sustainable practices. Mechanisms need to be put in place to ease their financial and administrative burdens, thereby incentivizing transformational change. There is a need to ensure that the benefits and costs of transformation are equitably distributed among stakeholders in agrifood value chains.

Businesses and investors in agrifood systems also have critical roles to play. Agribusinesses range from micro- and small enterprises to global corporations, and their influence can drive sustainable practices across supply chains. Consumer demand for healthier, sustainable and fair production practices is a significant driver of change. Similarly, the investment community must incorporate environmental and social responsibility into their operations, recognizing that “business as usual is a high-risk proposition” in the face of a changing climate.

Consumers, the largest group of agrifood actors globally, can drive transformative change through their purchasing decisions. Dietary shifts to address the low consumption of fruits and whole grains and the overconsumption of sodium are key in all agrifood systems categories, whereas the overconsumption of processed and red meat is particularly relevant in industrial agrifood systems. Addressing these dietary risks would tackle not only health hidden costs, but also a significant portion of environmental costs through land-use change and input use, based on the dependencies captured in this report. Accumulating evidence suggests that interventions to build consumer agency and shape consumer preferences and procurement practices can spur change across food supply chains, promoting sustainability and health.

These insights provide a strategic guide for action, underscoring the urgent need for transformative change in global agrifood systems. The transformation of our agrifood systems is fundamental to achieving the Sustainable Development Goals and securing a prosperous future for all. It requires us to bridge sectoral divides, align policies across health, agriculture and the environment, and ensure that the benefits and costs of change are equitably distributed, including across generations.

As we move forward, it is important to remember that real change begins with individual actions and initiatives. A smallholder farmer adopting sustainable practices, a community coming together to support value generation in local agrifood systems, or a consumer choosing to buy fair trade products that are sustainably produced – all these actions contribute to the larger goal. These individual actions need to be further incentivized through enabling policies and targeted investments. Each of us has a role to play, and our collective efforts can drive the transformation needed to build a better future through the four betters: better production, better nutrition, a better environment and a better life – leaving no one behind. Let us be inspired by the stories of those who are already making a difference and come together to create a global movement for sustainable and inclusive agrifood systems.

The journey ahead will be challenging, but the potential rewards are immense. By embracing the insights and recommendations of this report, we can build agrifood systems that nourish both people and the planet, today and for generations to come. The time for action is now, and the path forward is clear. Let us seize this moment to transform our agrifood systems and create a more sustainable, healthier and inclusive world for all.



Qu Dongyu
FAO Director-General

SUMMARY

For the first time, in 2024, *The State of Food and Agriculture* builds on the previous year's edition, which revealed that the global hidden costs of agrifood systems were highly likely to have exceeded 10 trillion dollars at purchasing power parity (PPP) in 2020. This preliminary figure was quantified using true cost accounting (TCA) – a systems approach that captures the environmental, social, health and economic impacts, both visible and invisible, of agrifood systems.

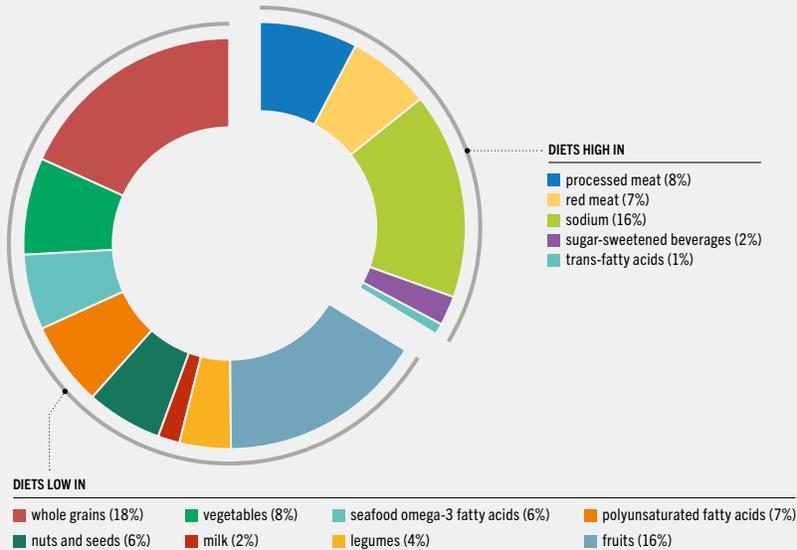
The State of Food and Agriculture 2024 refines the global estimates presented in the 2023 edition, providing a detailed breakdown of the health hidden costs for 156 countries, and moves forward, including targeted TCA assessments through case studies. Targeted TCA assessments enable stakeholder consultation and the identification of policy levers needed to address the main drivers of hidden costs, and are, therefore, a fundamental precondition to successful transformation on any scale.

