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Food Foresight: Impact of COVID-19 on the agri-food sector in Central and Eastern Europe

Contents

Foreword

At the very beginning of 2020 no one expected that during the same year Europeans will face national lockdowns, "Green Corridors" for transport between EU member states and panic buying of basic food products. COVID-19 has changed the way the agri-food sector works and the way European citizens consume and purchase food. At the moment, the only thing we can be certain of is that the future is unpredictable. How can we prepare for that? There is no clear pathway, but identifying potential future scenarios of the developments in agri-food sector based on megatrends and deep analysis of available data might help us understand what is coming. That is why in September 2020 Ursula van der Leyen introduced the overarching Strategic Foresight agenda that will chart EU political priorities and key initiatives in Commission Work Programmes. "In these challenging times, political leaders have to look wide and far ahead" – she said. We truly believe that the challenging times might also bring opportunities, especially to the region, which still requires efforts to stimulate the innovation and growth. Central and Eastern European countries are ready to move to the next level of innovativeness in agri-food. Opportunities arising from the COVID-19 pandemic might become a catalyst to accelerate this change. This is the main goal standing behind the Foresight analysis and the report you are about to read. We hope that compilation of statistical data, insights generated through brainstorming sessions with experts from our network and scenarios drawn based on the gathered material will become an inspiration for all of us to continue transforming our food system for more sustainable, healthy and trusted.

The Food Foresight is a joint effort of representatives of our EIT Food CLC NE Partners, RIS Policy Council members and EIT Food Hub organizations in 12 CEE countries – Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, Slovakia, and Slovenia. Thanks to this remarkable network we are able to make innovation happen. This report allows us to look at the crisis situation as a source of opportunities and give additional boost to our innovation efforts!

Marja-Liisa Meurice
Director EIT Food CLC North East

Executive Summary

The COVID-19 Pandemic has affected every sector of the economy. The pandemic-induced shock is an important test to the resiliency of the economies of Central and Eastern Europe. Businesses and policymakers, alike, have to respond effectively to the quickly changing economic landscape. Despite its steady growth and relative resilience, the agri-food industry has also been impacted. While the shock necessitated a comprehensive response to support those impacted, it also accelerated certain trends that have already been developing within the agri-food industry.

This analysis utilizes the structural historic and the recent pandemic-related development of the agri-food industry in Central and Eastern Europe in order to identify how agri-food will develop in the future under various exogenous circumstances.

Development Trends and Characteristics

Through this section, identified are historical trends on agri-food industry development in Central and Eastern Europe. These historical patterns of development from the last decade form the basis through which structural vulnerabilities, which could stifle growth during economic shocks, such as the one caused by the COVID-19 pandemic, have been identified.

The key domestic agri-food vulnerabilities in the CEE are:

- Decreasing employment share and an ageing workforce in the agricultural sector
- Volatility & seasonality in agricultural production output
- Production adaption costs
- Growing number of smaller players exploiting niche markets
- A growing dependence on HoReCa

The key external agri-food vulnerabilities in the CEE are:

- Import-dependence on goods needed for intermediate consumptions
- Export-driven demand for output

The key macroeconomic & demographic vulnerabilities in the CEE are:

- An ageing population
- Labour and skills shortages
- Pressures on cost competitiveness
- High dependence on external markets

COVID-19 Impact Mapping

Disruption caused by COVID-19 is unique and cannot be compared to other crises in the recent years, including the Great Recession of 2009. High uncertainty regarding its duration, depth and lack of ready prescriptions "from economic textbooks" requires robust scenario analysis. However, there is a consensus that impact of the COVID-19 is present both on the demand and supply-side of the economy. A summary of these impact channels is presented below, which distinguishes between real shocks, financial shocks, and behavioural changes – and maps the respective impacts to both demand-side and supply-side effects.

Table 1: Impact Mapping Framework

Impact channels	Demand-side effects (agri-food perspective)	Supply-side effects (agri-food perspective)
Real shocks (impulses in the real economy)	• Changes to domestic demand and its structure (e.g., reduced demand in restaurants and hotels) • Changes to foreign demand and its structure (due to restrictions in transportation, border closures, etc.) • Payment gridlocks and bankruptcies affecting recipients and suppliers	• Lower supply or higher cost of intermediate consumption (goods and services used in food production & processing; e.g., reduced access to animal feed, fertilizers) • Lower supply and/or lower productivity of the labour (absences, illness, quarantine, lack of seasonal workers etc.)
Financial shocks (impulses in the financial sector)	• Lower demand for the capital to finance investments in the agri-food industry • Higher demand for the capital to maintain liquidity	• Lower supply or higher cost of the capital for the agri-food industry (e.g., due to tightening credit conditions) • Risk of credit crunch and/ or "sudden stop" regarding international capital flows and/or defragmentation of the financial market
Expectations and behavioural changes	• Increased uncertainty and risk aversion among customers (fear of contagion can result in lower animal protein consumption, reduced visits to restaurants, and increased e-commerce deliveries)	• Increased uncertainty and risk aversion affecting food producers and processors' decision towards accumulation of capital (e.g., investments in new equipment/human capital) • Increased uncertainty among policy-makers leading to implementation of food protectionism measures

