UKRAINE RAPID
FOOD SYSTEMS ASSESSMENT
2021

2022

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Acronyms and abbreviations

CRM	Customer Relationship Management
EPI	Environmental Performance Index
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
FSA	Food system assessment
GDP	Gross domestic product
GFSI	Global Food Security Index
GHG	Greenhouse gas
GMO	Genetically modified organism
HLPE	High Level Panel of Experts
ICF	International Charitable Fund
ICO	International Charitable Organization
IDP	Internally Displaced Persons
ILO	International Labour Organization
ILOSTAT	ILO Labour statistics database
IOM	International Organization for Migration
NAAASU	National Association of Agricultural Advisory Services of Ukraine
NAAS	National Academy of Agrarian Sciences of Ukraine
NGO	Non-government organization
NULES	National University of Life and Environmental Sciences
SDGs	Sustainable Development Goals
SFS	Sustainable Food System
SMART	Specific, measurable, attainable, relevant, time-bound
SME	Small and medium-sized enterprise
URDN	Ukrainian Rural Development Network
VAT	Value Added Tax
WHO	World Health Organization
WTO	World Trade Organization

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Executive Summary

This rapid assessment aims to provide an initial broad understanding of the main challenges and opportunities of Ukraine's food systems, based on data for 2021, and serves to guide further discussions on relevant interventions. The report adopts a **food systems** approach, highlighting the interconnections between production, consumption and the broader socio-economic and environmental contexts, as well as trade-offs and synergies.

Approach and conceptual framework. The analysis follows the framework of food systems for diets and nutrition outlined in a recent report by the Committee on World Food Security's (CFS) High Level Panel of Experts on Food Security and Nutrition (HLPE, 2017). Key areas discussed include external factors or *drivers* affecting the decisions of producers and consumers, food supply chains, food environments, consumer behaviours and diets, health outcomes, and the broader impacts on society and the planet. The assessment is based on data from reliable international and national sources including databases, the websites of official institution and scientific articles as well as expert interviews.

Drivers. With a diverse landscape, high-quality soils and over 70 percent of land allocated to agriculture, Ukraine can deliver enough nutritious and diverse food nationally to meet the needs of its population, and to broaden its share in the global exports of agricultural commodities. Current agricultural production consists mainly of large, influential enterprises (agri-holdings) and smallholder farmers, accompanied by a relatively small proportion of mid-sized entities. Aligning the interests of these and other food system actors is complicated and the transition towards an equitable and green food system requires significant effort. The situation is further complicated by climate change which is likely to result in temperature increases, water shortages and possible sea-level rise, which if left unaddressed will affect arable land, livelihoods and the entire national economy. Continued urbanization and emigration to more developed countries have created the conditions for labour shortages and have increased pressure on supply chains. The introduction of innovations and advanced technologies may mitigate the abovementioned challenges, for instance through automation or productivity increases, but greater political stability and harmonization of Ukraine's legislation with EU laws is vital to provide a solid institutional foundation.

Food supply chains. Ukraine's food supply value chains comprise single-participant end-to-end and complex multi-participant supply chains. Food production is highly regionalized with most types of food produced domestically. There are multiple private and state-owned storage facilities, but access to them is limited for small producers. The system of distribution channels is somewhat complicated consisting of direct supply by farmers to retail networks, direct supply of pre-ordered products to end consumers, and distribution through own delivery service or via wholesalers. The main participants in the distribution network are retail networks, super and hyper-markets, wholesale and retail trade, independent shops, local food markets and street vendors. All Ukrainian regional centres also have organized food markets offering products directly from producers. The last decade has seen intense growth of large and medium-sized supermarket networks with food producers of all scales increasing their share of direct sales.

Food environments. Diverse foods are widely available in Ukrainian cities and to a lesser extent in rural areas. The country has seen a moderate increase in the level of average protein supply per capita as well as growth in dietary energy supply from cereals, roots and tubers. However, a decreasing trend has been observed in average dietary energy supply adequacy. Low consumer purchasing power constrains the achievement of a healthy diet, although 64 percent of household consumption is spent on food and beverages, which negatively affects economic wellbeing. Not all food safety and quality standards follow EU guidelines, but the situation is improving gradually as Ukraine legislation is harmonized with European

norms. Ukrainian consumers have expressed growing concerns about environmental issues and the need for responsible production.

Consumer behaviour. Most Ukrainian consumers still have a limited food budget. However, urban citizens are expressing greater interest in organic products, as well as ethically sourced and environmentally friendly food and beverages. Within the next ten years, people are expected to consume more eco-products, with an increasing daily share of white meat at the expense of traditionally consumed red meat.

Diets. Bread, cereals, vegetables, and pork fat and meat are key staple foods in Ukrainian diets, despite the relatively high price of the latter. However, consumer preferences are changing, with greater degree of interest being expressed towards healthy products including organic food.

Food systems outcomes. Despite the broad availability of a wide range of food products in the country, many people are still moderately food insecure, and are not able to afford a nutrient adequate or healthy diet. While the level of non-communicable diseases is relatively stable, diabetes is gradually increasing. Conversely, there has been an observable decrease in mortality between the ages of 30 and 70 from cardiovascular diseases, cancer, diabetes and chronic respiratory disease. Economically, Ukraine's food systems do not yet ensure steady incomes and currently provide insufficient support to smallholders and family farmers. However, social equality presents an increasing trend. Ecologically, Ukraine demonstrates significantly lower levels of greenhouse gas (GHG) emissions compared to Eastern Europe, with CO_2 emissions decreasing, and effective optimization of both crop yields and fertilizer use.

Political and institutional frameworks. Overall, the Ukrainian food system has good potential to provide sufficient and nutritious food for its population, while also playing a vital role in the international market of agricultural commodities. Further success depends on taking effective action on the path towards EU membership including effective harmonization of Ukrainian legislation with EU laws, as well as diverse stakeholders working in synergy to make the necessary adjustments for achievement of the Sustainable Development Goals (SDGs).

Policy implementation remains difficult regardless of the area, due mostly to bureaucratic and political obstacles, as well as inefficient functioning of the administrative authorities. The 2014 Russian invasion (including the annexation of Crimea) and the Russian-Ukrainian war has affected Ukraine's fast track to EU integration, due to the resulting significant damage to all economic activities including the agricultural sector, and the loss of land.

This report recommends several priority measures to tackle emerging challenges and the transition towards sustainable development:

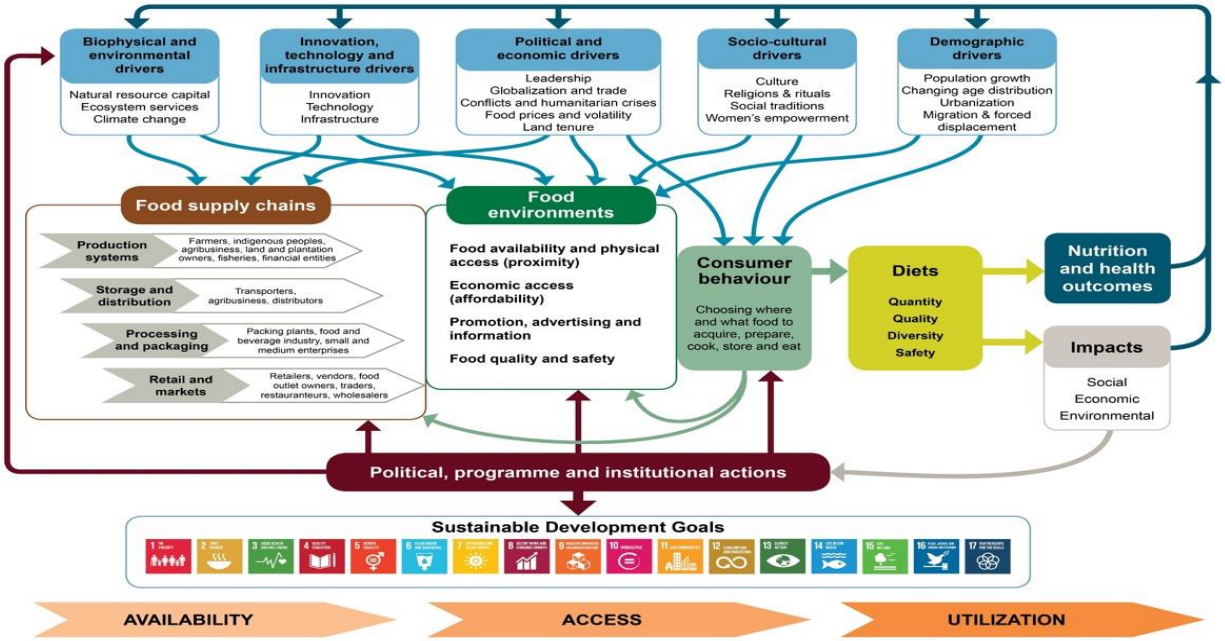
- Intensify the pace of harmonization of domestic legislation with EU laws.
- Deal with political instability.
- Introduce sound and viable nutrition programmes at the state level.
- Review environmental policy to enable the country to effectively combat, mitigate and adapt to climate change.

Chapter 1. Rapid food systems assessments

Food systems approaches continue to grow in popularity and importance as policymakers and governments recognize their critical importance for achieving the Sustainable Development Goals (SDGs) by 2030. This trend is apparent in events such as the UN Food System Summit, COP 26 (with an increased focus on food and agriculture) and the Nutrition for Growth summit. The present report seeks to provide inputs into food system thinking in Ukraine. Annexes 2 and 3 provide the conceptual framework for sustainable food systems and the applied food assessment methodology, respectively.

The analysis is based on two recently developed frameworks: the 2016 Global Panel Report on Agriculture and Food Systems for Nutrition and the Committee on World Food Security's (CFS) 2017 High Level Panel of Experts on Food Security and Nutrition report *Nutrition and Food Systems*. Figure 1 illustrates this conceptual framework of food systems for diet and nutrition.

Figure 1. Conceptual framework of food systems



Source: HLPE (2017).

Chapter 2. Food systems drivers

The main food system drivers in Ukraine include income growth and distribution, population growth and migration, urbanization, socio-cultural context as well as climate change and environment. A more detailed analysis of current drivers is presented below:

2.1. Biophysical and environmental drivers

2.1.1. Natural resources capital

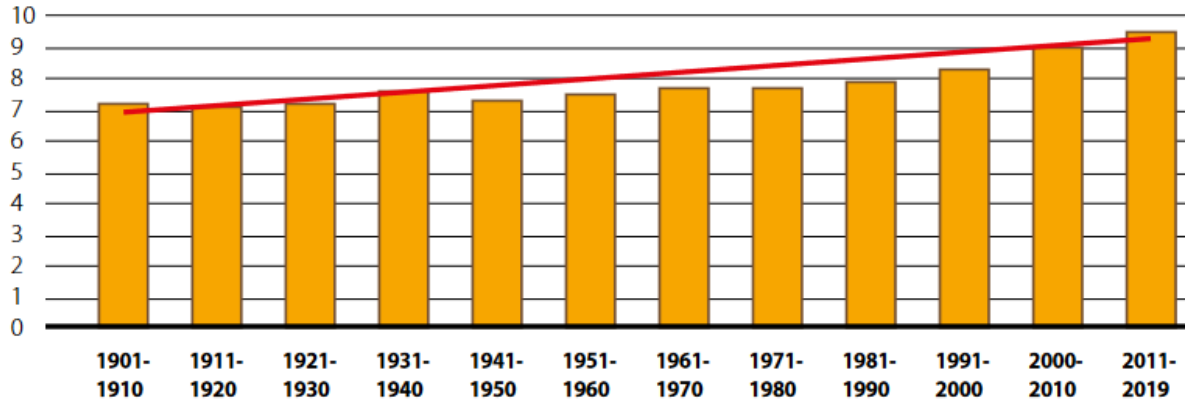
The share of agricultural land in total land area remained relatively stable at 71 percent during 2009–2018, while the share of arable land increased slightly to 79.58 percent from 79 percent over almost the same period (2009–2017). Surprisingly, the amount of land used for organic agriculture is decreasing year-on-year from 0.99 percent in 2015 to 0.75 percent in 2018. This trend exists in marked contrast to rising demand for organic products in Ukraine. More consistent with this demand is the decrease in pesticide application which has fallen from 90 815 in 2012 to 25 341 tonnes in 2018, while usage of nutrient nitrogen and phosphate has seen stable year-on-year growth – nutrient nitrogen increased from 29.26 kg/ha in 2015 to 41.63 kg/ha in 2018, while the amount of nutrient phosphate almost doubled from 6.63 kg/ha to 12.16 kg/ha over the same period.

The amount of renewable internal freshwater resources per capita have also increased from 1 143.09 in 2002 to 1 229.05 m^3 in 2017. Although it is difficult to estimate recent freshwater withdrawals in agriculture (percentage of total water withdrawal) as the last year for which data are available is 2012, a small increase can still be observed from 30 percent in 2002–2007 to 31.89 percent in 2012. In addition, it should be noted that some territories in the southern regions of Ukraine often experience problems in accessing quality water in sufficient quantity.

2.1.2. Climate change

According to research data provided by the Ministry of Ecology and Natural Resources in coordination with German-Ukrainian Agricultural Political Dialogue (2019), Ukraine is following global climate change trends, although the increase in temperature is slightly higher compared to the world average. Over the last 30 years, the average annual temperature in Ukraine has risen by more than 1 °C, averaging 1.3 °C during the cold period (November–March) and 1.1 °C during the warm period (April–October). Starting in 1991, every decade was warmer than the previous one – 1991–2000 by 0.5 °C, 2001–2010 by 1.2 °C and 2011–2019 by 1.7 °C (Figure 2). If the present trend persists, there will likely be negative effects on crops under cultivation in Ukraine.