GLOBAL QUANTIFIED HIDDEN COSTS OF AGRIFOOD SYSTEMS

Revising and refining the 2023 estimates

The quantified hidden costs in the 2023 edition of this report amounted to 12.7 trillion 2020 PPP dollars in 2020, of which more than 9 trillion (or 73 percent) were due to health-related costs. Because of the overwhelming share of health hidden costs associated with dietary patterns that lead to obesity and non-communicable diseases (NCDs), the 2024 edition of *The State of Food and Agriculture* makes three refinements to their quantification. First, it drops the hidden costs of high body mass index (BMI), as this can be driven by factors other than agrifood systems. Second, the health hidden costs of diets high in sugar-sweetened beverages are added, whereas these were previously excluded to prevent double-counting with BMI. Third, health hidden costs are now broken down into dietary risk factors

FIGURE IN BOX 5 DIETS LOW IN WHOLE GRAINS AND FRUITS AND HIGH IN SODIUM ARE THE LEADING DIETARY RISKS CONTRIBUTING TO GLOBAL HEALTH HIDDEN COSTS



NOTES: The hidden costs presented in the figure are the global total costs of disability-adjusted life years (DALYs) lost due to dietary risks associated with non-communicable diseases (NCDs). Data on DALYs are downloaded from the 2021 Global Burden of Disease study by selecting all dietary risks and NCDs as a cause of death/disability. DALYs are costed using GDP per person employed (2019) from the World Bank.

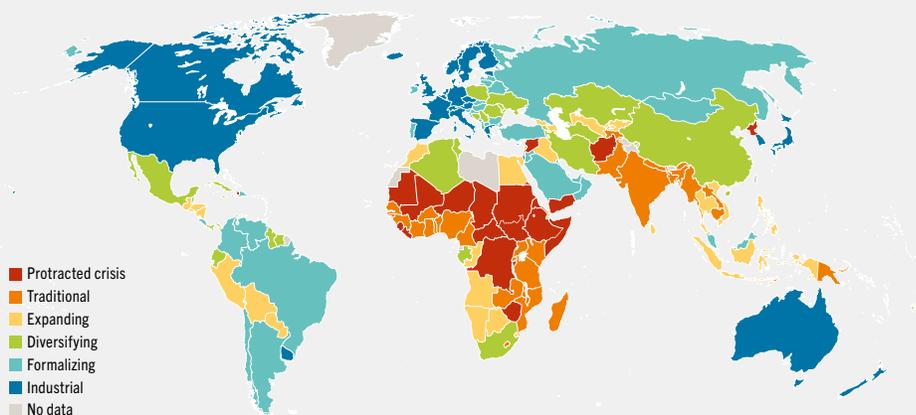
SOURCES: Authors' own elaboration based on Global Burden of Disease Collaborative Network. 2024. Global Burden of Disease Study 2021 (GBD 2021): Results. [Accessed on 7 June 2024. <https://ghdx.healthdata.org/gbd-results>; World Bank. 2021. World Development Indicators: GDP per person employed (2019). [Accessed on 29 January 2021. <https://data.worldbank.org/indicator/SL.GDP.PCAP.EM.KD>. Licence: CC BY-4.0.

<https://doi.org/10.4060/cd2616en-figB05> 

associated with NCDs from the Global Burden of Disease study to help identify more tangible policy levers.

With these refinements, the new quantified hidden costs amount to 11.6 trillion 2020 PPP dollars for 156 countries globally, with health hidden costs decreasing by around

13 percent to 8.1 trillion 2020 PPP dollars, but remaining equivalent to 70 percent of global hidden costs, confirming the 2023 edition's conclusions that urgent strategic action is needed. Breaking down these results by dietary risk associated with NCDs (Figure in Box 5), this report finds that diets low in whole grains are of concern (18 percent of

FIGURE 1 GLOBAL MAP OF THE AGRIFOOD SYSTEMS TYPOLOGY

NOTES: Refer to the disclaimer on the copyright page for the names and boundaries used in this map. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. The list of countries in protracted crisis is not necessarily endorsed by country governments.

SOURCES: Authors' own elaboration based on Food Security Information Network & Global Network Against Food Crises. 2022. *Global report on food crises 2022 – Joint analysis for better decisions: Mid-year update*. Rome. https://www.fsinplatform.org/sites/default/files/resources/files/GRFC%202022%20MYU%20Final_0_0.pdf; Marshall, Q., Fanzo, J., Barrett, C.B., Jones, A.D., Herforth, A. & McLaren, R. 2021. Building a Global Food Systems Typology: A New Tool for Reducing Complexity in Food Systems Analysis. *Frontiers in Sustainable Food Systems*, 5: 746512. <https://doi.org/10.3389/fsufs.2021.746512>

<https://doi.org/10.4060/cd2616en-fig01> 

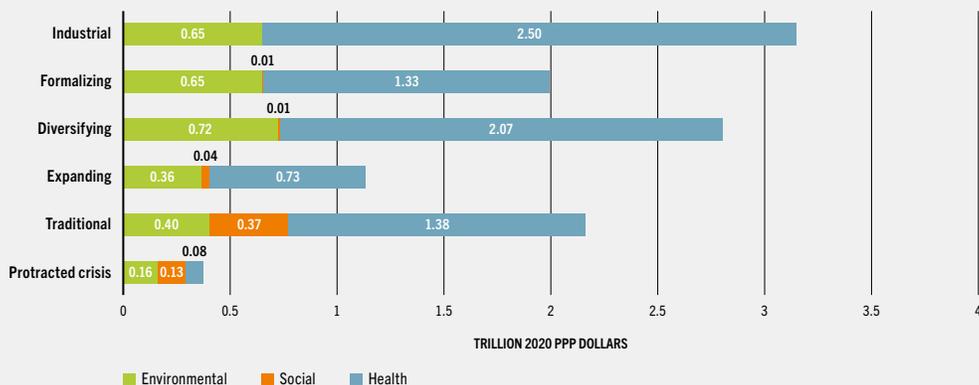
global quantified health hidden costs), alongside diets high in sodium and low in fruits (16 percent each), although there is significant variation across different types of agrifood systems.