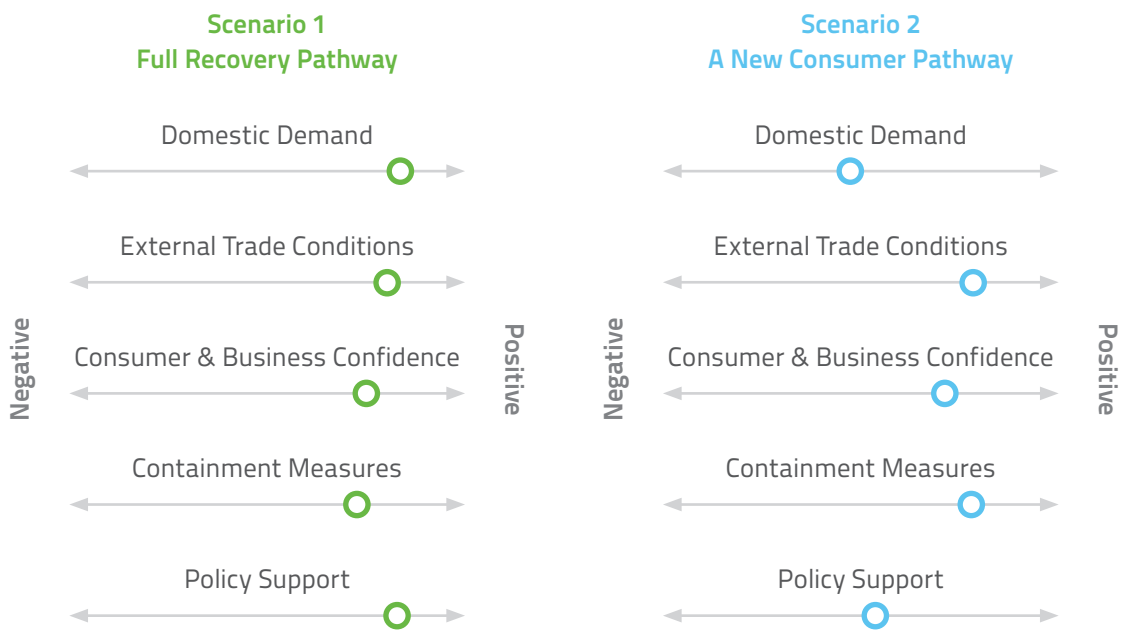
Source: Deloitte

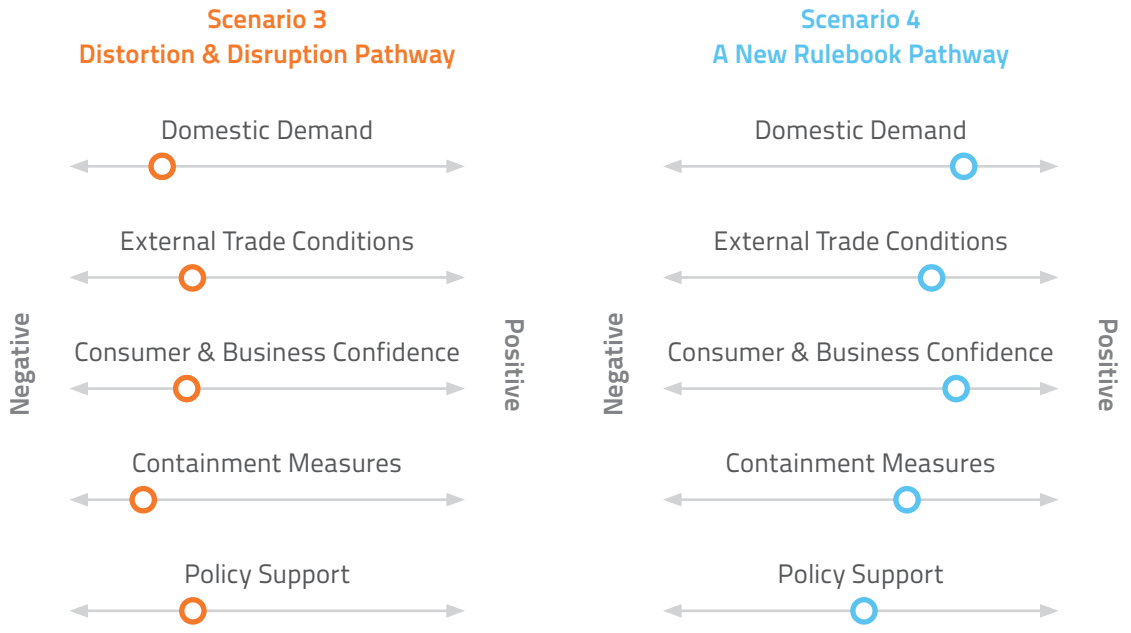
Foresight – Scenario Analysis

The foresight analysis employs a scenario planning methodology popularised by Royal Dutch Shell Plc, which to this day is widely accepted as a robust model for mapping a range of potential future trajectories with the aim of informing strategy and mitigation. The model identifies 2 broad variables which between them seek to capture a comprehensive a range of differing potential outcomes, approaching mutual exclusivity and cumulative exhaustion (MECE) if possible. Between these two variables, a matrix of 4 alternative scenarios can be formed, allowing for the visualization of distinct potential futures. This methodology is well suited to a COVID foresight analysis, as the path to recovery from the pandemic has not yet crystallized, and is instead still dependent on a number of economic and political variables which can still significantly impact the final outcomes.

The variables selected for this study (economic and public policy factors) proved sufficient to capture a comprehensive range of impact channels, and create a robust model mapping potential future recovery scenarios. The foresight analysis conducted maps the potential short and medium-term economic impacts related to the pandemic on the basis these four scenarios. Each is defined by (and a product of) a particular mix of potential economic, public policy, and other external factors, which influence and shape the trajectory of the recovery with differing implications for the studied sectors of the agri-food industry. Both of the high-level variables capture what could be referred to as "sub- variables" – which in this model are: Domestic Demand, External Trade Conditions, Consumer & Business Confidence, Containment Measures, and Policy Support. These factors are unknowns, and cannot be predicted with absolute certainty. While trends can be identified and estimations made, each factor retains a strong element of unpredictability. This is why the aforementioned model is an appropriate tool in mapping alternative scenarios – so that a company, government, or other entity, may foresee potential threats and adapt in time to mitigate any threat and seize any opportunity.

The four scenarios constructed are:





Under these four scenarios, different segments of the agri-food value chain will have to adapt to different challenges.

Farmers and Input Providers

Public Policy & Other Factors
From Unfavourable to Favourable

A New Consumer

- Changing consumer preferences for more local produce, driven by an increasing awareness
- Growing importance of goods with nutritional value

Full Recovery

- Production surpluses dissipate as demand returns to pre-pandemic stage
- Price pressures on farmers ease
- Labour flows return to being undisrupted

Distortion & Disruption

- Disruption of seasonal and international labour flows
- Excess supply depresses commodity markets
- Domestic demand decreasing as result of economic downturn

A New Rulebook

- Growing wage pressures on farmers
- Risk of trade complications
- Need to adhere to additional health & safety measures
- Consumer demand returns to pre-pandemic structure

Economic Factors
From Negative to Positive

Food Processing, Storage, and Transport

Public Policy & Other Factors
From Unfavourable to Favourable

A New Consumer

- Altered consumer patterns away from restaurants and into eating at home
- Necessity for food producers to reposition themselves due to changing demand
- Food manufacturers benefit from lower prices on international market

Full Recovery

- Growth and demand levels return to past dynamic
- Sector remains competitive and attractive to investors
- Growing consumer confidence and spending power

Distortion & Disruption

- Food manufacturing impacted by HoReCa disruptions
- Conservative consumer consumption patterns undermines growth potential of processors and manufacturers.
- New policies and regulations generating additional costs
- Investment in food processing facilities and updated production processes stalls

A New Rulebook

- Food manufacturing impacted by HoReCa disruptions
- New policies and regulations generating additional costs
- Protectionism decreasing competition
- Food manufacturers to potentially benefit from lower agricultural commodity prices

Economic Factors
From Negative to Positive

Retailers

Public Policy & Other Factors
From Unfavourable to Favourable

A New Consumer

- Necessary for retailers to adjust marketing strategies to adapt to changing consumer needs
- Larger online shopping capacity required to meet client expectations
- High competition among retailers to meet need demand and expectations.

Full Recovery

- Business as usual for large retailers
- Growth opportunity for smaller local players
- Food traffic & consumer spending power increase leads to consumption growth
- HoReCa sector returns to pre-pandemic levels, boosting connected sectors.

Distortion & Disruption

- Decreasing consumer confidence leads to lower consumption
- Conservative consumption patterns lead to less frequent store visits and lower expenditures
- Retailers faced with additional costs to ensure health and safety regulations are met.