Figure 2. Average annual temperature in Ukraine by decades, °C



Source: Ministry of Ecology and Natural Resources and German-Ukrainian Agricultural Political Dialogue (2019).

Additionally, according to research conducted by the Ministry of Ecology and Natural Resources in coordination with German-Ukrainian Agricultural Political Dialogue (2019), the annual average rainfall norm in 2014–2018 equalled 569 mm, while sustainable agriculture requires 700 mm and more.

Recent nationwide research conducted by Ecodiya (2018) has identified a high risk of strong impacts from sea-level rise on coastal zones in the Crimea, Odessa and Kherson regions. Up to 1.8 million ha (including 212 716 ha of agricultural land and 255 217 ha of natural landscapes) is expected to be flooded through to 2100. The most pessimistic scenario based on a +4°C temperature increase by 2100 projects sea-level rise of almost 1 m. The current scenario is highly likely unless current obligations to reduce GHG emissions are not increased significantly. However, active joint measures being undertaken by the world's countries directed towards transitioning to 100 percent renewable energy usage by 2050 can limit the increase in global temperature within +1.5–2 °C. In such circumstances sea-level rise is expected to be almost three times lower compared to the abovementioned pessimistic scenario.

2.2. Innovation, technology and infrastructure drivers

The Ukrainian population has adequate access to electricity, although rural territories often experience interruptions in power supply due to the overloading of electric lines. The amount of electricity used in agriculture has risen from 12 031.2 terajoules in 2014 to 14 314.32 terajoules in 2018. In parallel, gas-diesel oil usage in agriculture has diminished significantly from 59 254 terajoules in 2015 to 47 334.4 terajoules in 2018. If the trend in environmental impacts remains constant, these ongoing developments in energy usage can be considered relatively supportive of the transformation towards sustainability.

According to a report of the National Academy of Agrarian Sciences of Ukraine (2021), the amount of state funds directed to agricultural R&D was subject to a 21.8 percent increase in 2021 (UAH 634 055 000 budgeted) comparing to 2020 (UAH 495 541 000 spent). Regarding technology, Ukrainian agricultural producers are generally conversant with the latest global developments. The implementation of advanced technologies including the integration of recent digital trends is only limited by funding. However, application of advanced agricultural practices is currently insufficient compared to EU countries, as the largest Ukrainian agricultural producers often engage in extensive agriculture at the expense of social and environmental concerns. Within the public sector, the Ministry of Digital Transformation is currently implementing a complex digitalization policy directed at increasing the population's awareness of the

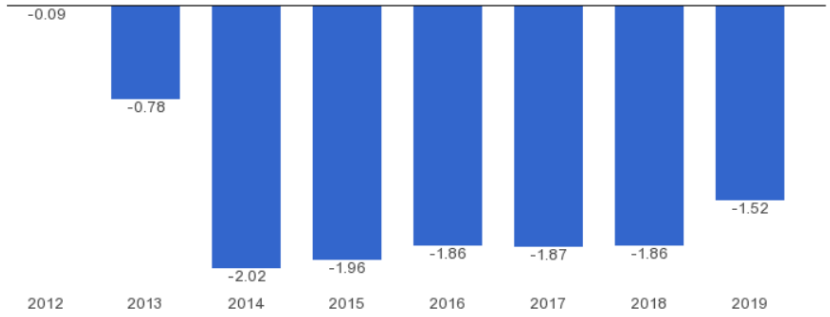
most recent technological developments as well as improving access to and the variety of public digital services.

2.3. Political and economic drivers

2.3.1 Political stability

Political stability is assessed using the Political Stability Index, provided by the World Bank. The average value for Ukraine during 1996–2019 was -0.68 points with a minimum of -2.02 points in 2014 and a maximum of 0.17 points in 2007. The latest value from 2019 was -1.52 points, indicating relatively poor political stability (-2.5 max.). For comparison, the world average in 2019 based on 194 countries was -0.06 points. As of 2019, the situation had started to improve with the index rising 0.34 points to -1.52 (Figure 3).

Figure 3. Ukraine's Political Stability Index, 2012–2019

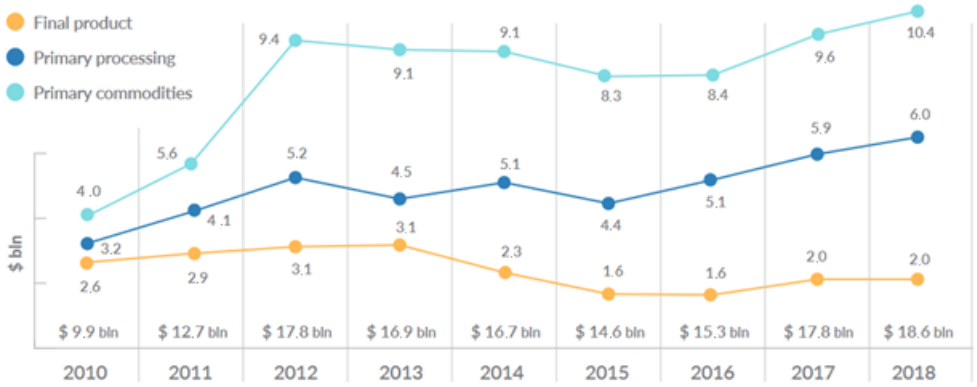


Source: World Bank.

2.3.2 Trade

The Ukrainian market for food and beverages has demonstrated strong growth in recent years. With a population of about 41.5 million, Ukraine is the second largest consumer market in Central and Eastern Europe after the Russian Federation. Food production is also an integral part of Ukrainian export policy. The food industry exports products such as cheese, dairy, sweets and alcoholic beverages (beer, wine and vodka) to Europe. The production of food additives (preservatives, emulsifiers, etc.) does not fully meet the demand of the Ukrainian market, so many of these ingredients are imported. Food production is closely interrelated with the development of the agricultural sector. Implementation of innovative technologies in production and manufacturing processes in both these fields may result in breakthroughs and comprehensively increase the profitability of the sector.

Figure 4. Export growth by food and beverages sector



Source: Ministry of Economy of Ukraine.

As it can be seen from Figure 4, Ukraine has significantly increased the exportation of primary commodities and primary processing in recent years. However, exports of final products remained unchanged during 2017–2018.

2.3.3 Financial inclusion

According to recent research (Shapoval *et al.,* 2021), Ukraine presents a relatively favourable situation regarding financial inclusion. The dynamics of the three-dimensional aggregate index of financial inclusion fluctuated in the aftermath of the crisis and the post-crisis years (2008–2020). A higher level of financial inclusion was initially observed in 2012–2020 (namely 0.55–0.56 within a range of 0 and 1). From 2015 (0.38) to 2018 (0.39), a lower level was noted during the withdrawal of banks from the market – a reform conducted by the National Bank of Ukraine aimed at rehabilitating the banking system. Since 2018, the index has grown constantly. Despite significant intensification of non-cash payments, which has improved the quality and expansion of banks' acquiring networks, the financial inclusion level is slightly higher than in pre-crisis 2008, reaching a peak of 0.56 due to the improved economic situation in 2020 (Figure 5).

Figure 5. Index of financial inclusion for the Ukrainian economy, 2008–2020

Source: Shapoval *et al.* (2021), based on Ukrainian National Bank and IMF data.

2.3.4 Income growth, food prices and volatility

The level of GDP per capita in Ukraine has trended upwards in recent years, increasing year-on-year since the downturn of 2014 and 2015, from USD 2 125 in 2015 to USD 3 727 in 2020. Current GDP value is slowly

regaining its position and approaching the pre-crisis level of USD 3855.42 in 2012 and USD 4029.71 in 2013. The share of agriculture, forestry and fishing in value added (percentage of GDP) also grew by 0.3 in 2020 compared to 2019, reaching 9.268 percent, which is also 1.071 percent higher than the 2010 level of 8.197 percent.

2.3.5 Adjusted net national income

Following the rapid fall from its historic position of USD 3 376.81 per capita in 2013 to USD 1 854.73 per capita in 2015, which was caused by the Russian-Ukraine armed conflict, the level of Ukrainian adjusted net national income began to recover and was the subject of stable growth during 2016–2019, almost reaching the pre-crisis level of USD 3 302.15 per capita as of 2019.

Following a severe increase in food price inflation in 2014 and 2015 (24.82 percent and 41.48 percent, respectively), compared to -0.7 percent in 2013, the situation began to improve during 2017–2019, reaching a level of 4.77 percent in 2019. However, the index had risen slightly to 4.93 percent as of 2020.

2.3.6 International aid

By 2016, the amount of international aid to agriculture, forestry, fishing had decreased dramatically to USD 0.62 million. However, aid to this sector has increased since and as of 2018 had reached USD 3.17 million.

2.4. Socio-cultural drivers

2.4.1 Ukrainian food consumption patterns

Ukrainian food consumption patterns are shaped by the national cuisine, which was historically formed by three main factors: the country's location at the crossroads of important trade routes, favourable climate and biodiversity, and cultural exchanges between different peoples occupying Ukrainian territory. For many centuries, bread and food made from cereals have remained a basis of nutrition. During times with insufficient meat consumption, vegetables such as cabbage, beet, turnips and parsnip have been important elements of Ukrainian cuisine. Cucumbers were introduced by Byzantium Greeks, onion appeared approximately in the thirteenth century, potatoes in the eighteenth century and tomatoes became widespread only at the beginning of the twentieth century. Consumption of salo (cured slabs of fatback and occasionally pork belly) has historically prevailed over other kinds of meat. Fish is not a typical element of Ukrainian cuisine, although its inclusion is found in certain areas close to rivers, lakes and the coast.

2.4.2 Gender equity

The labour force participation rate for men and women (percentage of the population aged 15+) fluctuated during 2008–2019 in Ukraine. The current index declined during 2018–2019 by 7.51 percent for women and 4.25 percent for men, respectively. Regarding gender inequality, the situation in Ukraine is favourable with a slight improvement visible. Ukraine's gender inequality index is above the global average (Figure 6).

Figure 6. Gender inequality in Ukraine, scale 0–1

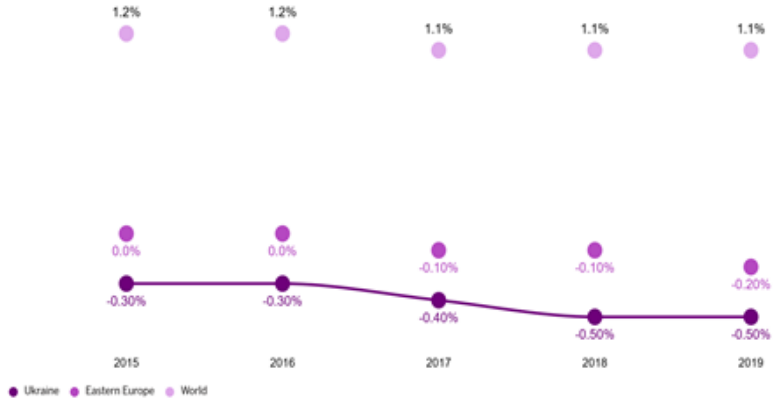
Source: UNDP (2020).

2.5. Demographic drivers

2.5.1 Population growth

The Population Growth index reflects negative population growth. Over the period 2015–2019, Ukraine along with other Eastern European countries experienced negative population growth rate with a slight decreasing trend. However, during 2018–2019 the current index stabilized at -0.5 percent per year (Figure 7).

Figure 7. Population growth in Ukraine, 2015–2019

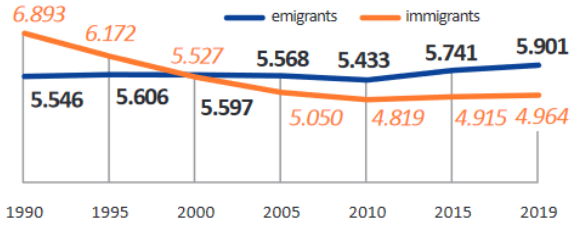


Source: World Bank.

2.5.2 Migration

Another important driver impacting the sustainability of food systems is migration, both in terms of emigration and immigration. According to IOM data, emigration from Ukraine is increasing. The number of people leaving the country reached 5.9 million in 2019, which is 3 percent higher compared to 2015. At the same time, the number of immigrants was gradually decreasing and stabilized at 4.9 million people per annum in 2015–2019 (Figure 8).

Figure 8. Migration in Ukraine

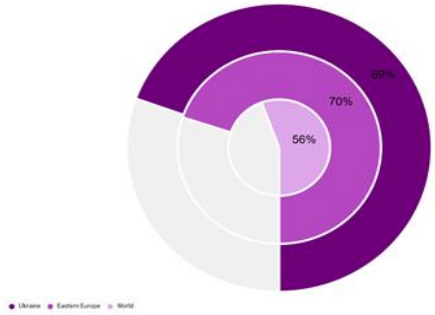


Source: IOM.

2.5.3 Urbanization

Despite a long-standing agrarian history and culture, the population of Ukraine is highly urbanized. This is partially a consequence of forced industrialization under the Soviet regime as well as more comfortable living conditions in Ukrainian towns and cities compared to rural areas. According to World Bank population estimates, the percentage of the urban population in Ukraine is similar to that of other Eastern European countries (Figure 9).