An agrifood systems typology to identify context-specific policies

To facilitate policy recommendations better suited to specific contexts, this report analyses quantified hidden costs through the lens of an agrifood systems

typology covering 153 countries with six categories – protracted crisis, traditional, expanding, diversifying, formalizing and industrial (Figure 1). This typology captures relevant components of food supply chains, diets and external drivers of food systems during rural transformation to contextualize relevant policy entry points.

Industrial and diversifying agrifood systems make the highest contribution to global quantified hidden costs (adding up

FIGURE 6 QUANTIFIED HIDDEN COSTS BY AGRIFOOD SYSTEMS CATEGORY

NOTE: The numbers in each bar represent the total quantified environmental, social and health hidden costs of agrifood systems by agrifood systems category.

SOURCE: Authors' own elaboration.

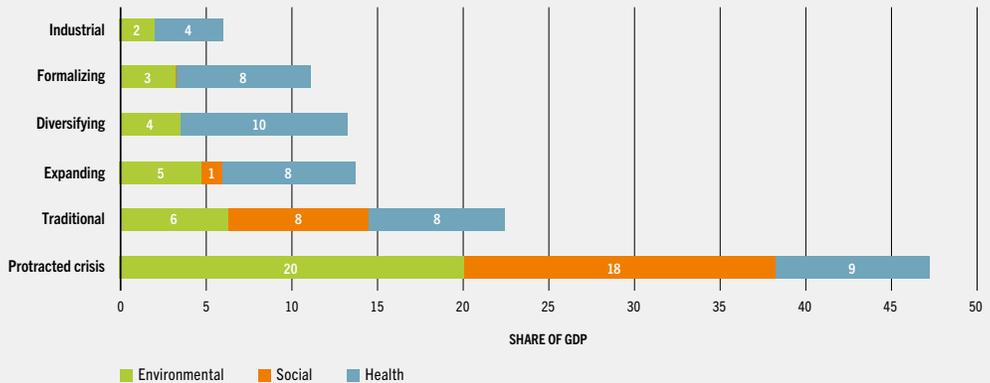
<https://doi.org/10.4060/cd2616en-fig06> 

to 5.9 trillion 2020 PPP dollars), dominated by health hidden costs linked to NCDs. These health hidden costs also account for a significant share of the total quantified hidden costs of other agrifood systems, except for those in the protracted crisis category (Figure 6).

Presenting hidden costs as a share of gross domestic product (GDP) gives a sense of the burden placed on the economy (Figure 7). In this respect, the burden of hidden costs is highest in countries in protracted crisis (47 percent of GDP) and those with traditional agrifood systems (23 percent of GDP), with social hidden costs being particularly important. The burden of

hidden costs decreases as agrifood systems transition towards industrial (6 percent of GDP), as does the relevance of social hidden costs.

The burden of health hidden costs associated with NCDs is largest in the diversifying category (10 percent of GDP) and decreases as systems transition towards formalizing and industrial categories. This pattern reflects the dietary transition that accompanies structural transformation, the higher financial and institutional capacity of formalizing and industrial systems to address health hidden costs, as well as the rise in demand for healthier diets as incomes increase.

FIGURE 7 QUANTIFIED HIDDEN COSTS AS A SHARE OF GROSS DOMESTIC PRODUCT BY AGRIFOOD SYSTEMS CATEGORY

NOTE: The numbers in each bar represent the share of the quantified hidden costs in the gross domestic product (GDP) of countries on average by agrifood systems category.

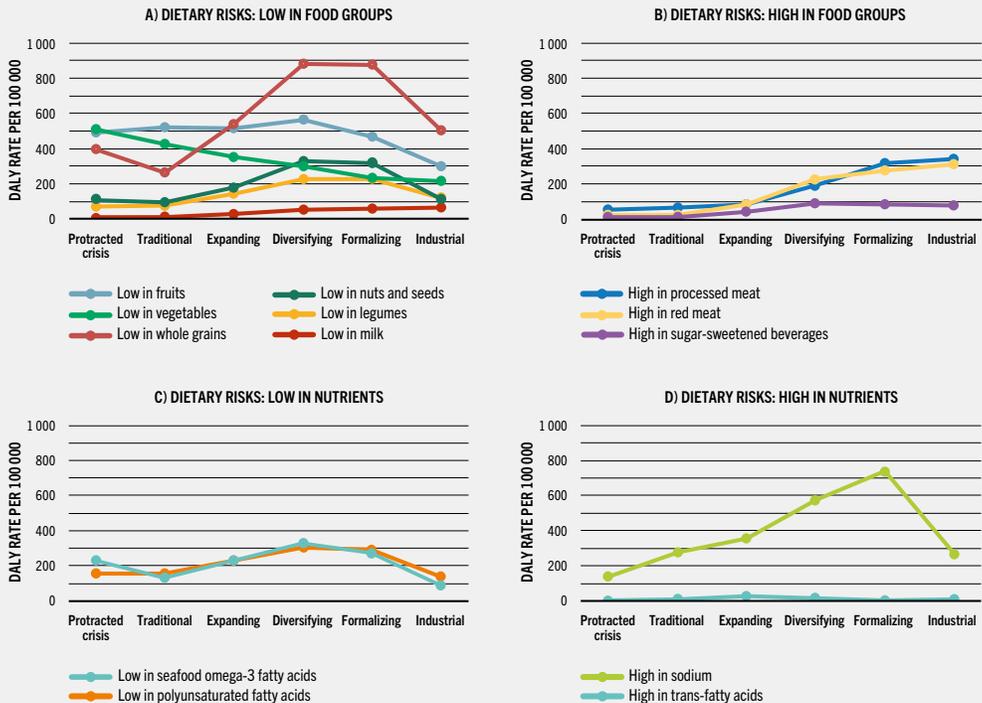
SOURCE: Authors' own elaboration.