A New Rulebook

- Retailers benefit from shift to home cooking
- Food services and catering suffering from low demand
- Competition subjected to digital value propositions

Economic Factors
From Negative to Positive

The Future of Agri-Food in CEE

The COVID-19 pandemic significantly disrupted all sectors across the agri-food industry in Central and Eastern Europe. These disruptions, while causing great negative impact, have also accelerated trends to which the industry would have had to adapt regardless. The most important of these trends:

1. A more aware and educated end consumer, who wants to be more informed when making his food purchasing decisions.

2. Climate change, which will necessitate large-scale adaption across the sector.

3. Higher competition and integration of different markets due to improving transport infrastructure (national, sub-regional etc.)

4. Rising labour productivity due to automation, digitalization and economies of scale (in both agriculture, manufacturing of foodstuffs and trade).

5. Growing importance of price mechanisms related to the use of natural resources and generated external costs like air pollution or impact on biodiversity, as well as environmental legislation such as the European Green Deal.

Therefore, based on the results of the analysis, certain opportunities, which need to be utilized for a sustainable recover, are identified.

Farmers and input providers

Opportunity	Source
Potential new consumer base	More individuals seeking local products
Innovations in the production process towards better resource efficiency and lower environmental impact	Changing demand and social preferences requiring alterations to the production process
More direct contact with consumers and higher margins	Shortened distance between farmers and consumers as a result of changing consumer preferences
Economies of scale through increased national and regional cooperation	Disruption of larger international supply chains but continued investments in transport infrastructure in CEE

Food processing, storage, and transport

Opportunity	Source
Opportunities for local suppliers to showcase their own products	Growing consumer interest in local goods as well as products will lower environmental footprint
Opportunity to "green" the food production process	Changing demand requiring alterations to the production process
New and effective solutions transport solutions	Transport disruptions
Need for higher self-sufficiency within the country or region	Trade and supply chain disruptions

Retailers, restaurants, and consumers

Opportunity	Source
More informed consumer choices and new fields of competition	Growing tendency to prepare food at home and sustainability-awareness
Higher interest in local food retailers and markets and resulting positive effect on margins	Growing consumer interest in local products
Growing interest in specialized stores and resulting positive effect on margins	More demanding consumers due to continued socio-economic development or health & dietary needs
Digitalization – rise of online ordering and home delivery of food	Necessity or desire to remain home

Development Trends and Characteristics

Historical Trends – Demand Side

While the countries of Central and Eastern Europe each have their own specificities, overall trends on how their agri-food industry has developed over the last decade can be identified. Identification of such trends is key in understanding how COVID-19 and related economic impact could shape the industry in the near future.

Key Historical Development Trends in Agri-Food for CEE – Demand Side

- Undisputed Importance to the economy
- Steady demand, less vulnerable to economic shocks
- Growing spending on food and beverages expected to continue to increase
- Going out to eat increasingly in popularity, large role of food services and restaurants
- Increasing role of export in demand for food products

The agri-food industry plays an important role in the economies of all of the countries in Central and Eastern Europe. Food produced by farmers and input providers reaches consumers in a variety of ways. The channels through which food gets onto the table of consumers differs depending on the degree to which the food is processed and the number of intermediaries involved. This process may involve manufacturers of food products, wholesalers, retailers, as well as restaurateurs.

This broadly defined agri-food industry generated between 6% of GDP (Slovakia) and 14% of GDP (Romania) throughout the Central and Eastern European (CEE) economies covered in this report.[i] In majority of the CEE countries, the relative size of the agri-food industry is larger than in Western Europe (see Figure 1). Despite average real growth rate of the industry is twice as large as in Western Europe (1.3% vs 0.8%), its relative economic size went down between 2007 and 2017 as a result of even faster growth in other sectors of the economy. This relative decline is a sign of growing income – although people get richer they tend to spend more on food, the increase of spending on other items is even bigger.

Figure 1: Share of Agri-Food in Value Added, 2017

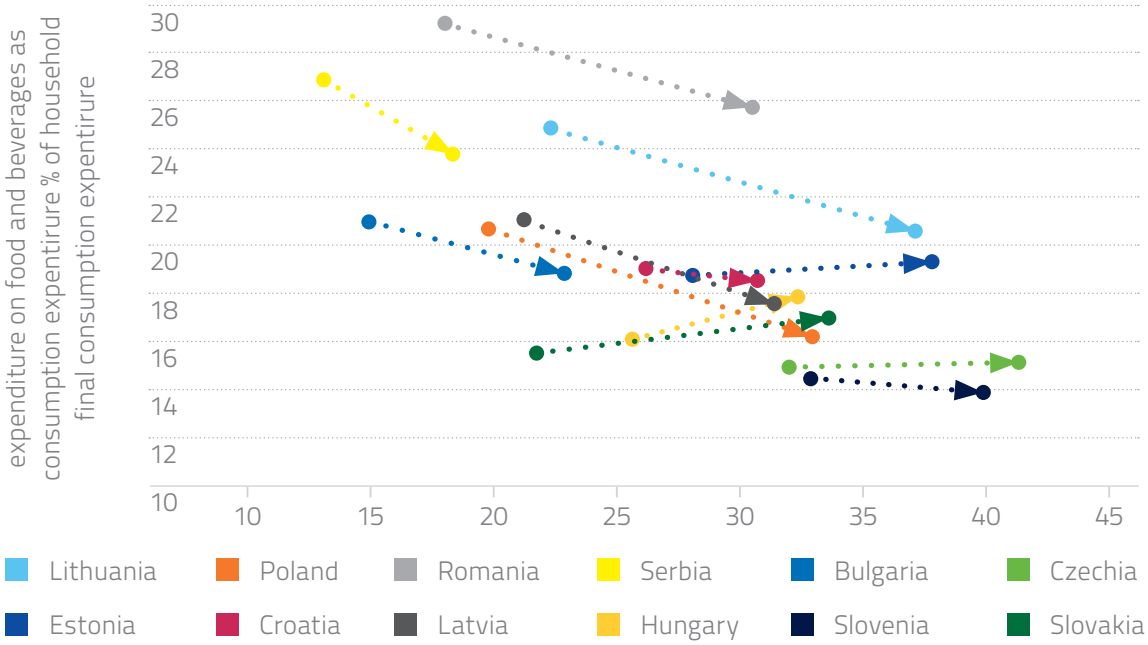
Source: own elaboration based on Structural Business Statistics from Eurostat

[i] Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, Slovakia, Slovenia

Food is one of the most basic human needs. No matter what is going on in the economy people need to eat, which in economic terms means a steady demand for food. Furthermore, the amount of food needed only changes to a limited extend as incomes increase. As consumers get richer, they predominantly increase their spending on goods and services other than food. It would be hard to expect that as household income doubled in CEE countries during past 20 years that their consumption of food would double as well, but of course some changes in quality and type of food consumed took place. The same mechanism works also in the reverse situation, when household income is falling people predominantly cut expenditure other than that on food.