Figure 9. Percentage of urban population out of total population



Source: World Bank.

2.5.4 Number of IDPs

The number of internally displaced persons (IDPs) in Ukraine peaked during 2015–2016 at 1.679–1.653 million, due to the Russian-Ukrainian War in Eastern Ukraine and the occupation of Crimea. As of 2020, the number of IDPs had decreased to 0.734 million, but 2021 saw a reversal of this trend with the number rising to 0.854 million and expected to increase further in the context of the ongoing war.

2.5.5 Decentralization

According to information provided by decentralization.gov.ua, despite the COVID-19 pandemic and its dramatic social and economic repercussions, the ongoing Russian-Ukrainian War, the difficult political environment including the 2020 local elections, among other factors, decentralization continues to progress and has advanced considerably. The administrative and territorial reform has completed with 1 469 hromadas (united local communities) and 136 raions (a subnational entity and municipal division usually translated as “district” that is two steps below the national level) established and in the process of development.

Chapter 3. Food system elements

3.1. Food supply value chains

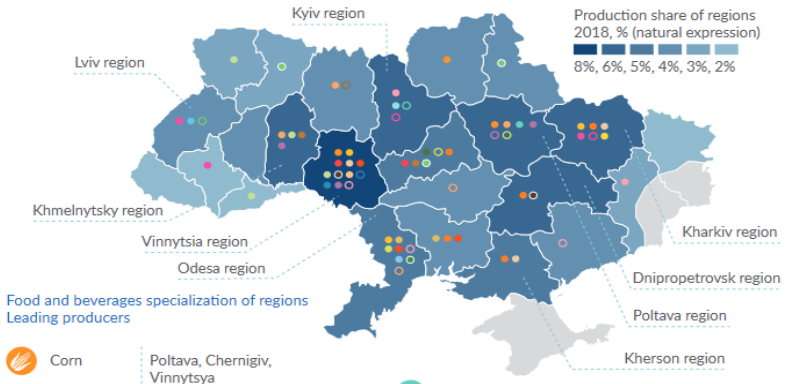
3.1.1. Production systems

Food supply value chains in Ukraine consist of two types:

- Basic food supply value chains involve the production and processing of raw food, and the direct sale of food products.
- Complete food supply value chains involve at least five to six participants in the sequence production – transportation – processing – storage – transportation – sales.

Food production is highly regionalized in Ukraine, as can be observed from the regional breakdown map in Figure 10

Figure 10. Regional breakdown of food and beverages sector production

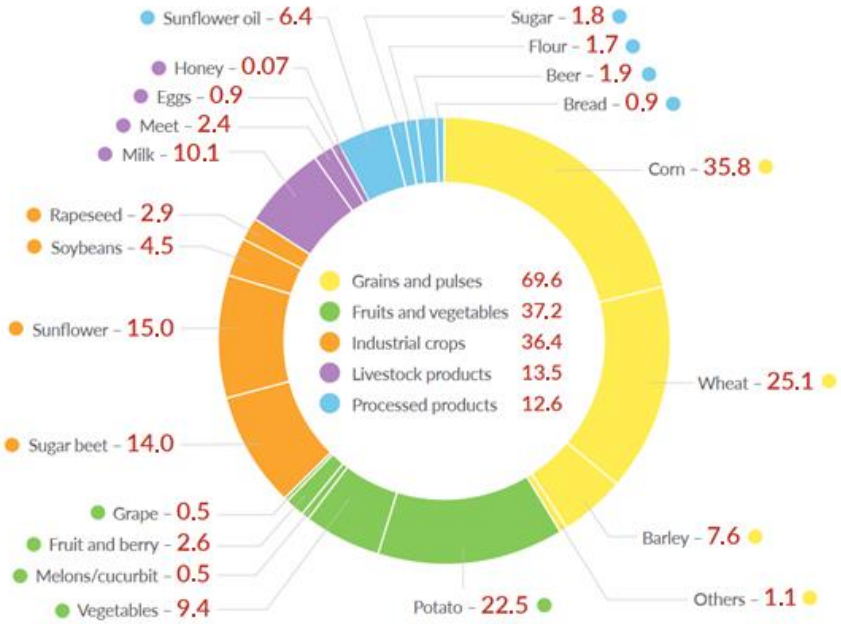


Corn	Poltava, Chernigiv, Vinnytsya
Wheat	Odesa, Kharkiv, Vinnytsya
Barley	Odesa, Mykolayiv
Sunflower	Kirovograd, Dnipropetrovsk, Kharkiv
Soybeans	Khmelnytsky, Zhytomyr Poltava
Rapeseeds	Odesa
Vegetables	Cherkasy, Kharkiv, Dnipropetrovsk, Kherson, Mykolayiv
Onions, shalots	Kherson, Kharkiv, Vinnytsya
Fruit juices	Mykolayiv, Odesa, Vinnytsya
Fruits and berries	Vinnytsya, Volyn, Khmelnytsky, Chernivtsi
Poultry	Cherkasy, Vinnytsya
Beef	Lviv, Ivano-Frankivsk, Kharkiv
Bird eggs	Kyiv
Live cattle	Khmelnytsky, Vinnytsya, Poltava
Pork	Kyiv, Donetsk
Butter	Vinnytsya
Cheese	Rivne, Cherkasy, Sumy
Whey powder	Poltava
Milk and dairy products	Vinnytsya
Walnuts	Cherkasy, Khmelnytsky
Alcoholic beverages	Cherkasy
Water and soft drinks	Lviv
Wine	Odesa
Beer	Kyiv
Raw, white sugar	Vinnytsya
Honey	Zhytomyr
Sugar confectionery	Poltava
Chocolate products	Vinnytsya, Dnipropetrovsk
Cakes, biscuits	Kyiv, Kharkiv
Sunflower oil	Kirovograd, Odesa
Soybean oil	Cherkasy, Poltava
Margarine	Vinnytsia, Odesa, Zaporizhzhya
Rapeseed oil	Lviv
Fish products	Odesa

Source: Ministry of Economy of Ukraine (2021).

The variety and share of produced agricultural products is shown in Figure 11.

Figure 11. Share of food products in total production



Source: Ministry for Development of Economy, Trade and Agriculture of Ukraine (2018).

According to the Ministry of Agricultural Policy and Food, the area under organic crops expanded significantly by 1.1 percent in 2019, with prospects for further increase possible due to changes in corresponding Ukrainian legislation, adopted in 2018. Since 2020, harmonization of national legislation with EU law has enabled Ukrainian organic production to become fully compliant with international organic standards. In addition, Ukraine now has its own independent, internationally recognized organic certification company: Organic Standard.

3.1.2. Storage and distribution

Agricultural products in Ukraine are stored either directly by agricultural producers or centralized in large storage facilities, such as elevators, vegetable storage units and cooling rooms, which are state-owned or private property. A significant share of warehouses or storage facilities are owned by large enterprises (agri-holdings), which often apply pressure on smaller agricultural producers who usually lack such facilities, unless they are a member of a cooperative.

According to accumulated research data, information provided by the Ministry of Economy of Ukraine and open food market analytics, Ukraine has a rather complicated system of distribution channels. It can include direct supply by food producers/processors (farmers to retail networks, supply of previously ordered food products to consumer through own delivery or other delivery services), or sales through wholesalers/traders and wholesale markets. The main participants in the Ukrainian food distribution network are retail networks, super/hyper-markets (both national and international networks), wholesale and retail trade, independent shops, local food markets and street vendors.

3.1.3. Processing and packaging

The Ukrainian food industry comprises over 40 sectors, with industrial food production carried out by more than 5 000 small, medium and large food-processing enterprises that produce a wide range of food products. According to Flanders Investment and Trade data (2020), every year foreign direct investment in the food industry amounts to about USD 3 billion, accounting for more than 25 percent of total foreign direct investment. Multinational companies that are well established in Ukraine include Mondelez, Nestle, Danone, PepsiCo, Coca Cola, Carlsberg, Jacobs, East Balt Bakery and Wim-Bill-Dann among many others.

Currently, vegetable oils dominate the Ukrainian food processing industry, accounting for 24 percent of food products exports. Along with vegetable oil, there are significant opportunities in vegetable and fruit processing. Ukraine is the leading producer of tomato paste and one of the five largest European suppliers of apple concentrate. The country also has 6.2 percent share in global potato production, and thanks to its cultivation of GMO-free potato, is well positioned to acquire a strong share in the potato flour and stash market and to increase its volume of potato exports to the European Union.

Large, vertically integrated poultry producers, supported by foreign investments, are projected to expand and increase their market share. This growth is expected to be driven by exports to Asia, the European Union and the Middle East. The level of concentration in Ukraine's meat processing sector is high, with the top 20 companies accounting for 10 percent of cattle livestock, 28 percent of pig livestock and 58 percent of poultry livestock.

3.1.4. Retail and markets

All Ukrainian regional centres have organized food markets which offer products to consumers directly from producers. Fresh and organic food, however often limited in variety, is mainly available in small shops and through their networks, which are owned mainly by food and agricultural producers, or is sold in local food markets or available from street sellers. All supermarkets and hypermarkets operating in Ukraine offer a wide variety of food products including processed and ultra-processed food of domestic and imported origin.

The following main changes have been observed over the last decade in marketing channels. Firstly, large and medium-sized supermarket networks in Ukraine have enjoyed a period of intense growth. These include nationwide networks such as ATB, Fora, Pcholka, Varus, Velyka Kyshenia and Wellmart, and international networks like Auchan, Fozzy Group and Novus. Larger supermarket networks (Novus Auchan, Silpo, Varus and Velyka Kyshenia) tend to operate mainly in big cities, such as Dnipro, Kyiv, Kharkiv, Lviv and Odessa, while small and medium-sized networks (ATB, Fora, Koshyk, Kolo, Pcholka and similar) are working on expanding their network to smaller towns and district centres across Ukraine. Secondly, agricultural and food producers of all sizes are actively seeking to make direct sales to customers – either through their own retail networks of small shops with fresh food products, by supplying fresh products to local food markets, launching their own Internet-based ordering and delivery services, or using existing express delivery services such as Glovo, Raketa and Uber Eats. The last option soared in popularity following the introduction of restrictions linked to the COVID-19 pandemic. In addition, the last five years has seen organic food producers open their own shops, but to date their number remains limited due to the low purchasing power of the majority of the population and the relatively small share of organic production.

3.1.5. Food lost and waste

While opinions on food losses obtained from respondents vary greatly, the majority agree that critical losses occur during transportation and across the sales network, while the level of losses during food production is much lower. In addition, interviewees highlighted the absence of an adequate food loss control system. According to interview data (2021) from the National Institute of Agrarian Economy, annual food losses by main categories of products are as follows: about 8 000 tonnes of meat, 14 000 tonnes of milk, 1 320 000 tonnes of cereals and approximately 4 526 tonnes of other products.

The Ministry of Economy of Ukraine recognized the inadequacy of current food waste management and called for urgent intervention in 2017. This resulted in the formulation and approval of a National Strategy of Food Waste Management and a corresponding Action Plan, which run to 2030 and are in line with the EU-Ukraine legislation harmonization processes.

3.2. Food environment

3.2.1. Food availability and physical access

Ukrainian consumers enjoy good access to food products needed for a healthy diet. This is particularly the case for those living in larger cities.

3.2.2. Affordability

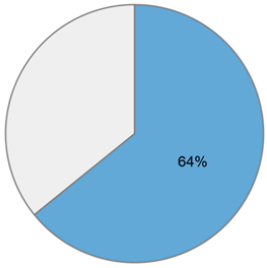
However, low consumer purchasing power limits the achievement of a healthy diet. According to data from the National Institute of Agrarian Economics, the income of around 33.9 percent of the population is below the level necessary to achieve the lowest living standard. Affordability in general is higher in big cities, where higher income populations are concentrated and lower in rural areas. Middle-class populations and people with higher incomes tend to consume organic and fresh food products, while low-income populations tend to consume cheap processed products. According to World Bank Data, during 2015–2019 consumption expenditure per capita in Ukraine was slightly lower than that of the rest of world and Eastern Europe (Figure 12). This started to change in 2018–2019 with expenditure rising to 7.87, approaching the average of 9.24 for Eastern Europe but just over half the world average of 13.71 (Figure 12).

Figure 12. Consumption expenditure per capita, international dollars

Source: World Bank.

According to the World Bank Global Consumption Database, the proportion of household consumption in Ukraine spent on food and beverages amounted to 64 percent in 2010 (Figure 13).

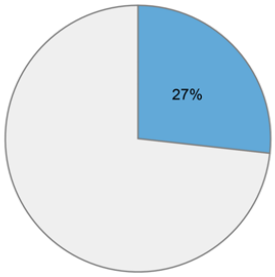
Figure 13. Proportion of household consumption spent on food and beverages, 2010



Source: World Bank Global Consumption Database.

According to World Bank data, the proportion of household food and beverage consumption spent on meat and fish (all households in Ukraine) amounted to 27 percent in 2010 (Figure 14).

Figure 14. Proportion of household consumption spent on meat and fish (all households), 2010



Source: World Bank.

3.2.3. Promotion, advertising and information

The introduction of the "ZNAIMO"/ "We know what we eat" online platform can be considered a key governmental initiative in the field of healthy nutrition. It was developed and is being actively promoted within the framework of the Nutrition System Reform in Educational Institutions, which was launched in 2020. It introduces a series of measures aimed at transforming the nutrition system – food consumption norms, technological processes, approaches to purchasing food and nutrition services, behavioural change, public acceptance, and better understanding of healthy nutrition and positive habits. The platform is supported by the Ministry of Education and Science, the Ministry of Health, the Ministry of Economy, the State Service of Food Safety and Consumer Rights Protection, the Antimonopoly Committee of Ukraine, and leading experts and international partners including UNICEF and the Ukrainian-Swiss projects "DECIDE" and "Act for Health".