<https://doi.org/10.4060/cd2616en-fig07> 

The dietary risk factors associated with NCDs driving health hidden costs are also highly diverse across systems, so breaking them down can help gain insights into potential levers (Figure 8). Diets low in whole grains are the leading risk in all agrifood systems categories, except for protracted crisis and traditional systems. In these two categories, diets low in fruits and vegetables prevail, although these are also relevant in other categories. Diets high in sodium are also problematic and show an increasing pattern as agrifood systems transition from traditional to formalizing, where they peak and then decrease for industrial agrifood systems.

Diets high in processed and red meat, in contrast, increase consistently as agrifood systems transition from traditional towards industrial, where they feature among the top three dietary risks. Policy interventions to address health hidden costs due to NCDs while countries transform their agrifood systems can be more effective if these patterns are considered when designing packages of interventions.

FIGURE 8 DIETARY NON-COMMUNICABLE DISEASE RISKS OF UNDER- AND OVER-CONSUMPTION OF FOODS AND NUTRIENTS BY AGRIFOOD SYSTEMS CATEGORY



NOTES: NCD = non-communicable disease; DALY = disability-adjusted life year. The DALY rates presented in the figure are the average DALY values per 100 000 people in each country by agrifood systems category. Data are downloaded from the 2021 Global Burden of Disease Study (GBD 2021) by selecting all dietary risks and NCDs as a cause of death or disability.

SOURCE: Authors' own elaboration based on Global Burden of Disease Collaborative Network. 2024. Global Burden of Disease Study 2021 (GBD 2021): Results. [Accessed on 7 June 2024]. <https://vizhub.healthdata.org/gbd-results>

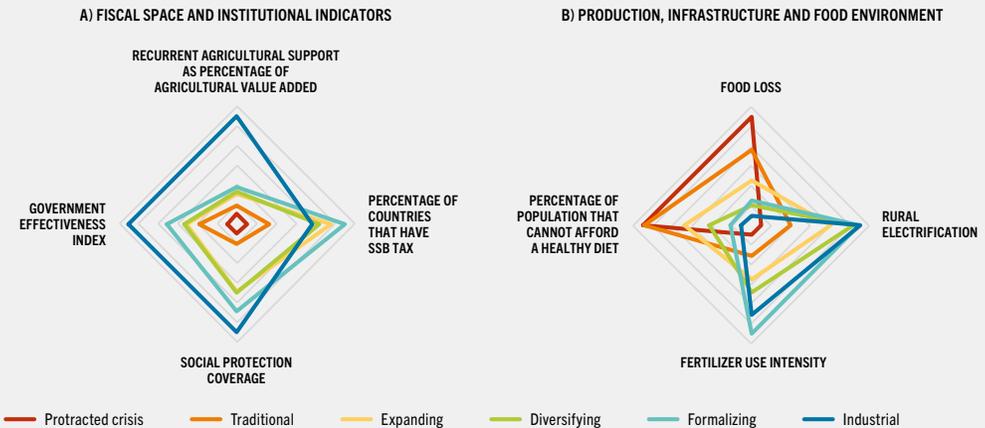
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CAPACITY OF AGRIFOOD SYSTEMS TO IMPLEMENT TRANSFORMATIVE ACTIONS

Countries' capacity to take transformative action will depend to some extent on their institutional and fiscal space, as well as their supply chain structures and food environments, which

vary widely across the agrifood systems typology (Figure 9).

Resources available for repurposing agricultural support are highest in the industrial and formalizing agrifood systems categories. These categories also boast the highest government effectiveness index scores – that is, the

FIGURE 9 SELECTED AGRIFOOD SYSTEMS INDICATORS BY AGRIFOOD SYSTEMS CATEGORY

NOTES: SSB = sugar-sweetened beverage. The values of the variables in the radar graphs are standardized between 0 and 1 for ease of presentation. They represent rankings rather than absolute values: being closest to the centre of the radar graph means that the agrifood systems category has the lowest ranking on that indicator rather than having a zero value.