Household expenditure on food and beverages in Central and Eastern Europe has grown very quickly in the last decade in most countries. However, this growth rate was lower than the growth rate of overall household consumptions. Just as economic theory predicts, as CEE countries were getting richer, household expenditure on food and beverages was growing at lower rate than overall consumption expenditure. Between 2005 and 2018, final consumption expenditure was growing in real terms by 2.3% annually[ii], while expenditure on food and beverages was growing at a much more limited rate of 1.2%. Nevertheless both overall expenditure and expenditure on food and beverages was growing much faster than in old EU member states, where respective growth rates were 1.1% and 0.7%. With expenditure on food and beverages growing slower than overall consumption their share in total household expenditure fell in majority of CEE countries, with notable exemptions of Czechia, Hungary and Slovakia (see Figure 2).

Figure 2: Change of GDP per capita and household expenditure on food and beverages between 2005 and 2018

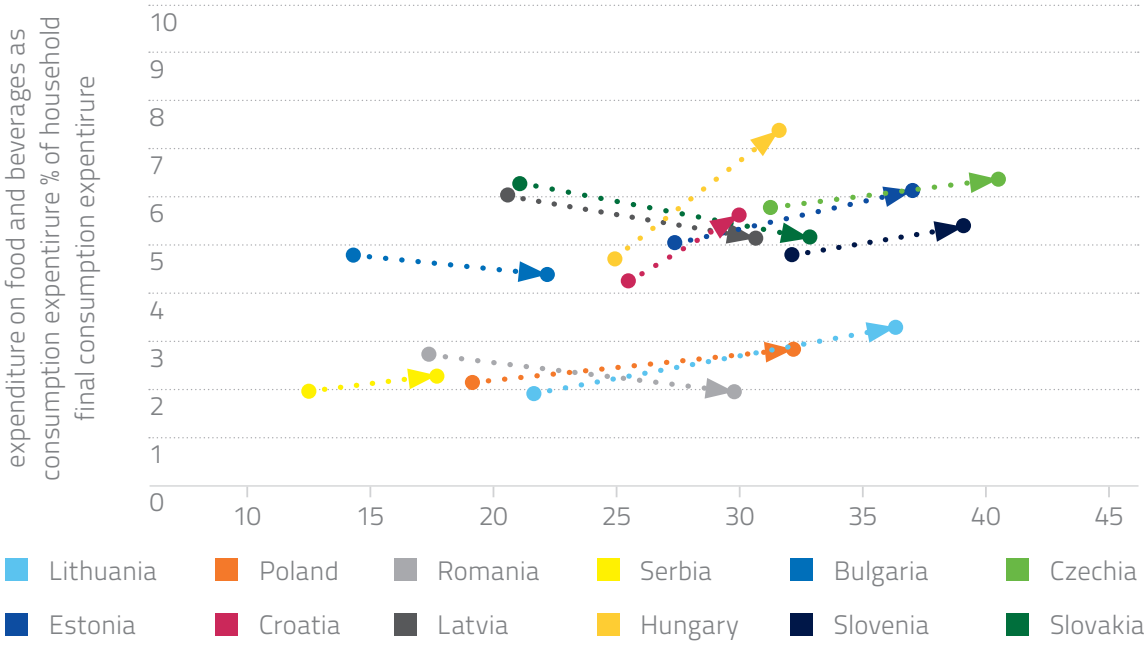


Source: Own elaboration based on Eurostat data

[ii] Non-weighted averaged

With growing income, individuals living in CEE countries have begun to eat out more. While with growing income, the share of household budget spent on food and beverages was going down, expenditure on food and beverage services went up in majority of CEE countries. The biggest growth was observed in Hungary, were the share of household consumption spent in restaurants and similar objects went up from 4.9% in 2005 to 7.6% in 2018; significant growth was also recorded in Croatia, Estonia and Poland. However, still some countries moved other way than theory would predict (Bulgaria, Romania, Latvia and Slovakia), perhaps due to an already established culture of eating out prior to the economic growth of the last decade.

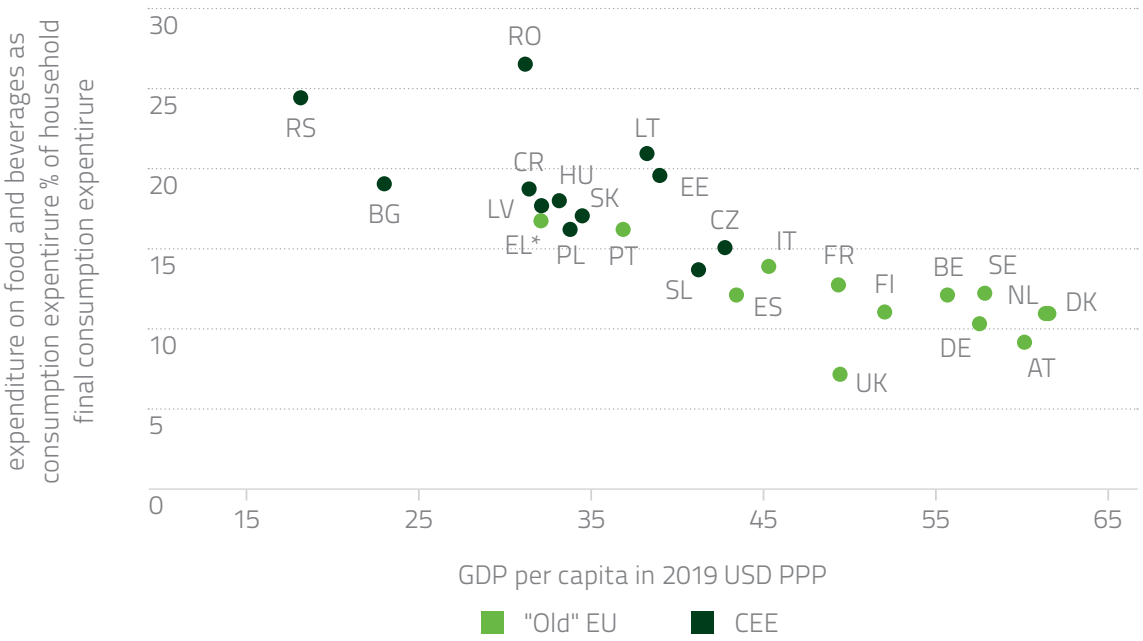
Figure 3: Change of GDP per capita and household expenditure on food and beverage services between 2005 and 2018