Ukrainian food system actors engaged in the production and distribution of food products, regardless of size, generally follow the latest global trends and make active use of the main forms of promotion, notably advertising, tasting, sampling, gifts offered during purchase and promotional events. The level of media access (press, TV and Internet) available to advertisers can be considered sufficient, and advertising campaigns are limited in their type, length and intensity only by the advertising budget.

3.2.4. Food quality and safety

Increasingly stringent hygiene and food safety standards mean that manufacturers at all stages of the food value chain must put high-level quality systems in place to ensure that their products are acceptable to export markets – particularly the European Union, one of the most important markets for Ukrainian food producers.

To fulfil the requirements of the EU-Ukraine Association agreement, Ukrainian food safety regulations must be harmonized with international best practices, especially the respective EU legislation. This means:

- creating favourable conditions for Ukrainian enterprises to implement food safety management systems, including cooperation with international consultants and international development projects;
- increasing public awareness of food safety issues.

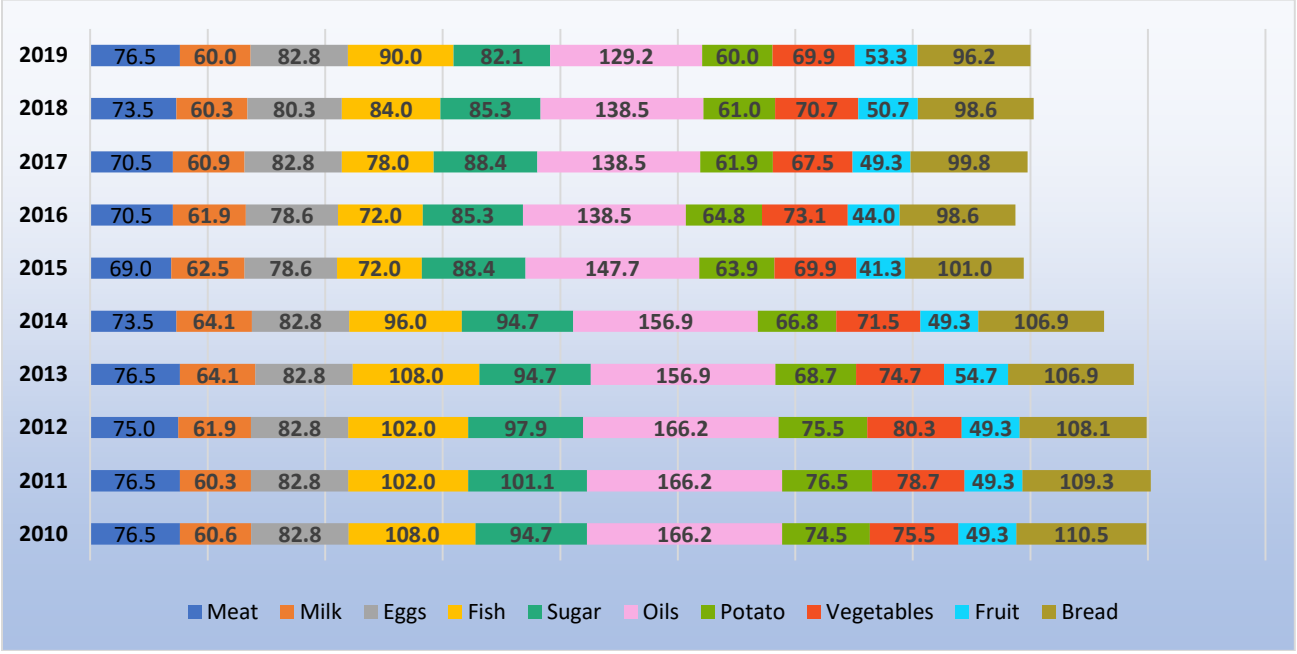
Recent legal changes have seen the introduction of a new food safety law, which is expected to improve the competitiveness of Ukrainian food producers by:

- advocating for a single food safety agency;
- making international certification procedures mandatory for all food production operations;
- making food producers bear clear responsibility for food safety in their operations.

3.3. Consumer behaviour

Data provided by the State Statistics Service of Ukraine on basic food consumption patterns in Ukraine, for the last available year (2019), show that Ukrainians consume insufficient amounts of agricultural food products compared to food-based dietary guidelines (Figure 15). The only product to show sufficient consumption is vegetable oil at 29.2 percent above the recommended minimum. Bread and bakery products, as well as fish, closely approach the recommended levels at 96.2 percent and 90 percent, respectively. Surprisingly, food consumption patterns did not change much during the period under consideration (2010–2019). However, Ukrainian food consumption patterns are far from sustainable. According to estimates of the National Scientific Centre “Institute of Agrarian Economics”, during the next ten years the Ukrainian people are expected to consume a greater share of eco-products, with an increasing daily share of white meat and a gradually decreasing amount of red meat.

Figure 15. Dynamics of agricultural food consumption in Ukraine, 2010–2019 (% of minimal recommended norm)[1]



Source: State Statistics Service of Ukraine.

Ukrainian consumers have also expressed increasing concern about environmental issues. This implies that producers must calculate their CO_2 emissions levels more effectively and follow modern trends in packaging requirements and the use of alternative materials.

3.4. Diets

According to FAO data, the level of average protein supply in Ukraine declined from 89.3 grams/capita/day in 2008 to 85.7 grams/capita/day in 2017. However, the current index shows a 1.7 percent increase between 2016 and 2017. Average dietary energy supply adequacy also decreased in Ukraine from 128 percent in 2010 to 118 percent as of 2019, with a decline observed over the past three years.

In contrast, the share of dietary energy supply derived from cereals, roots and tubers (kcal/cap/day) (three-year average), as a percentage, demonstrates an increasing trend in Ukraine, rising year-on-year from 41 percent in 2014 to 48 percent in 2018.

Growth in healthier and organic food consumption means that Ukrainian producers will need to adapt their product portfolio, recipes and content (e.g. by reducing fats and offering safer food products to those suffering from allergies) in response to specific consumer demand, and to acquire organic certification by accredited bodies when targeting these market segments.

[1] Rational norm of consumption per person/year (according to food-based dietary guidelines defined by the State Service for Food Safety and Consumer Protection) in kg: meat and meat products – 80; fish and fish products – 20; eggs – 290 items; milk and dairy products – 380; fruit – 90; vegetables – 151; potato – 124; bread and bakery products – 101; sugar – 38; vegetable oils – 13 (Seheda *et al.*, 2019).

Chapter 4. Food system outcomes

4.1. Nutritional, health and food security outcomes

4.1.1. Nutritional outcomes

Current nutritional and health impacts cannot be considered sustainable in Ukraine. Nutrition indices such as undernourishment, overweight and obesity, the percentage of low-birthweight babies and anaemia have all seen slow year-on-year growth in recent years. While relatively stable at 2.5 percent during 2010–2016, undernourishment started to increase in 2016, reaching 3.5 percent in 2018. Prevalence of obesity among the adult population aged over 18 years also showed steady year-on-year growth during 2007–2016 (the latest period for which data are available), increasing by 3 percent to reach 24.1 percent. In addition, the number of low-birthweight babies gradually increased year-on-year during the period 2007–2015, demonstrating an 0.5 percent increase up to 5.63 percent as of 2015 comparing to 5.13 percent in 2007.

Prevalence of anaemia among women of reproductive age also saw year-on-year growth during 2010–2019, increasing from 13.8 percent in 2010 to 17.7 percent in 2019. The number of children affected by anaemia decreased slightly during 2010–2012, but then began to rise again, increasing from 23.4 percent in 2013 to 25.6 percent in 2019.

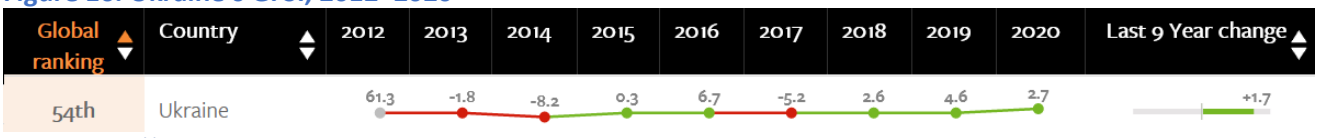
4.1.2. Food security

The level of food availability level in Ukraine began to improve slightly in 2018, reaching 3 102 kcal/capita/day, following a gradual downturn during 2014–2017. However, the current index remains 1.4 percent below the 2014 value of 3 145 kcal/capita/day.

Prevalence of severe food insecurity among the population increased 0.2 percent in 2016 compared to 2015, then decreased year-on-year to reach 1.6 percent in 2018, 0.6 percent above the level in 2015. Prevalence of moderate or severe food insecurity in the population presented a similar trend, decreasing from 22.3 percent in 2016 to 18.3 percent in 2018.

Food security is estimated using the Global Food Security Index (GFSI). Ukraine currently ranks 54th among 113 index countries on the GFSI scale, having risen by +1.7 points during the last nine years (Figure 16).

Figure 16. Ukraine's GFSI, 2012–2020



Source: https://foodsecurityindex.eiu.com

Overall, the country has significantly improved its performance, rising 11 positions in 2020 compared to 2019 to reach a total of 63 points. The GFSI components of affordability, quality and safety, and natural resources and resilience, are all above the global average by 8.5, 7.7 and 1.2 points, respectively. At the same time, Ukraine demonstrates **relatively poor results regarding food availability** with a score 51.6 points, 5.7 points lower than the world average of 57.3 (Figures 17 and 18).

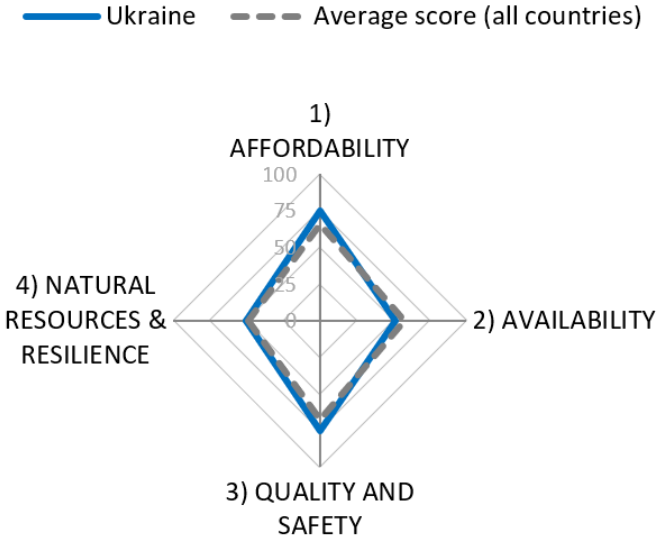
Figure 17. GFSI – overall food security environment, Ukraine 2020

Series	Score bar chart	Score	Δ	Rank	Δ	Average score (all countries)	Ukraine compared to average
OVERALL FOOD SECURITY ENVIRONMENT		**63.0**	**+2.7**	**54**	**▲11**	**60.4**	**+2.6**
1) AFFORDABILITY		74.4	+4.2	54	▲9	65.9	+8.5
2) AVAILABILITY		51.6	+4.6	78	▲11	57.3	-5.7
3) QUALITY AND SAFETY		75.3	-1.1	46	↔	67.6	+7.7
4) NATURAL RESOURCES & RESILIENCE		50.3	-0.1	42	↔	49.1	+1.2

Ukraine
Table shows latest available (2020) overall, category and indicator scores and ranks
Δ = change in score / rank, 2020 compared with 2019
▲ = Rank improved ▼ = Rank deteriorated ↔ = No change in rank
Rank out of 113 countries where 1=best. '=' denotes tie in rank.

Source: https://foodsecurityindex.eiu.com

Figure 18. Ukraine by GFSI dimensions compared to other countries



Source: https://foodsecurityindex.eiu.com

In the affordability component of GFSI, Ukraine currently ranks 54th with a score of 74.4, having improved its score by 4.2 points and moved nine positions up the table in comparison to 2019. Ukraine's results are 8.5 points better than the global average score of 65.9. Subcomponents such as change in average food costs, proportion of population under the global poverty line, the inequality-adjusted income index and agricultural import tariffs also display better results compared to the world average, while food safety net programmes, market access and agricultural financial services remain low (Figure 19).

Figure 19. Affordability GFSI component, Ukraine 2020

Series	Score bar chart	Score	Δ	Rank	Δ	Average score (all countries)	Ukraine compared to average
1) AFFORDABILITY		**74.4**	**+4.2**	**54**	**▲9**	**65.9**	**+8.5**
1.1) Change in average food costs		97.0	+21.0	16	▲52	70.7	+26.3
1.2) Proportion of population under global poverty line		99.6	-0.1	=24	▼5	73.3	+26.3
1.3) Inequality-adjusted income index		60.5	+0.5	40	▼3	53.7	+6.8
1.4) Agricultural import tariffs		77.2	0	17	▼2	62.8	+14.4
1.5) Food safety net programmes		50.0	0	=70	▲3	70.1	-20.1
1.6) Market access and agricultural financial services		59.3	-0.8	63	▼2	61.9	-2.6

Ukraine
Table shows latest available (2020) overall, category and indicator scores and ranks
Δ = change in score / rank, 2020 compared with 2019
▲ = Rank improved ▼ = Rank deteriorated ↔ = No change in rank
Rank out of 113 countries where 1=best. '=' denotes tie in rank.