SOURCES: Authors' elaboration based on Food Systems Dashboard. 2024. Food Systems Dashboard. [Accessed on 1 March 2024]. <https://foodsystemsdashboard.org>; data for Panel A are from FAO. 2024. FAOSTAT: Country Investment Statistics Profile. [Accessed on 20 February 2024]. <https://www.fao.org/faostat/en/#data/CISP>. Licence: CC-BY-4.0; FAO. 2024. FAOSTAT: Government Expenditure. [Accessed on 20 February 2024]. <https://www.fao.org/faostat/en/#data/IG>. Licence: CC-BY-4.0; Kaufmann, D. & Kraay, A. 2023. Worldwide Governance Indicators: 2023 Update. [Accessed on 19 October 2023]. www.govindicators.org; World Bank. 2022. World Bank: Global SSB Tax Database. [Accessed on 5 May 2024]. <https://datacatalog.worldbank.org/search/dataset/0063310>; World Bank. 2024. Data catalog: Coverage (%) - Active Labor Market. [Accessed on 20 February 2024]. <https://datacatalog.worldbank.org/indicator/4bca7d49-fdce-eb11-bacc-000d3a596ff0/Coverage-----Active-Labor-Market>; data for Panel B are from FAO. 2021. FAOSTAT: Fertilizers by nutrient. [Accessed on 20 February 2024]. <https://www.fao.org/faostat/en/#data/RFN>. Licence: CC-BY-4.0; FAO. 2024. FAOSTAT: Cost and Affordability of a Healthy Diet (CoAHD). [Accessed on 29 July 2024]. <https://www.fao.org/faostat/en/#data/CAHD>; FAO. 2024. FAOSTAT: Supply Utilization Accounts (2010-). [Accessed on 2 October 2024]. <https://www.fao.org/faostat/en/#data/SCL>; FAO. 2024. FAOSTAT: Value of Agricultural Production. [Accessed on 2 October 2024]. <https://www.fao.org/faostat/en/#data/QV>; World Bank. 2023. Access to electricity, rural (% of rural population). [Accessed on 20 February 2024]. <https://data.worldbank.org/indicator/EG.ELC.ACCS.RU.ZS>. Licence: CC-BY-4.0.

<https://doi.org/10.4060/cd2616en-fig09> ↓

overall capacity of governments to enact transformative policies – and highest level of social protection coverage.

Diversifying systems – which have the highest burden of health hidden costs as a share of GDP – face significant

challenges due to low government effectiveness and fiscal space. Furthermore, 27 percent of the population living in these countries cannot afford a healthy diet, indicating that in addition to dietary risks leading to NCDs, they also face the burden of

malnutrition leading to child stunting and wasting. Countries in this category require policy action specifically targeting the different types of dietary risks faced, as well as the affordability of nutritious food.

Countries and territories in protracted crisis perform worst on most agrifood systems indicators, with particularly low levels of government effectiveness, agricultural support, social protection coverage, fertilizer use intensity and rural electrification. In these contexts, social and environmental hidden costs stand out, likely due to the vicious cycle of social and environmental stressors and conflict. While short-term agrifood systems interventions in such situations may focus on food aid, medium- to long-term actions to address environmental stressors, poverty and social inclusion are needed to break this cycle.

Stakeholder engagement and scenario analysis to address the quantified hidden costs of agrifood systems

National stakeholder consultation is needed to assess the plausibility of the quantified hidden costs, acknowledge and potentially fill data gaps, and contextualize the challenges based on national priorities and commitments. Scenario analysis, including simulations of alternative futures, is another fundamental tool in informing policy actions in targeted assessments.

This report commissioned six country case studies by the Food, Agriculture, Biodiversity, Land-Use and Energy Consortium – Australia, Brazil, Colombia,

Ethiopia, India and the United Kingdom of Great Britain and Northern Ireland. These case studies combine scenarios (based on stakeholder consultations) with TCA of the hidden costs of their agrifood systems. The stakeholder consultations identified nationally relevant variables that would have to change to increase the sustainability of their agrifood systems ([Table 1](#)).

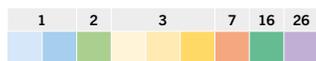
The results of the scenario analysis show significant variation from country to country. For the majority of the agrifood systems studied, changing dietary patterns is not only the main means of decreasing quantified health hidden costs, but also a very effective way of reducing the quantified environmental hidden costs by freeing land, reducing and sequestering greenhouse gases (GHGs) and reducing nitrogen emissions. This study also highlights the need for more ambitious national commitments to achieve reductions in the hidden costs of agrifood systems.

The role of stakeholder consultation in identifying nationally relevant levers was particularly evident in a Swiss Government-backed study. One of the most important enablers of this process is the existence of a national commitment to agrifood systems transformation. The results provide an initial validation of the hidden costs quantified in *The State of Food and Agriculture 2023*, which are adapted to national needs driven by existing commitments using more locally relevant and accepted cost categories and data sources. The refined hidden cost