Source: Own elaboration based on Eurostat data

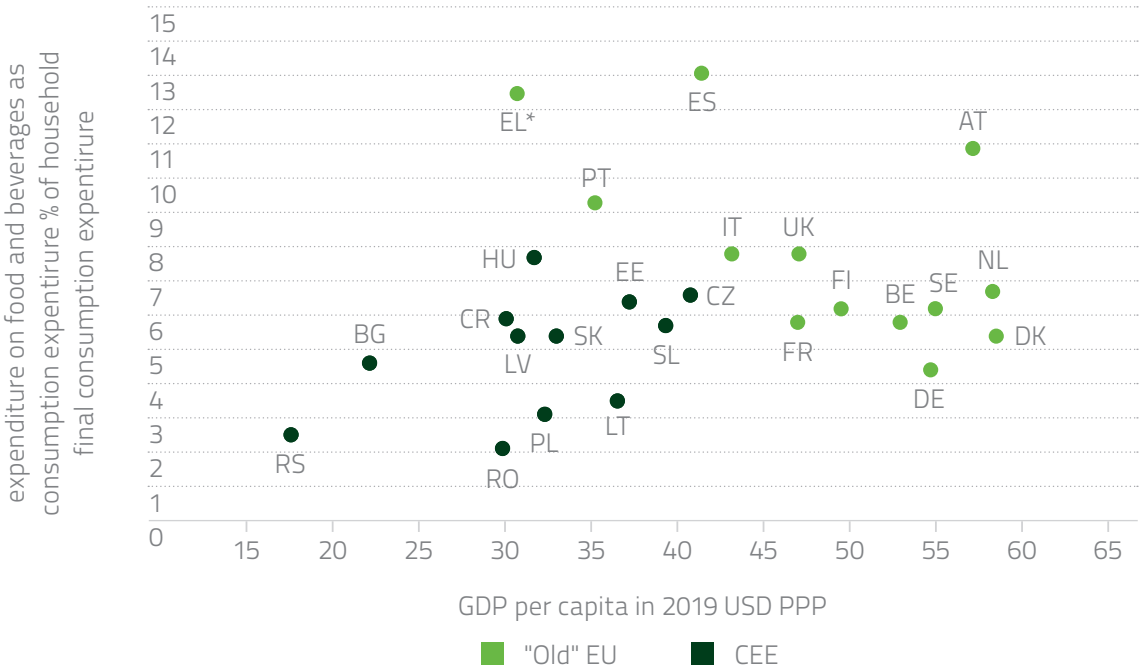
With continuingly growing incomes, spending on food and beverages will continue to rise, both in stores and markets, as well as in restaurants. During the last 30 years CEE countries experienced rapid GDP growth, but still their income level remains lower than Western Europe, leaving space for further convergence. According to both economic theory and available medium and long term projections[1,2] in the years to come CEE countries will keep growing faster than their Western European peers and the difference in income levels will at least partially close. As income will grow, so will the consumption expenditure and its structure will converge to Western European. On the one hand it will mean lower share of expenditure on food and beverages (see Figure 4) and on other hand bigger expenditure on food and beverage services, although here cultural factors seem to play important role, as the relationship between income level and expenditure on food and beverage services is not that straightforward (see Figure 5).

Figure 4: GDP per capita and household expenditure on food and beverages in 2018



Source: own elaboration on based on Eurostat and TED data. Data for Greece from 2017

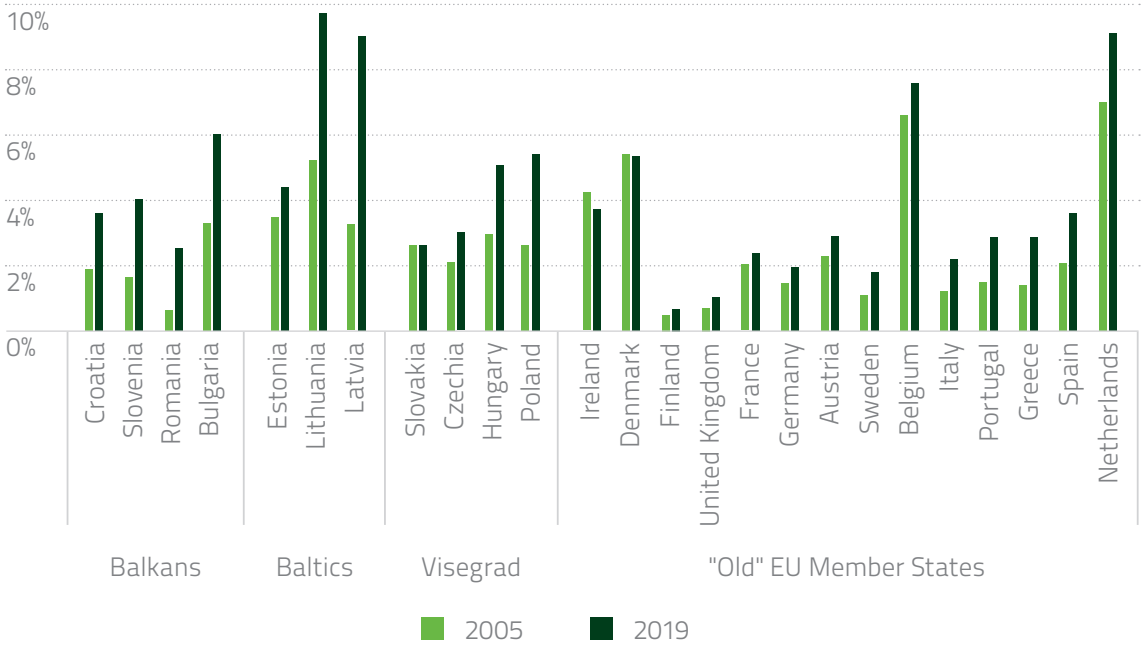
Figure 5: GDP per capita and household expenditure on food and beverage services in 2018



Source: own elaboration on based on Eurostat and TED data. Data for Greece from 2017

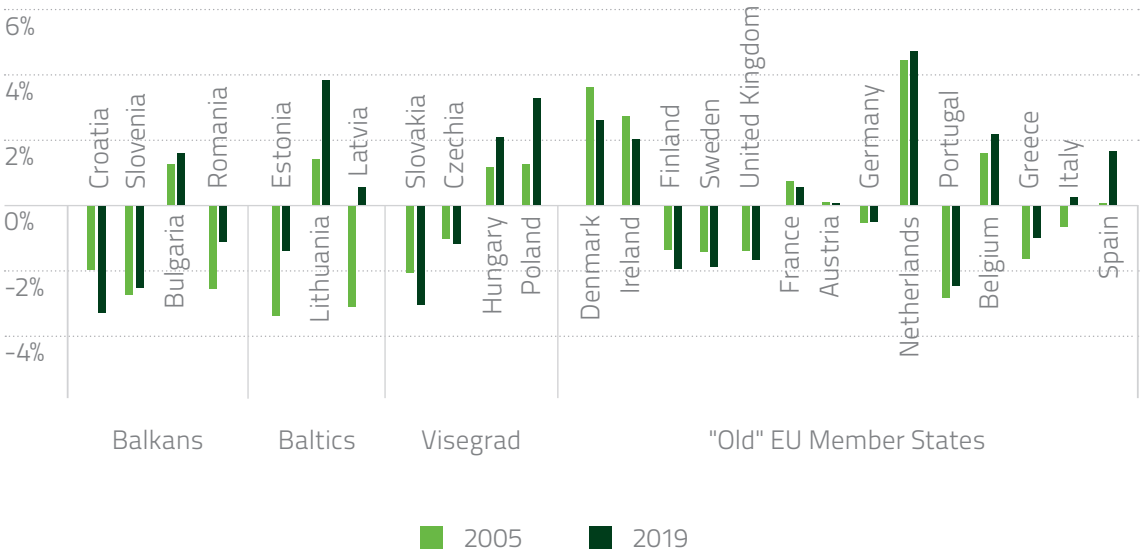
The role of food exports in the economy has significantly increased. In 2005 export of food, beverages and tobacco in CEE countries on average was at a level similar to old EU member states and amounted to less than 3% of GDP. In the following years, however, it grew faster than GDP. Its growth rate in 2019 was above 5% of GDP, well above majority of Western European countries. It should be noted that along with export, import of food products grew as well, but still several countries like Latvia, Lithuania and Poland managed to increase their net export of food products significantly (See Figure 6). Judging by the experience of old EU member states, some countries might specialize in food export, like Netherlands or to lesser extend Ireland, Denmark and Belgium (See Figure 7). Currently, among the CEE countries, Lithuania, Poland and Hungary seem positioned in this direction.