Source: https://foodsecurityindex.eiu.com

Regarding the food quality and safety GFSI component, Ukraine currently ranks 46th with a score of 75.3, having fallen by 1.1 points in 2020 in comparison to 2019, due mainly to a reduction of 6.4 points in the food safety subcomponent. However, Ukraine remains above the world average for the following subcomponents: nutritional standards, micronutrient availability, protein quality and food safety. Only dietary diversity is 0.5 points lower the world average of 48.3 (Figure 20).

Figure 20. Quality and safety GFSI component, Ukraine 2020

Series	Score bar chart	Score	Δ	Rank	Δ	Average score (all countries)	Ukraine compared to average
3) QUALITY AND SAFETY		**75.3**	**-1.1**	**46**	**↔**	**67.6**	**+7.7**
3.1) Dietary diversity		47.8	0	=59	↔	48.3	-0.5
3.2) Nutritional standards		73.5	0	=32	▲9	64.1	+9.4
3.3) Micronutrient availability		87.0	0	46	↔	78.3	+8.7
3.4) Protein quality		81.6	0	41	↔	68.4	+13.2
3.5) Food safety		83.5	-6.4	59	▼9	76.2	+7.3

Ukraine
Table shows latest available (2020) overall, category and indicator scores and ranks
Δ = change in score / rank, 2020 compared with 2019
▲ = Rank improved ▼ = Rank deteriorated ↔ = No change in rank
Rank out of 113 countries where 1=best. '=' denotes tie in rank.

Source: https://foodsecurityindex.eiu.com

Ukraine demonstrates outstanding performance regarding the **demographic stress component of GFSI**. Scoring 92 points as of 2020, the country occupies first position in the corresponding GFSI ranking. With a small 0.1-point increase compared to the previous year, Ukraine's score is 35.6 points higher than the global average of 56.4 (Figure 21).

Figure 21. GFSI demographic stress component, Ukraine 2020

Series	Score bar chart	Score	Δ	Rank	Δ	Average score (all countries)	Ukraine compared to average
4.7) Demographic stress		92.0	+0.1	1	▲1	56.4	+35.6

Ukraine
Table shows latest available (2020) overall, category and indicator scores and ranks
Δ = change in score / rank, 2020 compared with 2019
▲ = Rank improved ▼ = Rank deteriorated ↔ = No change in rank
Rank out of 113 countries where 1=best. '=' denotes tie in rank.

Source: https://foodsecurityindex.eiu.com

Demonstrating strong dynamics during 2008–2011, the food supply variability index was the subject of rapid decline during 2012–2014 reaching 17 kcal/cap/day in 2014 compared to 94 kcal/cap/day in 2011. The next three years saw an upward trend towards a maximum of 84 kcal/capita/day in 2017.

4.1.3. Health/non-communicable diseases

Regarding non-communicable diseases, the number of adults with raised blood pressure and diabetes remained stable at 22 percent and 7.2 percent for women, respectively, during the period 2010–2015. The number of men with diabetes increased slowly by 0.1 percent year-on-year during 2010–2014 (7.0-7.4%), while the number of men with raised blood pressure remained at stable level of 32.5 percent. In contrast, the level of mortality for people aged between 30 and 70 years from cardiovascular disease, cancer, diabetes and chronic respiratory disease showed a year-on-year decrease during 2010–2019 reaching 25.5 percent compared to the initial value of 29.7 percent in 2010.

Access to improved water resources has improved significantly since 2008 increasing from 79.4 percent in 2008 to 92 percent in 2017. However, access to basic drinking water services has declined slightly from 93.8 percent of the population in 2008 to 96 percent in 2017.

In the absence of measures to improve nutrition and health, the current situation will not support the transformation towards sustainability.

4.1.4. Progress on Global Nutrition Targets

According to data provided by the Global Nutrition Report (2021), Ukraine is currently off course to meet all global nutrition targets for which sufficient data were available to assess progress. The country is not on track to meet all targets for maternal, infant and young child nutrition, and no progress has been made towards the target of reducing anaemia among women of reproductive age with 23.5 percent of women aged 15–49 years now affected. Similarly, there are no signs of progress towards the low birthweight target, with 5.6 percent of infants having a low weight at birth. There is insufficient data to assess progress towards the exclusive breastfeeding target; however, the latest prevalence data show that 19.7 percent of infants aged 0–5 months are exclusively breastfed. Likewise, there are no recent available data to assess progress towards the target for stunting, although the latest prevalence data show that 22.9 percent of children under 5 years of age are affected. Data are also insufficient to assess progress made towards the target for wasting; however, the latest prevalence data show that 8.2 percent of children under 5 years of age are affected. The prevalence of overweight children under 5 years of age is 26.5 percent, but the available data are insufficient to assess whether Ukraine is on course to prevent a rise in this figure.

Ukraine demonstrates only limited progress towards achieving the diet-related non-communicable disease targets. The country has shown no progress towards achieving the target for obesity, with an estimated 25.7 percent of adult (aged 18 years and over) women and 22.0 percent of adult men living with obesity. Ukraine's obesity prevalence is higher than the regional average of 23.3 percent for women, but lower than the regional average of 22.2 percent for men. At the same time, diabetes is estimated to affect 7.2 percent of adult women and 7.4 percent of adult men.

4.2. Socio-economic outcomes

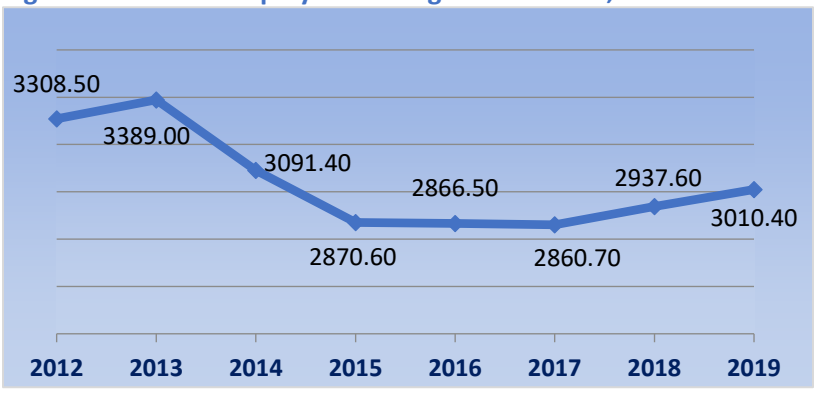
FAOSTAT and World Bank data on socio-economic and institutional impacts related to food systems indicate that the situation in Ukraine is improving across most of the subcomponents analysed.

A wide range of institutions recognizes the growth potential of the Ukrainian agrifood sector. The National Scientific Centre "Institute of Agrarian Economics" forecasts up to 15 percent growth for agricultural production over the next five years, despite the restrictions imposed by the COVID-19 pandemic, with growth in the share of organic commodities produced.

Enabling business environment is an integral part of socio-economic and political performance, and a crucial component of the country's investment attractiveness. Currently Ukraine ranks 64th in the Doing Business rating with score of 70.2.

According to data provided by the State Statistics Service of Ukraine, employment in the agri-food sector was subject to a rapid decrease in 2013–2015, falling from 3 389 000 people employed to 2 870 600. In 2017–2019, the number of people employed started to rise again, reaching 3 010 400 in 2019 from 2 860 700 in 2017 (Figure 22).

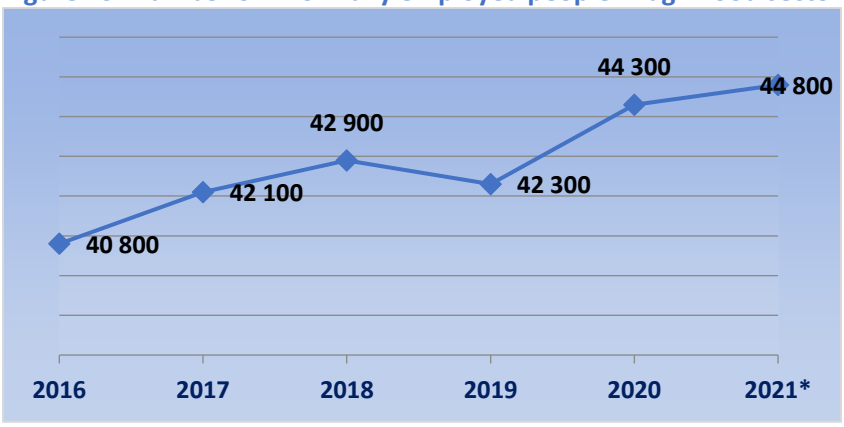
Figure 22. Formal employment in agri-food sector, thousands



Source: State Statistics Service of Ukraine.

At the same time, the number of informally employed people experienced stable growth from 2016 onwards from 40 800 people to 44 800 as of March 2021 (Figure 23).

Figure 23. Number of informally employed people in agri-food sector



Source: State Statistics Service of Ukraine.

4.2.1 Import dependency

The cereal import dependency ratio was also the subject of year-on-year decline during 2012–2017, reaching -202.2 in 2017 compared to -65.5 in 2012.

4.2.2 Value added

The level of agriculture value added per worker experienced a year-on-year increase during 2012–2016, stabilizing at USD 5 359.60 in 2016–2017 compared to the former level of USD 2 886.66 in 2012.

4.2.3 Employment

The only indices demonstrating decreasing trends within the current section are those related to employment. Employment in agriculture slowly decreased over the period 2015–2018 to reach 13.82 percent in 2018 compared to 15.26 percent of 2015. The number of employees in agriculture also decreased during 2013–2017 to reach 2 489.4 as of 2017 compared to 4 082.8 in 2013. The decline in these two indices is likely caused by increases in automation and the efficiency of agricultural production.

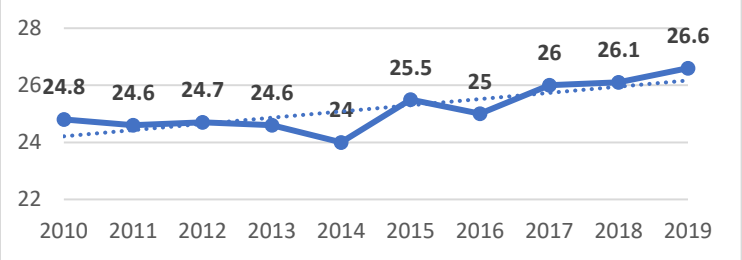
4.2.4 Poverty

According to World Bank data, the national poverty level experienced a year-on-year decrease during the period 2012–2019, reaching 1.1 percent in 2019 compared to 9 percent in 2012. The poverty headcount ratio is also favourable at USD 1.90 a day (2011 PPP), as the current index remains at the 0 level, with the poverty headcount ratio at USD 3.20, which is within range of 0.2–0.5 percent during the last ten years. In addition, according to the calculations of the National Scientific Centre "Institute of Agrarian Economics", the income of around 14 million people in Ukraine (33.9 percent of citizens) is below the lowest living standard, with 56 percent of income on average spent on food compared to an average of 15 percent in EU countries.

4.2.5 Social equality

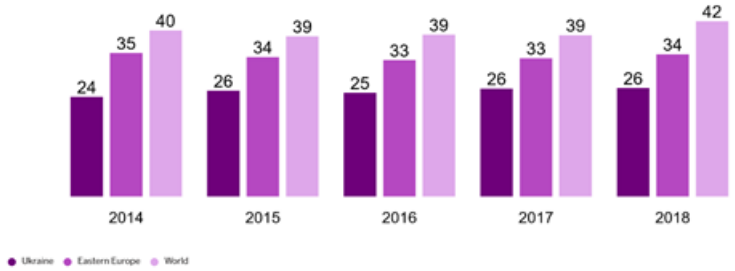
The World Bank's GINI index shows a gradual year-on-year increase in the level of social equality over the last few years in Ukraine (Figure 24). However, the GINI index level remains significantly below that of other countries (Figure 25), with the overall increasing trend indicating a **gradual increase in social inequality** in Ukraine.

Figure 24. GINI Index, Ukraine



Source: World Bank.

Figure 25. GINI index: Ukraine vs other countries, scale 0–100



Source: World Bank.

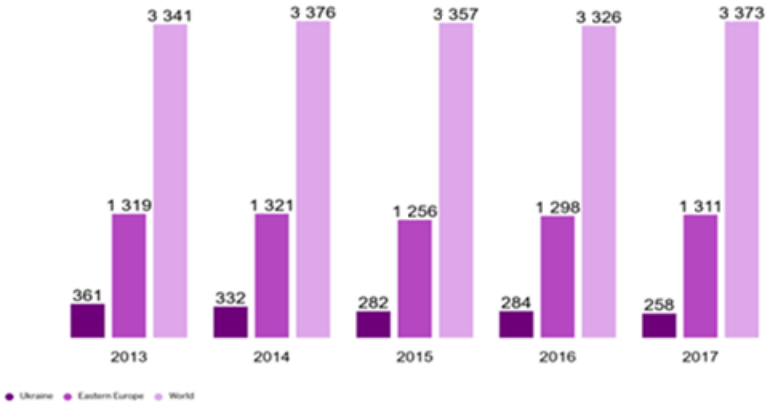
Between 2014 and 2018, Ukraine experienced a slight shift towards more equal income distribution compared to other states (average data). However, the GINI index indicates that the situation in Ukraine over this period remained virtually the same without presenting indications of possible change.