TABLE 1 DESIRED OUTCOMES THAT ARE MOST EFFECTIVE IN DECREASING THE HIDDEN COST SUBCATEGORIES BY COUNTRY, 2050

Subcategories	Australia	Brazil	Colombia	Ethiopia	India	United Kingdom of Great Britain and Northern Ireland
CO ₂ emissions	Afforestation	Dietary changes	Crop productivity	Constraints on agricultural expansion	Afforestation and expansion of protected areas	Dietary changes
CH ₄ emissions	Dietary changes	Dietary changes	Food waste	Livestock productivity*	Dietary changes	Dietary changes
N ₂ O emissions	Crop productivity	Dietary changes	Dietary changes	Livestock productivity*	Nitrogen efficiency	Dietary changes
Total N	Dietary changes	Dietary changes	Crop productivity	Livestock productivity*	Nitrogen efficiency	Dietary changes
Cropland	Crop productivity	Crop productivity	Crop productivity	Crop productivity*	Livestock management	Crop productivity
Forest	No change	Crop productivity	Constraints on agricultural expansion	Constraints on agricultural expansion	No change	No change
Pasture	Dietary changes	Dietary changes	Ruminant density	Ruminant density	Dietary changes	Dietary changes
Other land	Dietary changes	Dietary changes	Crop productivity	Afforestation	Livestock management	Dietary changes
Water irrigation requirements	Crop productivity	Irrigation	Trade	Crop productivity*	Dietary changes	Food waste
Farm labour	Crop productivity	Crop productivity	Crop productivity	Crop productivity*	Dietary changes	Food waste
DALYs	Dietary changes	Dietary changes	Dietary changes	No change	Dietary changes	Dietary changes

Frequency



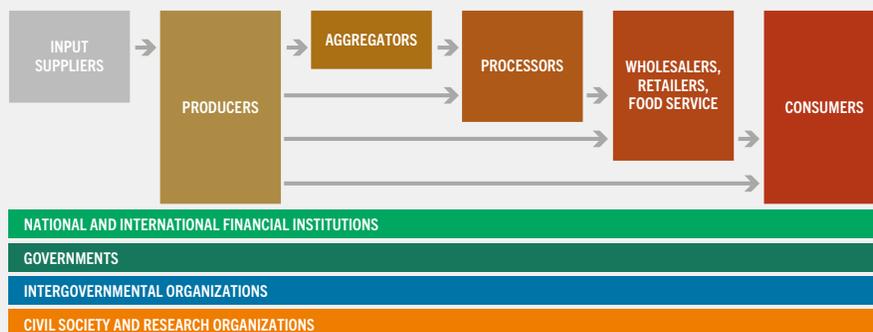
NOTES: CO₂ = carbon dioxide; CH₄ = methane; N₂O = nitrous oxide; N = nitrogen; DALY = disability-adjusted life year; SSB = sugar-sweetened beverage. Dietary changes modelled include the following for each country: Australia – Higher intake of nuts and seeds, fruits, vegetables, legumes; lower intake of processed and red meat, and SSBs; Brazil – Lower intake of processed and red meat, and SSBs; Colombia – Lower intake of processed meat and SSBs; higher intake of legumes; India – Lower intake of sugars, salt, and processed foods; United Kingdom of Great Britain and Northern Ireland – Lower intake of processed meat; higher intake of legumes. * The global sustainability scenario in Ethiopia includes a lower population assumption in line with the Ethiopian National Statistical Office's projections. While the largest decrease in hidden costs in these subcategories is attributable to this assumption, we show the most impactful outcome related to agrifood systems transformation – namely, livestock and crop productivity improvements – in this table.

SOURCE: FABLE. 2024. *How to reduce agrifood systems' future hidden costs? A multi-country case study – Background paper for The State of Food and Agriculture 2024*. Paris, Sustainable Development Solutions Network.

estimates send a relatively simple message: key entry points for agrifood systems transformation could focus on addressing dietary patterns, biodiversity loss and GHG emissions.

The importance of stakeholder participation is also evident in the application of The Economics of Ecosystems and Biodiversity (TEEB)

AgriFood Evaluation Framework in several countries, which offers further examples of combining a consultative scenario-building process with TCA. Its comprehensive strategy for policy intervention for agrifood systems transformation highlights the significance of integrating the (hidden and visible) values of nature into government decision-making and education.

FIGURE 3 GLOBAL AGRIFOOD SYSTEMS ACTORS

SOURCE: Adapted from Capitals Coalition. 2023. Figure 0.3. In: *TEEB for agriculture and food: operational guidelines for business. Putting nature and people at the centre of food system transformation*. London.

<https://capitalscoalition.org/wp-content/uploads/2023/08/TEEB-for-Agriculture-and-Food-Operational-Guidelines-for-Business.pdf>

A closer look at who bears the highest burden of agrifood systems hidden costs

The core actors whose decisions depend on and affect the value provided by agrifood systems range from input suppliers and producers, through processors and wholesalers, to retailers, food service providers and consumers (Figure 3). The decisions of one actor at one point in time in one location have implications for actors in another time or location.

As the disconnect between the producers of hidden costs and the cost bearers grows, the benefits to society and the planet of transforming agrifood systems become less visible. This gap can be impossible to bridge if the

damage occurs in the distant future or abroad. The inequalities on multiple dimensions (for example, socioeconomic, gender and generational) between who benefits from producing hidden costs and who bears those costs are one of the key challenges of transforming global agrifood systems. The role of governments and intergovernmental organizations is particularly important in cases where international or intergenerational transfers are needed to address these inequalities.

An estimated 1.23 billion people are directly employed in agrifood systems, bringing food to our tables by way of food supply chains. While agrifood systems

provide employment around the world, they do not always provide an acceptable standard of living and quality of life. In fact, too often, vulnerable populations, for example, the poor and food insecure, small-scale value chain actors, migrants and refugees, women, children and youth, persons living with disabilities, and Indigenous Peoples, bear the greatest burden of the social hidden costs of agrifood systems.