Figure 6: Export of food, drinks, and tobacco as % of GDP



Source: own elaboration on based on Eurostat

Figure 7: Net export of food, drinks and tobacco as % of GDP



Source: own elaboration on based on Eurostat

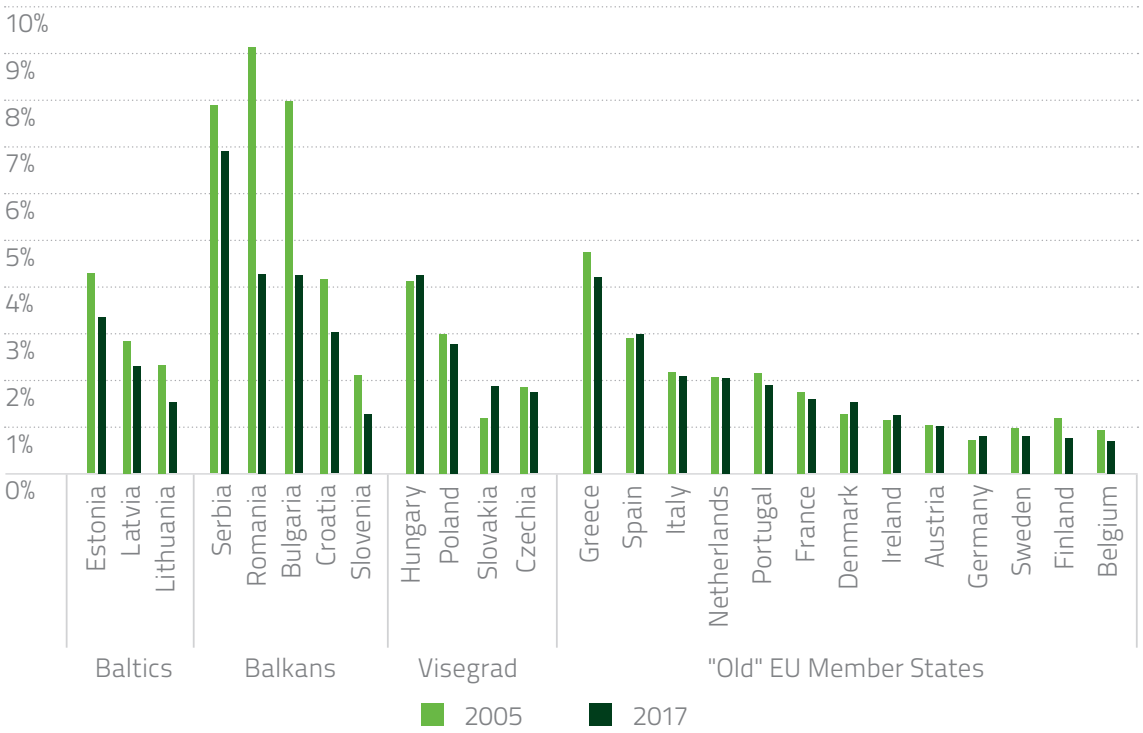
Historical Trends – Supply Side

Key Historical Development Trends in Agri-Food for CEE – Supply Side

- Agri-food production growing faster in CEE than in EU-14
- Share of employment in agriculture falling due to modernization of production processes
- Share of employment in food manufacturing still high, but gradually decreasing
- Labour flows out of agriculture into other sectors; aging agricultural workforce
- Smaller players being replaced by larger ones
- Rising food prices due to economic growth
- Labor productivity in both agriculture and food manufacturing typically below national averages

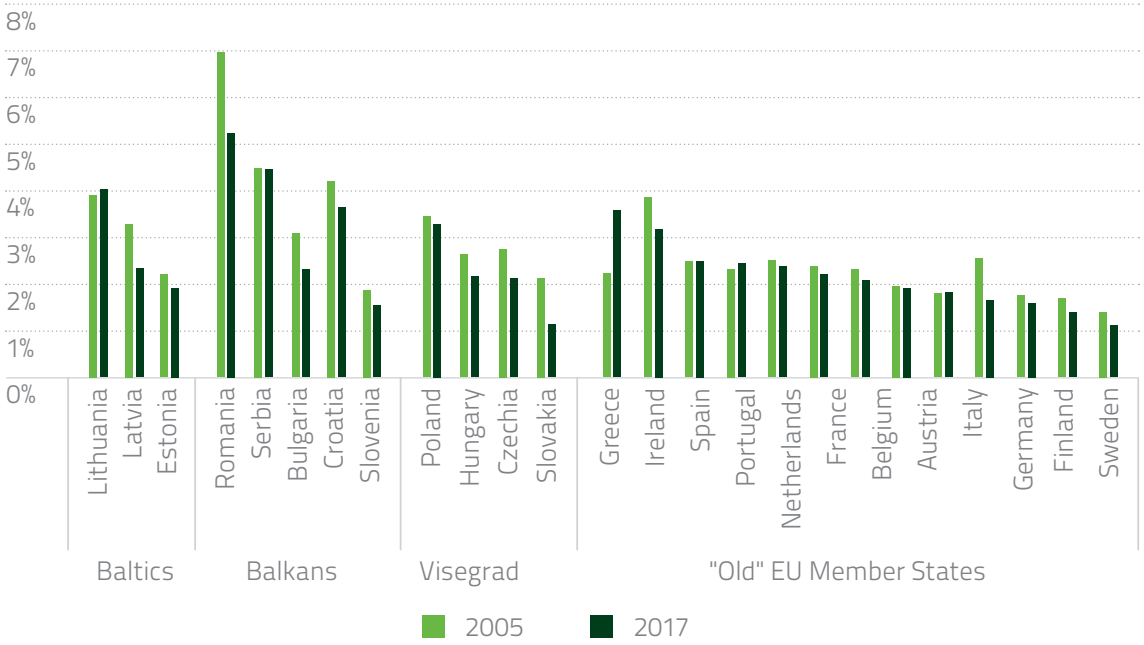
Production from the agri-food industry correlated with increasing demand for food products. When looked at as a whole, CEE show impressive nominal growth of value added between 2005 and 2017 in both agriculture (above 3% annually) and manufacturing of food and beverages (above 4%), which are well above levels seen in the original EU member states, where both sectors grew on average at a rate of less than 2%. Still, as the other sectors in the economies of Central and Eastern Europe grew even faster (over 5% annually), the share of value added from both agriculture and manufacturing of food and beverages fell in nearly every country in the region (see Figure 8).