Taking into consideration the abovementioned indices, social outcomes can be considered relatively sustainable in Ukraine.

4.3. Environmental outcomes

The situation in Ukraine regarding environmental impacts is improving for most subcomponents analysed. The total level of CO_2 emissions in Ukrainian agriculture has declined significantly since 2012, reaching 196 191.55 gigagrams in 2017 compared to 341 571 gigagrams in 2012. The same trend is observed with enteric fermentation, which declined gradually from 11 279.35 in 2013 to 8 208.6 kilotonnes in 2019. The amount of manure left on pasture (N content) has also decreased slightly during the period 2017–2019 to reach 155 700.72 kg in 2019 compared to 156 028.12 in 2017.

Figure 26. Total GHG emissions in Ukraine compared to other countries, Kt of CO2 equivalent



Source: World Bank.

Levels of GHG emissions were significantly lower in Ukraine over the period 2013–2017 than in Eastern Europe and other countries, with the overall observable trend decreasing due to the significant decline in industrial production following the collapse of the Soviet Union.

4.3.1 Progress to combat climate change

The Environmental Performance Index (EPI) tracks performance indicators across 11 issue-based categories to provide a data-driven summary of the state of sustainability around the world. Ukraine ranks 26th on the EPI's climate change component with a score of 69.2, indicating negative progress to combat climate change. Over the last decade the index score has fallen by 1.7 points.

4.3.2 Sustainable use of water resources

The wastewater treatment component of the EPI ranks Ukraine 60th with a score of 14.1. Regarding the state of key ecosystems for ecosystem services, Ukraine ranks 108th on the corresponding EPI rating, with a score of 30.2. The current index change during the past ten years is negative and amounts to -1.3. For the biodiversity and habitat component of the EPI rating, Ukraine ranks 139th with a score of 37.7. The change over the past ten years is relatively low and equals -0.1, indicating no active actions taken towards protecting natural ecosystems and biodiversity.

4.3.3 Negative impacts of agriculture on the environment

Efforts to minimize the threat of agriculture on the environment are reflected in the Sustainable Nitrogen Management Index (2021). Ukraine currently occupies first position in the corresponding EPI rating, scoring 79.5 out of a maximum 100 points and demonstrating an impressive 18.3-point change over the past ten years. This indicates a relatively effective optimization of both crop yields and fertilizer application to minimize harmful impacts on the environment.

Chapter 5. Food system resilience

Resilience is the ability to prepare for, withstand and recover from a crisis or disruption. A resilient food system can withstand and recover from disruptions in a manner that ensures a sufficient supply of acceptable and accessible food for all.

The main risks and shocks to Ukrainian food systems are presented in Table 1, drawn from information presented in the previous chapters as well as data gathered during semi-structured interviews and highlighted in recent research conducted by Ukrainian scientists (Skydan and Hryshyn, 2020). The list includes both real and potential risks and shocks, and is divided into four sections: political, social, economic and environmental.

Table 1. Current and potential risks and shocks influencing food systems resilience in Ukraine

Political • Insufficient compliance with internationally accepted food quality and safety standards • Low level of political stability in Ukraine • Uncertain situation with future reintegration of temporarily occupied territories including certain districts of the Donetsk and Luhansk regions, and Crimea • Military conflict in Eastern Ukraine and the occupation of Crimea has resulted in the partial/total loss of the large Russian market for Ukrainian food producers (depending on project type).	**Social** • Reduction in population numbers • Poor purchasing power of consumers • Poor consumer culture, especially among youth • Reduction of employment, internal migration and illegal migration • Large numbers of IDPs due to the Russian-Ukraine conflict. • Social and cultural issues associated with the protection of interests of food consumer groups.
Economic • Economic downturn due to the COVID-19 outbreak • Economic downturn due to the Russian-Ukrainian conflict • Informal economy and inflation • Critical dependency of the national economy on global market conditions • Insufficient organizational and financial support for public procurement of vital food products, and their inefficient use • Russian invasion of Ukraine caused damages to all economic activities, especially in the agricultural sector, including loss of 43,300 km^2 of territory, as of 2021.	**Environmental** • Global climate change (natural disasters and potentially lower water availability) • Irrational use of agricultural land including mono-culture cultivation (mainly sunflower and corn), causing soil deterioration • Anthropogenic load increasing risks of human-made emergencies, negative environmental consequences of the Chernobyl accident, and significant reduction in arable land area due to the Russian-Ukrainian conflict on the territory of Eastern Ukraine and Crimea.

Source: Current research analytics supported by data provided by Skydan and Hryshyn (2020).

Building more resilient food systems in Ukraine in order to ensure a continual supply of safe, accessible food for the whole population would require tackling the following issues:

- **Overall political instability** potentially hinders further sustainable development of the Ukrainian food system. Though Ukraine's political stability index (according to World Bank Data) has recently demonstrated minor improvement, rising from -2.02 points in 2014 to -1.52 points in 2019, future stability remains questionable.
- **The poor pace of state-level reforms** directed towards harmonization of Ukrainian laws with EU legislation represents a crucial area of vulnerability for the Ukrainian food system and its safety. The Ukrainian government has also taken insufficient action to tackle corruption activities – an issue that has been increasingly highlighted by international partners in recent years.
- **Possible intensification of the Russian-Ukraine military conflict** in Donetsk and Luhansk regions of Ukraine poses potential threats for food producers operating in the state-controlled territories of the above-mentioned regions as well as in neighbouring regions. In addition to hindering basic business operations, this situation drastically reduces the attractiveness of local food producers from an investment feasibility standpoint.
- **The economic downturn caused by the COVID-19 pandemic must be addressed**. State efforts to mitigate this issue require further adjustment to consider the interests of all stakeholders involved.
- **Improvement of the socio-economic situation** requires action to address employment issues and significant internal migration caused by the large number of IDPs present in the country.
- **Environmental sustainability** calls for the harmonization of domestic legislation with international food quality and safety standards, as well as prevention of the irrational use of agricultural land.

Chapter 6. Political and institutional framework

The Ukrainian government's priorities regarding the national food systems can be categorized into four main phases with different state policy priorities:

- **1991–1992: Producer-oriented support.** This period was characterized by strong support directed towards agricultural producers to the disadvantage of consumers. The largest share of this support took the form of fixing market prices for all agricultural commodities. Prices were regulated by politically defined production quotas similar to the approach used in the former Soviet Union. Other forms of support included electricity purchase subsidies and grants for fixed capital formation.

- **1993–2004: Measures related to agrarian policy and limitations on private property.** During this period the government conducted ad hoc interventions into the agricultural commodities market, such as credit and input supply activities. Grain transactions among food supply chain actors were restricted. Then, in 1999 market interventions ceased, and the banking system increased the rate (level) of credit provision (OECD and World Bank, 2004). Between 1995 and 1999, land was distributed in the form of non-tradeable land share certificates, which created difficulties for realizing the associated land rights. In 2001, the revised Land Code fixed the system of land ownership and transfer, although agricultural land could not be sold, be used as collateral or equity by newly created businesses, or be acquired by foreign citizens or entities (OECD and World Bank (2004). Meanwhile, the gradual process of transforming massive collective farms into smaller private ones continued in the absence of opportunities for private entrepreneurship. In 2004, adoption of the law "On State Support of Agriculture in Ukraine" introduced regulation of subsidies and other forms of support by means of vast tax benefits, although public expenditures remained modest (Nivievskyi *et al*., 2015).

- **2005–2012: Revival of producer-oriented support.** The third phase was notable for an increase in producer support. WTO accession exercised a dominant influence over the agricultural sector, disciplining agricultural support by limiting it to a maximum of UAH 3.043 billion (USD 133 million) each year (Kobuta, Zhygadlo and Sikachyna, 2015). Electricity expenditure subsidies along with short- and long-term loans and VAT accumulation were re-introduced, and support to family farms increased by over 25 times compared to the previous phase. Government also increased the level of investment in services related to inspection and control functions as well as irrigation infrastructure, which was classified as a "green box" under WTO rules. The main relevant political documents during this phase include the law "On Basic Principles of the State Agrarian Policy up to 2015" (2007) and the "State Targeted Programme for the Development of the Ukrainian Countryside until 2015". These legislative acts specified the process for developing rural infrastructure and other facilities, improving food security and efficiency in production, and enhancing international competitiveness. There were no significant changes in the land ownership regime, although the land sales moratorium was extended several times.

- **2013–2021: Consumer support and crucial legislative changes.** This phase saw a decline in state support. Long-lasting electricity subsidies were reduced and subsidies for short- and long-term interest rates were eliminated. Subsidies on VAT accumulation continued to increase, but in 2017

the VAT exemption for agricultural sector was abolished in compliance with the WTO condition on removing support for VAT accumulation. While the livestock support breeding programme, the support programme for orchards, vineyards and berry fields, and irrigation infrastructure development support all ended, consumer support doubled from 2012 to 2013 and tripled from 2013 to 2014. These and other changes were supported by the National Strategy for Agricultural Development 2020 and later by the new Strategy for Agriculture and Rural Development 2015-2020. The updated document aimed to subsidize livestock production and family farms, offered targeted food assistance to the most vulnerable segments of the population, and provided free healthy food in schools. The rise of the Ukrainian agricultural sector in terms of share in GDP motivated banks to launch special finance products for agrarians, including crop receipts with harvest as collateral, agro-promissory notes, credit lines with an extended repayment period, special leasing programmes for agricultural equipment, and so on. One crucial change introduced on 1 July 2021 was the elimination of the moratorium on agricultural land sales, viewed as an important precondition for increasing the sustainability of the Ukrainian food system. To ensure a larger share of higher added value products, the government plans to increase state support for the development of the food processing industry and organic farming.

Institutional framework of relevance to the Ukrainian food system

Ukrainian policy in relation to the national food system is shaped directly and indirectly by several official domestic and foreign institutions. The following legislative and executive Ukrainian institutions directly influence agrarian policy:

- The Verkhovna Rada (Ukrainian Parliament)
- The President of Ukraine
- The Presidential Administration
- The Cabinet of Ministers

The aim of food systems governance in Ukraine is to ensure positive nutrition and health outcomes and food system sustainability – socio-economic, environmental and ecological – as well as improved resilience in line with EU integration priorities. Governance of the corresponding components of the Ukrainian food system at the state level falls under the sphere of responsibility of the following ministries:

Socio-economic:

- Ministry of Social Policy
- Ministry for Reintegration of the Temporary Occupied Territories
- Ministry of Economy
- Ministry of Agrarian and Food
- Ministry of Infrastructure

Environmental and ecological:

- Ministry of Ecology and Natural Resources

Ukrainian political parties. As of 2021, five parties are represented in the Ukrainian Parliament: the pro-presidential party Sluha Narodu (43.16 percent), the opposition platform Za Zhittya (13.05 percent), Batkivschyna (8.18 percent), Eropeyska Solidarnist (8.10 percent) and Holos (5.82 percent).

Private actor/stakeholder groups play a key role in driving food systems sustainability. **Agricultural producers, especially small and medium-sized producers, tend to unite in agricultural producer organizations** to defend their interests. Such associations are usually sector wide, and include the Poultry Producers Association, the Milk Producers Association, the National Association of Meat Producers and the Beekeepers Association.

Large agricultural producers are represented by agri-holdings which control significant areas. Top ten Ukrainian agri-holdings with over 100 000 ha of controlled agricultural land are represented by Kernel (510 000 ha), UkrLand Farming (475 000 ha), MHP (370 000 ha), National Academy of Agrarian Sciences of Ukraine (362 600 ha), Agroprosperis (300 000 ha), Astarta-Kyiv (243 000 ha), Continental Farmers Group (193 000 ha), Epicentr Agro (160 000 ha), Agrarian System Technologies (150 000 ha), HarvEast (127 000 ha).

Significant bank lending services to the agricultural sector include local state and commercial banks such as Credit Dnipro, Oschadbank, Pivdencombank, Privatbank, PUMB, Ukreximbank and Tascombank, as well as international banks like CityCommerce Bank, Credit Agricole, Erste Bank, OTP Bank and Raiffeisen Bank. These institutions offer a wide range of credit products and financial services to meet the demands of agricultural producers regardless of size.

The largest multinational corporations present in Ukraine include Auchan, Bunge, Cargill, Coca Cola, Delta Wilmar, Fozzy, Louis Dreyfus, Metro, Mondelez, Nestle, PepsiCo, Viterra and many others. The main areas of interest to food systems are the agro-industrial complex, food and beverages production, wholesale and retail, and fast-moving consumer goods.

The power balance between Ukrainian food system actors has shifted in favour of large agri-holdings and their associated lobbying forces, which enables them to exert a significant influence over state agrarian and food policy. Although the number of small agricultural producers is relatively high (48 600 registered farmers as of 2021 according to the State Statistics Service of Ukraine), their ability to advocate for their interests is limited, and is only possible through agricultural producer associations.

In terms of institutional coordination and collaboration, there has been significant improvement in relations between the Ministry of Agrarian Policy and Food and key agricultural producer associations. However, direct coordination of activities between the most vulnerable actors of the Ukrainian food system – smallholder farmers not united in agricultural producer organizations – and the Ministry needs to be enhanced.

Chapter 7. Conclusions

The research data collected for this assessment report and the responses from interviews indicate that Ukraine is generally on track to achieve a sustainable food system, provided that the key issues highlighted below are addressed in a proper and timely manner:

- **Nutrition and health**. Growing public interest in healthy nutrition is supported at the state level with healthy nutrition designated as a top priority underpinned by strong potential for scientific research and development.