The informality of agrifood operations, which can preserve poor working conditions (such as unofficial employment contracts), also presents an overlapping set of challenges for agrifood systems transformation.

Producers are on the front line of agrifood systems transformation

A successful agrifood systems transformation must recognize the unique position of producers: they are on the front line of climate change impacts and bear a significant share of the burden of adopting sustainable practices. The benefits of addressing hidden costs are realized all along the supply chain, but producers are not always compensated for the expenses they incur in addressing these costs. In other words, mechanisms need to be put in place to ease the financial and administrative burdens, thereby incentivizing transformational change.

When individual producers join forces by way of collective action, they create a bargaining power they can leverage to advance their goals for economic growth,

as well as transformational change. Recent protests by farmers globally underscore the importance of integrating political economy considerations from the outset, by initiating processes that are inclusive and address issues of distributive justice and participation. Transformational change, therefore, needs to be designed so that the costs of taking action today are paid by those reaping the long-term benefits. Government pressure for agrifood systems reform, be it in the form of regulation or incentives, must be carried out in an inclusive manner.

One option is participation in certification programmes, known as voluntary sustainability standards, such as fair trade or organic certifications, which can be a means for producers to receive compensation for the costs of transition. However, although the effect of such certifications on producers' welfare is generally positive, it varies substantially by standard, crop and farmer organization. Standards that apply a system of quality-based price differentiation have the greatest impact on net farm revenue through a price effect. Certification schemes that enable producers to sell their products with a price premium facilitate the internalization of some, but not all, hidden costs. A TCA study on banana supply chains shows that social hidden costs were considerably lower for Fairtrade producers, making the social case for such quality standards and certifications.

Agribusinesses and investors have an important role to play

Businesses in agrifood systems engage in various activities beyond primary production, including aggregating, transporting, processing and selling food products to consumers. Each subsequent agribusiness in the chain can exert business leverage over the preceding one, depending on its scale and market domination.

The investment community – including international financial institutions, banks and insurance companies – is facing increasing pressure from investors and stakeholders to incorporate environmental and social responsibility into its operations. This is reflected in the increasing participation of large firms conducting environmental, social and governance (ESG) reporting. Interestingly, ESG practices promoted by agrifood businesses are often implemented at the primary production level, but the benefits of the changes are enjoyed by other actors in the supply chain, highlighting once again distributional issues along value chains.

Agribusinesses and financial institutions with more leverage have roles to play beyond exerting their influence over other actors, by investing in better practices, be it through finance, contract arrangements, technical assistance or overall skills and awareness building.

CONSUMERS ARE THE LAST – VITAL – PIECE OF THE PUZZLE

Consumers are the largest group of agrifood actors globally, even though they may lack political clout and visibility. When in a position of agency, consumers can drive transformative change through their purchasing power.

From an environmental perspective, dietary shifts, especially reducing overall animal product consumption in countries where it is excessively high, can significantly lower GHG emissions and mitigate other environmental harms. However, given the large discrepancies in dietary quality around the world, in some places, higher consumption of animal products may be necessary for a balanced diet, and the burden of countering the environmental damage wrought since the Industrial Revolution cannot be equally distributed.

In many countries, populations are facing a double burden of malnutrition, where undernutrition coexists with overweight, obesity or diet-related NCDs, probably requiring a combination of shifting consumer demand, economic measures and social safety nets.

Special consideration needs to be given to the nutritional status of children through early childhood nutrition interventions.

The strength of consumers' purchasing power in driving agrifood systems transformation depends on both economic

TABLE 2 LEVERS FOR CHANNELLING PURCHASING POWER TO HEALTHIER AND MORE SUSTAINABLE DIETS

Target actors	Lever (sub)category	Lever	Examples
Consumers	Economic	Taxes and subsidies	Taxes on sugar-sweetened beverages, animal source foods or foods with a high environmental footprint Subsidies for fruits and vegetables
		True pricing	Reflecting the true prices of food items at points of sale
		Cash transfers and vouchers	Food stamps, cash transfers to poor and vulnerable households
	Non-economic	Labels and certifications	Fair trade or organic certificates Labels indicating environmental footprint Labels discouraging consumption by children
		Marketing	Restrictions on marketing for unhealthy foods and beverages, including restrictions on marketing to children Campaigns for marketing healthy foods
		Education	School programming on health, nutrition and sustainability
		Nudges	Strategic product placement in shelves and aisles Portion limitations Rules on default food options for kids' meals
	Institutions	Economic	Food procurement
Non-economic		Food service	Awareness and health campaigns Strategic menu design

SOURCE: Authors' own elaboration.

and non-economic factors that can be addressed through different levers.

Levers for influencing consumer demand

Economic levers can affect household consumption patterns by varying either relative prices or the incomes available for food purchases. Price measures include taxes and subsidies on food products (Table 2). For example, taxing sugar-sweetened beverages or subsidizing fruits and vegetables have been shown to deliver positive results where demand is price sensitive. Reforming existing tax regimes, such as differentiating value added tax rates based on health and environmental considerations, could address environmental and health costs without reducing government revenue.

Combining these financial measures with improved information, labelling measures, regulations and educational programmes on nutrition, health and sustainability is essential to change diets.

Where undernourishment remains a problem, income measures such as cash transfers or in-kind food assistance can be effective. However, economic constraints do not explain all consumption behaviour. Food preferences, access and environments are also pertinent.