Figure 8: Value added from agriculture in 2005 and 2017 (% of total value added)



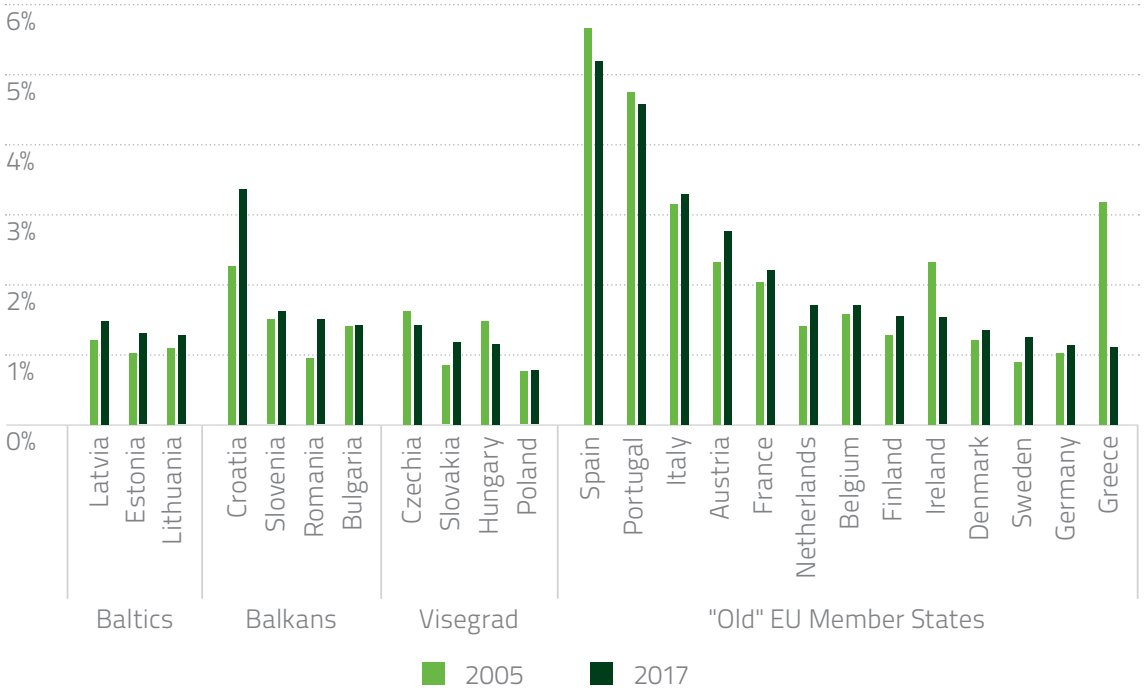
Source: own elaboration based on Eurostat

Figure 9: Value added from manufacturing of food and beverages (C10 - C11) in 2005 and 2017 (% of total value added)



Source: own elaboration based on Eurostat

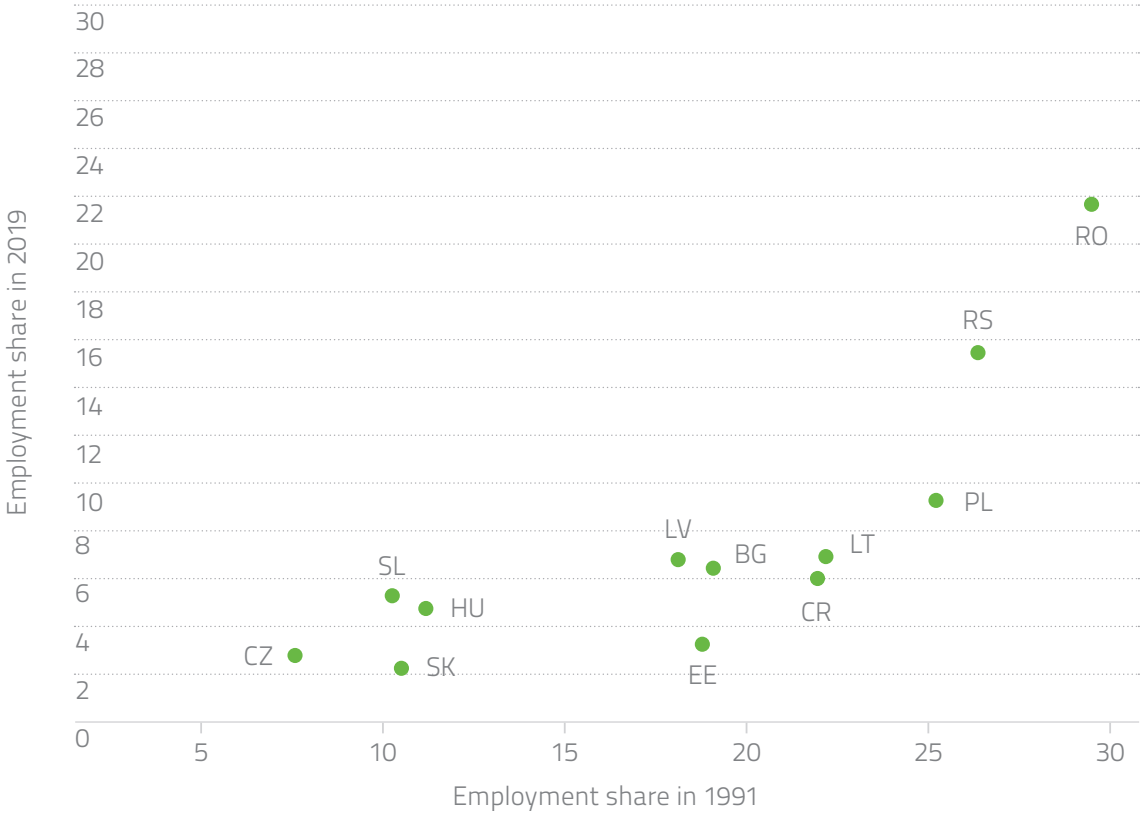
Figure 10: Value added from food and beverage service activities (I56) in 2007 and 2017 (% of total value added)