- **Socio-economic development**. The Association Agreement between the European Union and Ukraine enables progressive institutional changes and simplification of business procedures in parallel with decentralization reforms, all of which are important preconditions for sustainable socio-economic development.

- **Environmental sustainability**. The global transition towards clean energy sources will enable the Ukrainian government and key food system actors to initiate adequate environmental protection measures as well as promote adequate soil management and no-till practices and intensify organic production.

However, the Ukrainian food system is also underperforming in each of the same areas:

- **Nutrition and health**. Excessive usage of pesticides and antibiotics by agricultural producers contributes negatively to public health. This situation is further exacerbated by poverty and low purchasing power, which increases consumption of larger food portions containing a high level of synthetic compounds. In addition, there is a lack of innovation around health and nutrition and a concomitant need to modernize production capacities.

- **Socio-economic development**. The socio-economic situation is complicated by significant damage to economic activities caused by the Russian-Ukrainian war. Insufficient purchasing power, income inequality and relatively high spending on food are the main issues of concern in the social sphere, while support to small and medium-sized enterprises (SMEs) in the agriculture sector and social protection for elderly people and families with children remain insufficient.

- **Environmental sustainability.** The most problematic environmental issues in Ukraine relate to the reprocessing of solid and fluid waste in rural areas, uncontrolled usage of agrochemicals and pesticides, soil deterioration and the depletion of natural resources. State interventions to address these issues remains low despite the introduction of policies in these areas. In addition, usage of energy-saving technologies is insufficient among small agricultural producers.

The above identified issues are nearly all covered by policies and strategies, which if implemented correctly should adequately address the concerns. However, achievement of the core food system goals will only be possible if efforts between key actors in the food system are coordinated effectively. At present, the situation in Ukraine in this regard leaves much to be desired.

Chapter 8. Towards food system sustainability – potential next steps and recommendations

According to the data provided by interview respondents, there are several key entry points to transform food systems towards sustainable development, as follows:

- Orienting towards a healthy nutrition culture and responsible consumption will positively impact population health and transform mass consciousness in a manner compliant with the SDGs.
- Understanding the need for integration into the global food system will help Ukraine, as a large exporter of agricultural commodities, become an integral component of the world agrarian market.
- Intensification of EU integration processes will encourage clear and transparent rules and mechanisms for food policy and equal conditions for both external and internal market participants.
- Targeted assistance and long-term policies aimed at smaller agricultural producers will promote sustainability, as such entities (most of which are family farms) are more agile and demonstrate strong potential to increase organic production.
- A broad public-private dialogue platform to review Ukraine's progress to meet the SDGs in conjunction with a detailed year-by-year plan is essential to assess performance and make changes, as necessary.
- Active representation and participation in key international initiatives related to sustainable development is essential.

The following priority actions will encourage the integration of food systems sustainability dimensions:

- **Nutrition and health impact.** Develop healthy nutrition programmes and corresponding informational campaigns, implement advanced food safety systems food production, and undertake the necessary activities to form a healthy nutrition culture.
- **Social-economic and institutional impact**. Develop and implement social protection programmes for elderly people and people with children, and put in place agricultural SME support programmes and policies.
- **Environmental impact.** Introduce additional preferences for the use of advanced energy-saving technologies, improve and adjust environmental support policies, ensure greater control over agrochemical usage, and implement an effective waste management system.

According to this rapid appraisal as well as information collected from the interview respondents, in order to encourage transparent and inclusive governance, accountability, and multi-stakeholder partnerships to scale-up investments towards the transformation towards sustainable food systems, the following activities are necessary:

- **Ensuring governance transparency.** This should include intensifying government efforts towards digitalization (further development of the E-governance initiatives and services including the existing Diia service and Diia-City special legal framework, as well as developing new services, including but not limited to electronic voting system, etc.). It should also include a dedicated information campaign to heighten population awareness of and participation in e-governance initiatives.

- **Increasing accountability**. Upgrading the web portals of main governmental bodies to be more user-friendly and convenient, building in feedback/Customer Relationship Management systems, and ensuring inclusive governance approaches can all enhance accountability. The Law of Ukraine on access to public information (dated 24 October 2020) constitutes a good starting point here, but needs to be implemented effectively, along with other introduced legislative changes.
- **Multi-stakeholder partnerships**. Important contributors to sustainable food systems transformation include (i) accelerating the EU-Ukraine Association progress, especially to harmonize domestic legislation with EU laws – thereby, creating the same legal environment for international partnership; (ii) improving anti-corruption legislation and introducing an independent judicial system to better protect foreign investments; (iii) introducing transparent and accountable governance to better trace the impact of foreign investments; and (iv) improving the economic, social and environmental policy of respective governing bodies by introducing SMART-compliant strategies to ensure that pathways to sustainability are well planned and attainable.

The entry points for transforming food systems towards sustainable development can also be determined by employing Elkington's Triple Bottom Line, which assesses economic, social and environmental dimensions of sustainability in equal degree (Elkington, 2018). Accordingly, the following steps can be taken:

Economic:

- Intensify anti-corruption reforms in Ukraine and ensure independent and impartial functioning of the judicial system as an important precondition of bettering the investment attractiveness of the Ukrainian food industry and the country.
- Undertake effective market de-regulation to boost market economy development in Ukraine.
- Plan, develop and implement a strategy for international markets diversification to improve access to international markets.

Social:

- Make adequate changes to social policy to address inequality and unemployment.
- Strengthen reform of the public health system and ensure a greater degree of state control of the population's nutrition to improve public health and create more healthy and responsible consumers of products supplied by the Ukrainian food system.

Environmental:

- Intensify harmonization with EU standards, including the use of hazardous substances.
- Introduce changes to land re-cultivation and forest management policy.
- Launch an effective emission control system involving emission quotas and sanctions.
- Implement an effective waste management system.

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Annexes

Annex 1. General country and agriculture sector context

Ukraine is the largest state in Central Eastern Europe. The country is bounded to the north by Belarus (a border of 952 km), to the northeast by the Russian Federation (2 484 km), to the west by Poland (542 km) and Slovakia (98 km), and to the southwest by Hungary (135 km), Romania (608 km) and Moldova (1 194 km). The state border extends for a total of 7 698 km, and the length of Ukraine's coastline is 1 758 km. Ukraine has access to the Black Sea and the Azov Sea and two mountain ranges: the Ukrainian Carpathians in the West and the Crimean Mountains in the South. The capital and the country's biggest city is Kyiv (2.95 million people).

The combination of substantial natural resources and a favourable climate and geographical position represent significant potential for the production of agricultural products and food.

Having reaffirmed its pro-European course, Ukraine is currently pursuing numerous democratic reforms and changes, directed towards further effective international economic integration.

Key characteristics and trade indicators

- Ukraine's total area covers 603 700 sq. km and the country has a population of 41.5 million people (Ministry of Finance of Ukraine, 2021).
- Some 41 515 million ha of Ukrainian land is dedicated to agriculture.
- Ukrainian GDP has seen stable year-on-year growth since 2015, and as of 2019 amounts to USD 153.78 billion (World Bank, 2021). However, the economy was hit hard by the COVID-19 outbreak. GDP declined overall by 11.4 percent year-on-year (y-o-y) in the second quarter of 2020, and GDP continued to decline to 6.5 percent y-o-y in the first half of 2021.
- Agro-industrial production is one of the leading branches of the national economy, with the share of agriculture in Ukrainian GDP increasing to 9.27 percent in 2020 (State Statistics Service of Ukraine, 2021).
- Key Ukrainian exports include agro-industrial and food products (45.1 percent), metallurgy (18.3 percent), machinery (11 percent), mineral products (10.8 percent) and the chemical industry (5.5 percent) (Ministry of Economic Development and Trade of Ukraine, 2021).
- Ukraine increased exports in 2020 compared to 2019 of the following: agricultural food products – by USD 55 million increase (0.2 percent), animal or vegetable fats and oils – by USD 1.0 billion (21.7 percent), remains and waste of food industry – by USD 90.3 million (6.1 percent), cereal products – by USD 43.7 million (16.2 percent), other food products – by USD 16.9 million (11.9 percent), alcohol and non-alcohol products, vinegar – by USD 12.9 million (6.1 percent) (Ministry of Economic Development and Trade of Ukraine, 2021).
- EU-28 countries are Ukraine's biggest trade partners, accounting for 40.7 percent of foreign-economic turnover of goods and services in 2020. At the same time, Ukraine has reduced foreign trade turnover of goods and services with the countries of the Customs Union (Armenia, Belarus, Kazakhstan, Kyrgyzstan and the Russian Federation) by 34.1 percent (USD 8.0 billion) in 2020 compared to the previous year. The same trend has been observed with countries of the Commonwealth of Independent States (Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and the Russian Federation) in 2020 with a reduction of 31.6 percent (USD 8.1 billion).

- China, United States and Turkey are also key trade partners of Ukraine. Their share in Ukraine's foreign trade turnover of goods and services accounts for 13.3 percent, 4.9 percent and 4.6 percent, respectively. Among other main trade partners of Ukraine, the share of the Russian Federation amounts to 8.5 percent (Ministry of Economic Development and Trade of Ukraine, 2021).

In the current context of the Russian-Ukrainian War (as of 2021), the Donetsk and Luhansk regions, as well as occupied Crimea in eastern Ukraine, are the most vulnerable territories in regard to sustainable food systems transformation. The most critical challenges in these regions regarding food system drivers are as follows:

- **Climate change and environment**. Criminal negligence on the part of the occupation administration regarding environmental management, includes but is not limited to spoiling previously arable land areas with mines and weapon remains, extensive uncontrolled exploitation of natural resources, wastewater mismanagement in active and abandoned coal mines, and heavy militarization of the Crimean peninsula.
- **Globalization and trade**. In the absence of recognition as independent subjects of economic activity by the entire civilized world, these territories have temporarily left the global economic system. Trade is currently possible only with the Russian Federation, which tacitly supports the occupation administrations with huge volumes of cross-border traffic.
- **Income growth and distribution**. Current income levels among the population of the temporarily occupied territories is significantly lower compared to the average Ukrainian level and is highly unstable. Income distribution favours members and activists of the occupation administrations.
- **Urbanization, population growth and migration**. As formerly huge industrial cities of Ukraine, Donetsk and Luhansk have experienced a significant drop in population numbers. According to the Cabinet of Ministers of Ukraine (2021), the regional industrial centres of Donetsk and Luhansk have lost 1.45 million people who have been internally displaced.
- **Politics and leadership**. The population of the temporarily occupied territories has very limited access to governance. The administration in many cases includes active members of terrorist forces controlled by the Russian Federation.
- **Socio-cultural context.** Issues related to gender parity, equal participation, education and literacy are not prioritized or the focus of consideration by the occupation administrations.
- **Innovation, technology and infrastructure**. The temporarily occupied territories have lost innovative potential due to the widespread departure of companies. No technological progress is being observed at present, while existing infrastructure is deteriorating.

Annex 2. The Sustainable Food Systems approach and BSEC project considerations

Food systems approaches have grown in popularity and importance as policymakers and governments recognize their critical importance for achieving the Sustainable Development Goals (SDGs) by 2030.

FAO defines food systems as follows:

> The agri-food system covers the journey of food from farm to table – including when it is grown, fished, harvested, processed, packaged, transported, distributed, traded, bought, prepared, eaten and disposed of. It also encompasses non-food products that also constitute livelihoods and all of the people as well as the activities, investments

> and choices that play a part in getting us these food and agricultural products. In the FAO Constitution, the term "agriculture" and its derivatives include fisheries, marine products, forestry and primary forestry products (FAO, 2021).

Multiple other definitions exist (see Barrett *et al*., 2020), most of which highlight the need to balance economic, social and environmental sustainability demands in a food system that provides income, returns on assets, tax revenue for the government, nutritious and safe food to consumers, and positive socio-economic and environmental benefits (FAO, 2018). The holistic nature of food system analysis sets it apart from other approaches. It focuses on dynamic relationships between drivers, the structural nature of the system itself and the outcomes that these interactions deliver or fail to deliver. This approach accepts that food systems change and evolve. While certain stages or trajectories of food system development can be identified, no singular food system exists either globally or domestically. Rather, multiple food systems co-exist and interact in diverse ways. Food systems approaches recognize the existence of trade-offs between goals and seek to inform policymakers of their options and the potential implications of policy decisions. This is not, however, a normative approach with a "correct" answer. Instead, food systems represent an analytical framework to visualize and inform decisions that balance demands with local needs in order to develop tailored solutions.

The Black Sea region is a strategically important geographical location connecting Europe and Asia and home to a rich bio-diverse ecosystem including unique marine habitats. All food systems rely upon natural resources, which are currently under threat due to changing climate conditions and human behaviour. In addition, intensive and uncontrolled agricultural practices put extensive pressure on nature and may lead to deforestation, biodiversity loss, land degradation and conversion of natural habitats. In the light of these threats, enabling sound sustainable food systems has been identified as a priority for Black Sea Economic Cooperation (BSEC) countries. Tackling these issues necessitates countries acting together to establish a platform (mechanism) integrating instruments for the sustainable management of natural resources and reduction of food losses and waste in value chains. BSEC aims to take concrete steps and achieve tangible results in the areas of sustainable agriculture and agro-industry, which in turn should open up the agricultural potential of the region.