Institutional procurement, such as school and hospital meals, can be instrumental in changing consumption patterns over generations when accompanied by effective food and nutrition education.

Entities involved in food procurement can have a profound impact by requiring TCA data for the products they buy to maximize true value.

Stakeholder engagement for a true systems approach to transformation

Within a systems approach, all interdependent actors within agrifood systems need to have a voice to identify effective levers towards the most suitable development paths while addressing distributional imbalances.

For instance, voluntary sustainability standards, ESG reporting and multicriteria accounting are all steps in the right direction. However, these need to be combined with well-designed incentive structures, government regulation and action, as well as guidance from international organizations and the TCA community.

Health ministries remain largely absent from the current discourse on stakeholder engagement needed to achieve agrifood systems transformation. Their involvement is important to ensure that food value chains and social safety nets are designed to avoid the historical peak in unhealthy diets seen during agrifood systems transitions.

Shaping government policy to meet multiple objectives

Governments make many decisions to meet their national commitments under current agrifood systems structures.

In industrial agrifood systems, interventions to address unhealthy dietary patterns can be prioritized, including upgrading food-based dietary guidelines, requiring nutrient labels and certifications, and conducting information campaigns on health and environmental impacts, thus also addressing a substantial share of environmental hidden costs.

In traditional agrifood systems, inclusive rural transformation will remain a priority, including social safety nets as integral policy levers to ensure the food security and nutrition of the most vulnerable. At the same time, the double burden of malnutrition is also highest in these agrifood systems, suggesting a need to complement conventional productivity-enhancing interventions with environmental and dietary levers to avoid the increase in environmental footprint and health costs.

Transitional agrifood systems (expanding, diversifying and formalizing categories) need to invest in redesigning food value chain development to leapfrog certain historical transitions and avoid the mistakes of industrial agrifood systems.

There is a growing amount of encouraging evidence on the effectiveness of policy mixes that combine traditional economic and behavioural incentives, though more research is needed to expand this evidence to cover traditional and transitional agrifood systems.

Financing the transformation

Many promising initiatives by the finance sector are increasingly incorporating environmental and social responsibility into their operations. Scaling these up sufficiently to achieve global agrifood systems transformation, however, seems bound by “hidden constraints”, including the distributional issues between different agrifood systems actors and the institutional status quo.

The global cost of transformation is estimated to be within the means of global financial resources; however, as its distribution between countries is highly uneven, innovative and collaborative financing partnerships may be necessary to ensure a just transition.

THE WAY FORWARD

Addressing the hidden costs revealed in *The State of Food and Agriculture 2023* and refined in this report inherently requires the distributional issues entrenched in global and local agrifood systems to be addressed. Globally, distributional imbalances occur between populations that enjoy the benefits of the status quo and those that bear the hidden costs – which may be those same populations at some point in the future or future generations separated by space and time. Even within national

boundaries, trade-offs between different constituencies arise, as evidenced by the recent farmer protests in many parts of the world.

Transforming any large system that comprises interconnections between actors requires an effective institutional and regulatory environment. Creating clear rules and standards and instilling trust that they will be applied fairly to all stakeholders, regardless of size or political influence, takes some of the uncertainty out of investments that contribute to sustainability and fuel innovation.

The dietary shifts necessary to drive agrifood systems transformation will also require a mix of levers, such as taxes, subsidies and social safety nets, increasing food literacy and raising awareness about the impacts of available food choices. Institutions can also play a critical role by facilitating a unique food environment and channelling their purchases to the broader benefit of society.

While the global community can always hope for innovation to solve many of the problems of agrifood systems, this alone is unlikely to steer agrifood systems towards sustainability. Governance across agrifood systems needs to be transformed through political will and strong accountability at the international level. ■



2024

THE STATE OF FOOD AND AGRICULTURE

VALUE-DRIVEN TRANSFORMATION OF AGRIFOOD SYSTEMS

Uncovering the true cost of food is the first step in making agrifood systems more inclusive, resilient and sustainable. As *The State of Food and Agriculture 2023* revealed, agrifood systems activities generate significant benefits for society, but also have negative impacts on economic, social and environmental sustainability. The quantified hidden costs of agrifood systems amount to around 10 percent of global gross domestic product. Therefore, strategic action is necessary, and all agrifood systems actors – from producers and agribusinesses to consumers and governments – have a crucial role to play.

While transforming agrifood systems would yield a net global gain, the benefits and costs would be unevenly distributed among stakeholders and countries over time. *The State of Food and Agriculture 2024* builds on the findings of the 2023 edition, delving deeper into the use of true cost accounting assessments of agrifood systems and identifying policy interventions aimed at transformation. Using updated global datasets, the report confirms previous estimates of the quantified hidden costs of agrifood systems and provides a detailed breakdown of the hidden costs associated with unhealthy dietary patterns and non-communicable diseases for 156 countries. These findings are analysed through the lens of six agrifood systems categories to take into account various outcomes and hidden costs that require different policy interventions. Case studies offering in-depth assessments of country, local and value chain contexts illustrate the economic, social and environmental impacts of current practices to guide policy interventions. Crucial to all contexts is the need for inclusive stakeholder consultations to inform interventions and reconcile power imbalances and trade-offs.



*The State of Food and
Agriculture 2024* (full text)



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