Maintaining sustainable food systems requires extensive research to develop united approaches to common challenges, and experience and evidence sharing to learn from each other. During the BSEC Agriculture Ministers Meeting held in Turkey in May 2017, and subsequent meetings, the BSEC member states agreed to establish the "BSEC – Regional Cooperation Centre for Sustainable Food Systems", in partnership with FAO and the Republic of Turkey.

This initiative may assist the BSEC member states in implementing joint research programmes, special training activities, exchange of information and knowledge within the BSEC region, on sustainable food systems. By the end of the project, the BSEC member states should have strengthened their capacity to analyse and monitor food systems for sustainability and implement projects to make food systems more sustainable.

The BSEC Regional Cooperation Centre for Sustainable Food Systems (BSEC-CSFS) will directly contribute to SDG 12 (responsible consumption and production) and SDG 2 (zero hunger), and indirectly to all the other Goals. The BSEC member states will benefit from the work of the BSEC-CSFS, as they will receive advice, guidance and information on making food systems in BSEC states more sustainable. This will be achieved through capacity development of government officials and other stakeholders in sustainable agricultural production, enhanced agricultural trade and enhanced regional cooperation/competitiveness

of member states in food and agriculture products. The main outcome of the project will be stronger regional cooperation in the areas of food security and safety, improved institutional capacities, poverty alleviation, and sustainable natural resource management including aquatic resources. The BSEC-CSFS will prepare the BSEC Regional Sustainable Food Systems Programmes and Action Plans and support the activities and projects for their implementation. The Centre will conduct co-programmes on sustainable food systems and cooperate closely with other international organizations if deemed appropriate.

Among the different outputs and results needed to reach the above-mentioned project impacts and outcomes, the BSEC-CSFS is preparing the **Review Report on the Current State of Sustainable Food Systems in the BSEC Region**. A team of experts and national and international consultants have been recruited to collect and analysis primary and secondary data on food systems in their countries with a view to assessing the sustainability of their national food systems. Food Systems Assessments Profiles have been prepared for each of the 13 member states, which in turn will be used to prepare a regional report on the state of food systems in the BSEC region, including gender gaps.

The process has been enriched by the participation of National Focal Points and Alternates in each BSEC member state, as well as the involvement of universities and institutions that have reviewed the reports on the state of food systems in the BSEC countries.

Annex 3. Methodology for rapid assessment of food systems

The creation of sustainable food systems is critical to achieving the SDGs, and means connecting discrete issues – livelihoods, climate resilience and biodiversity, as well as nutritional status, access and affordability of healthy foods, and consumer preferences, among others. Production, consumption and markets must all be recognized as interrelated parts of one system, in order to perceive potential synergies and trade-offs and identify potential pathways forward.

Traditionally, these issues have been studied and monitored separately, an approach that inhibits efforts to understand and assess food systems and their dynamics, especially in low- and middle-income countries, where these systems are changing fastest. Indeed, the absence of a holistic view precludes effective decision-making. This Food System Country Profile consolidates and helps make sense of existing data to support more informed and evidence-based decisions; curb negative outcomes such as malnutrition in all its forms, food loss and waste, or unsustainable environmental footprints; and improve food system sustainability.

To develop this profile the following steps were implemented:

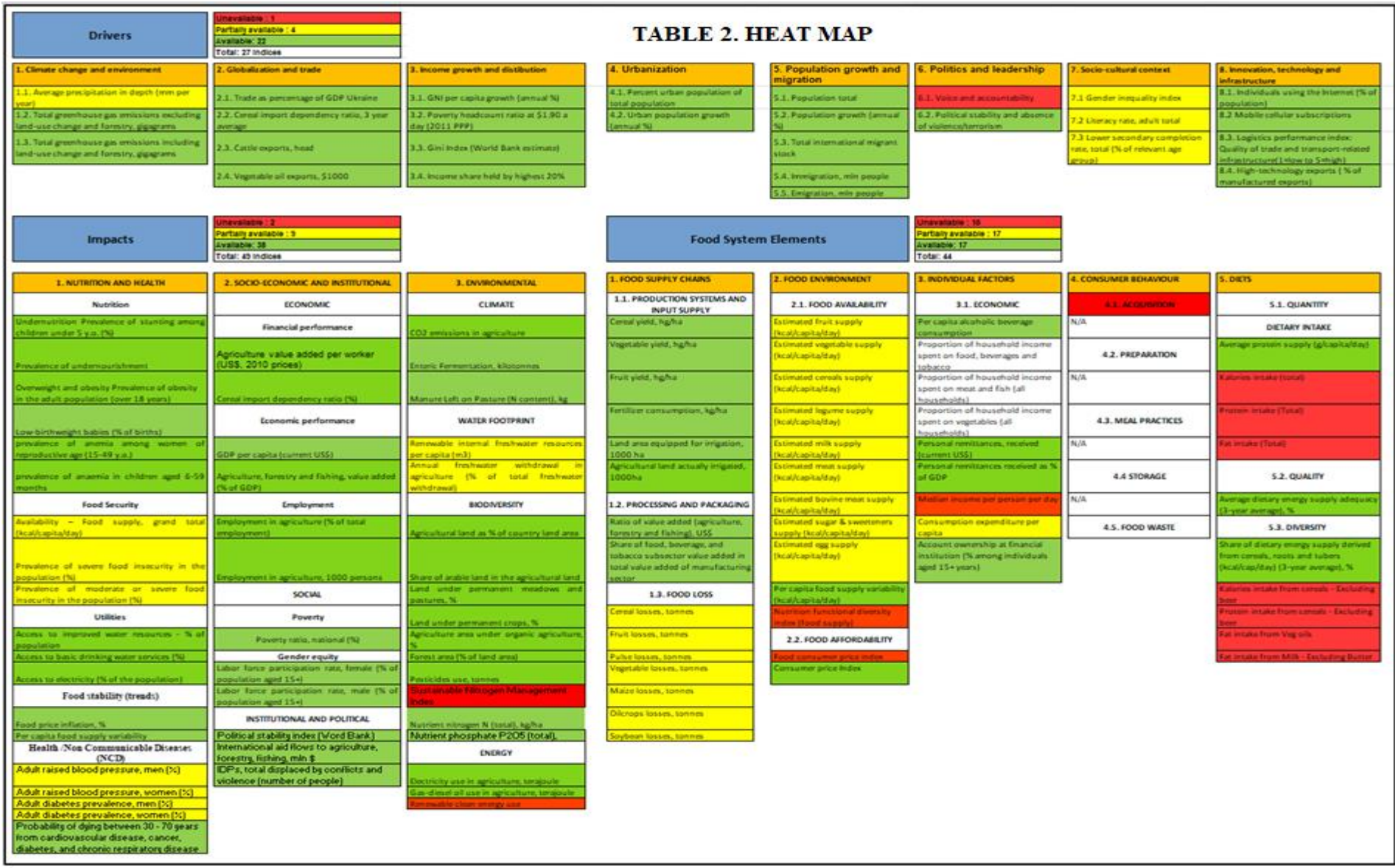
- Compilation and assessment of existing data on the components of the national food system using international datasets provided by FAO (FAOSTAT), the World Bank, the International Labour Organization (ILOSTAT), the World Health Organization (The Global Health Observatory, 2021), leading educational institutions such as Yale University, professional reports such as the *Global Nutrition Report*, the *Global Forest Resource Assessment* (FAO, 2020), specialized online portals such as the Food Systems Dashboard, as well as relevant national datasets provided by Ukrainian government institutions including the Ministry of Economic Development and Trade, the Ministry of Agricultural Policy and Food, the National Statistics Service and relevant national subject matter experts. This exercise focused on the last decade but, where relevant, included some historical data.

- Based on available data, a Heat map was constructed of existing knowledge on the national food system (Table 2). The process started with international data, which was classified based on quality and consistency across three categories: good, partial and missing. Higher quality data helped to identify key trends and provide an initial narrative of the evolution of the national food system.

- To complement existing available international data and better assess the emerging narrative, gaps were identified and targeted semi-structured interviews conducted with local food system actors. In Ukraine, this involved engagement with a total of ten different actors from across the food system. In some cases, this led to the incorporation of additional national datasets while, in others, it helped understand the trends and dynamics at play in the national food system and further sharpen the narrative.

- Finally, information gathered through data and interviews was combined in the present document to provide a snapshot of key drivers and the present status and outcomes of the national food system. This exercise represents a first step towards achieving a more holistic understanding of the Albania food system. Nonetheless, it is recommended to undertake additional data collection, analysis and ongoing engagement with key food system actors in order to deepen understanding, identify additional priority action areas and move towards coherent and integrated policies to improve the social, economic and environmental performance of the food system.

TABLE 2. HEAT MAP



Annex 4. Stakeholder mapping and main actors

Ukrainian institutions with legislative and executive power directly influencing agrarian policy

- The **Verkhovna Rada** (the Parliament) shapes policy and includes the specialized Committee on Agrarian Policy and Land Relations.
- The **President of Ukraine** can influence the Ukrainian food system through his right of legislative initiative and right of veto.
- The **Presidential Administration** can employ a wide variety of formal and informal mechanisms to influence political and economic actors.
- The **Cabinet of Ministers** is the highest body of executive power.

Ministries governing components of the Ukrainian food system at the state level

- **The Ministry of Economy** has produced the Strategic Plan of Activity for 2020–2024 (updated).

- **The Ministry of Agricultural Policy and Food** is the main authority in the system of central government responsible for supervising and implementing national agricultural policy. This includes policy on agriculture and food security, public policy in the fields of fishery and fishery protection, the use and reproduction of aquatic resources, regulation of fishery and maritime security, veterinary medicine, species protection, land-related questions, mapping and surveying, forestry and hunting, and surveillance (monitoring) of agriculture. Subdivisions for agrarian policy implementation include: the State Veterinary and Phytosanitary Service; the State Service for Geodesy, Cartography and Cadastre; the State Agency for Forest Resources; the State Agency for Fisheries; and the State Agricultural Inspectorate. The latter body coordinates and controls the coherent implementation of agrarian policy by different institutions across the country. Initiatives currently underway include: (i) partial reimbursement for agricultural machinery of domestic origin, (ii) financial support by means of low-interest loans, (iii) financial support directed to gardening development, (iv) financial support to family farms, and (iv) state support for livestock breeding development. These initiatives are considered important contributors to the sustainable development of Ukrainian food systems.

  The Ministry of Infrastructure fulfils its obligations within the framework of the implementation of the Association Agreement with the European Union (2021), by establishing the Coordination Council and working groups in relevant areas: transport policy and infrastructure, security and transportation of dangerous goods, air transport, road transport and roads, railways, maritime and river transport, and postal communications. In addition, three basic laws of Ukraine have been submitted to the Ukrainian Parliament on: (i) the harmonization of Ukrainian legislation in the field of road transport with EU legislation; (ii) on railway transport and (iii) on inland waterway transport

- The **Ministry of Social Policy** addresses social protection and employment through a corresponding strategy.

- The **Ministry for Reintegration of the Temporary Occupied Territories** is responsible for the reintegration of IDPs.

- The **Ministry of Ecology and Natural Resources** is the main governance body in the corresponding field currently implementing the following main components of the 2021 National Ecological Policy of Ukraine:
  - Increase the level of public environmental awareness.
  - Improve the ecological situation and increase the level of ecological safety regarding ambient air, water resources, land and soil, forests, the geological environment and mineral resources, protection from anthropogenic and natural disasters, management of waste and hazardous chemical substances, and biosafety.

- Improve conditions of environmental safety for human health.
- Integrate ecological policy and improve the integrated ecological governance system.
- End biodiversity and landscape losses and establish an ecological network.
- Ensure ecologically balanced usage of natural resources.
- Improve ecological policy at the regional level.

Ukrainian political parties

As of 2021, five parties are represented in the Ukrainian Parliament: the pro-presidential party Sluha Narodu (43.16 percent), the opposition platform Za Zhittya (13.05 percent), Batkivschyna (8.18 percent), Eropeyska Solidarnist (8.10 percent) and Holos (5.82 percent). The individual parties generally focus on questions of land ownership and rental prices. Each party includes influential representatives of agri-business entities from all over Ukraine, which gives large-scale agrarian business significant potential influence on the development of Ukrainian agrarian policy. Although, the Agrarian Party should, in principle, play an important role in discussion and policymaking on food-related issues, the party is relatively small, has low political influence and is not even represented in the Parliament.

Agricultural producer organizations

The main agriculture producer organizations include the Poultry Producers Association, the Milk Producers Association, the National Association of Meat Producers and the Beekeepers Association.

Large agricultural producers

The top ten Ukrainian agri-holdings with over 100,000 ha of controlled agricultural land are: Kernel (510 000 ha), UkrLand Farming (475 000 ha), MHP (370 000 ha), National Academy of Agrarian Sciences of Ukraine (362 600 ha), Agroprosperis (300 000 ha), Astarta-Kyiv (243 000 ha), Continental Farmers Group (193 000 ha), Epicentr Agro (160 000 ha), Agrarian System Technologies (150 000 ha) and HarvEast (127 000 ha).

Significant bank lending services to the agricultural sector

- State and commercial banks: Oschadbank, Privatbank, Ukreximbank, Tascombank, PUMB, Credit Dnipro and Pivdencombank.
- International banks: Credit Agricole, Raiffeisen Bank, OTP Bank, Erste Bank and CityCommerce Bank.

Largest multinational corporations present in Ukraine

- Nestle, Coca Cola, PepsiCo, Mondelez, Auchan, Metro, Fozzy, Cargill, Bunge, Viterra, Delta Wilmar, Louis Dreyfus and many others.