Source: own elaboration based on Eurostat

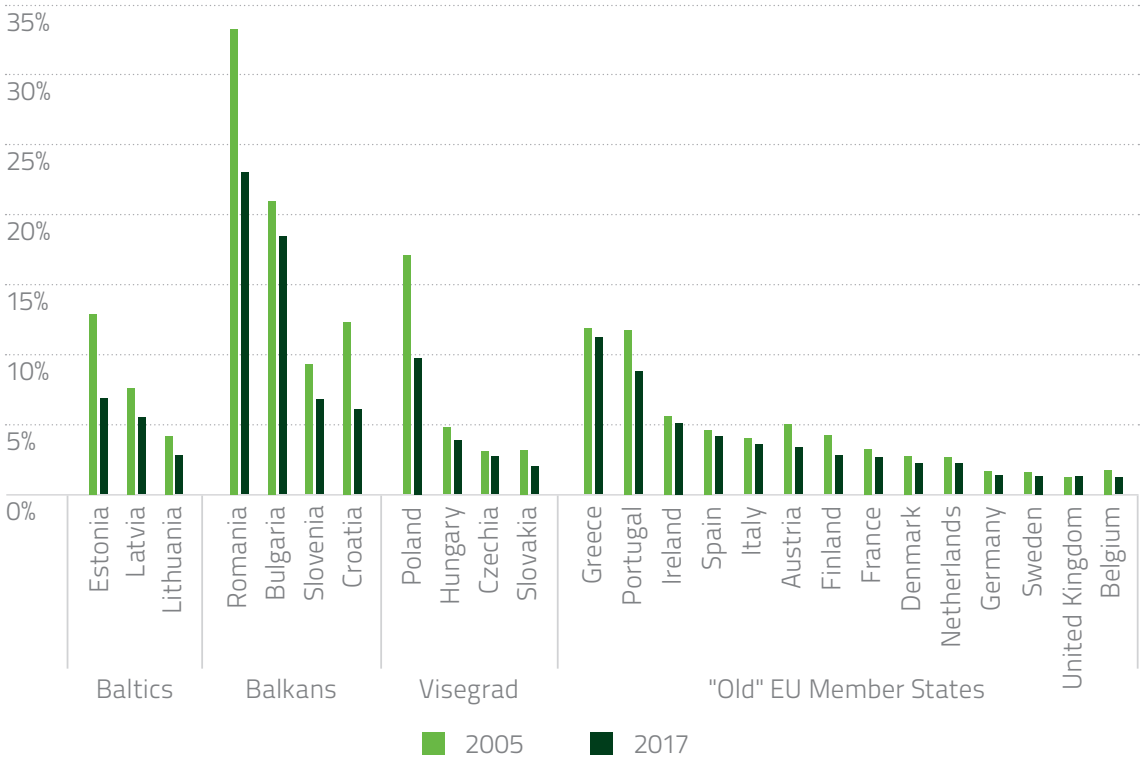
The share of people employed in agriculture decreased in all CEE countries as other sectors developed and agriculture modernized itself. Initial size of employment in agriculture in 2005 was a result of both different histories (e.g. to what extend private farms were allowed under communist rule) and the level of development. The legacy issues are still visible – countries with the highest share of employment in agriculture in 1991 tended to have above average employment in the sector in 2019 (see Figure 11). As CEE economies developed, the labour force gradually shifted from agriculture to more modernized sectors of the economy. In several countries, employment in agriculture has already fallen to the levels similar to Western Europe. It should be noted that in case of countries with the biggest excess employment in agriculture like Romania, Bulgaria and Poland many of farmers consumed majority of their production, selling on market less than 50% of their production (see Figure 12). As older generations gradually retire only fraction of their children takes over farms, while majority chooses other professions and selling land. Although process is time consuming, over time the structure of agriculture in CEE evolves toward smaller number of larger and more efficient farms (see Figure 13).

Figure 11: Employment in agriculture as % of total employment



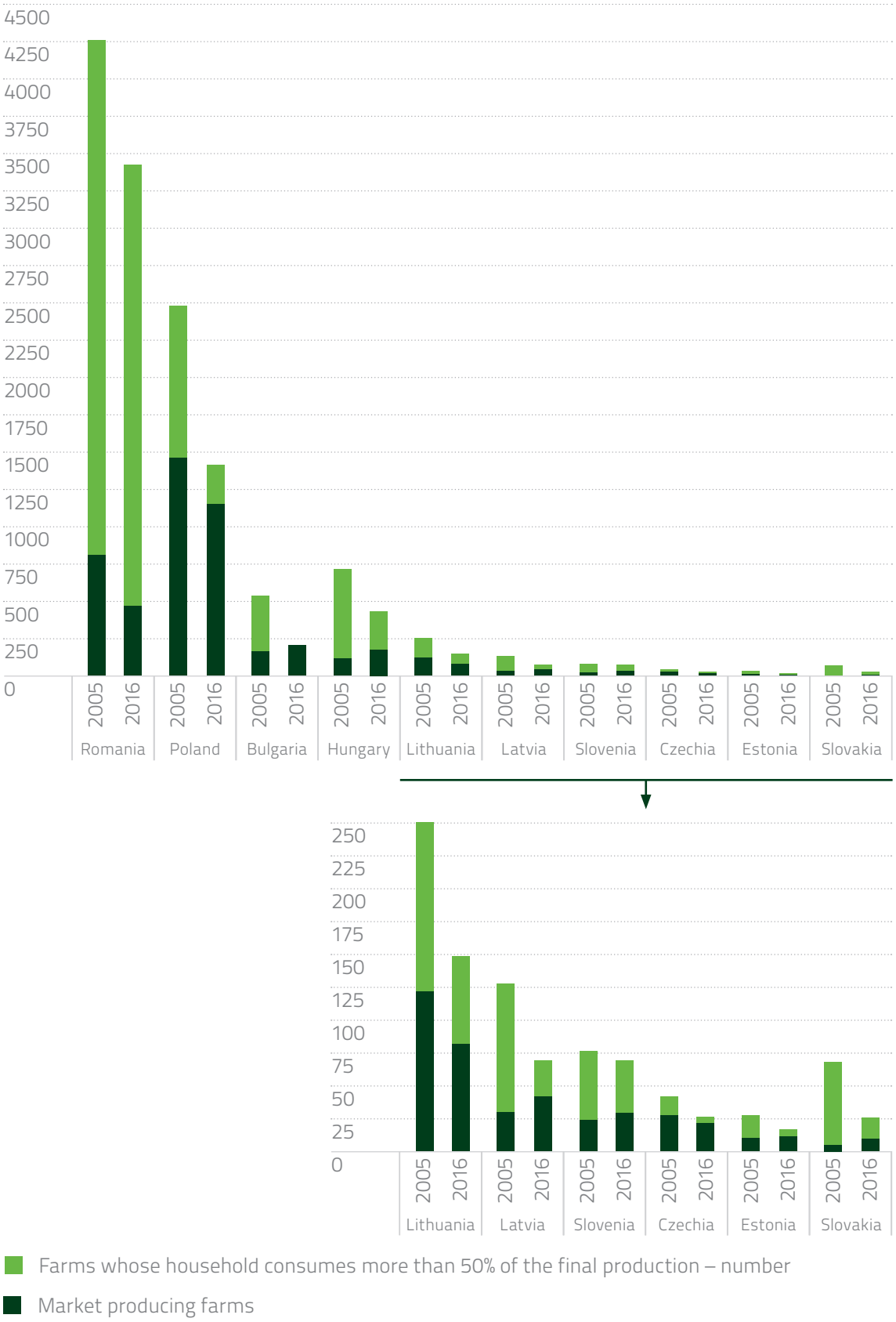
Source: World Bank World Development Indicators

Figure 12: Employment in Agriculture (A1 and A3) in 2005 and 2017 (as % of total employment)



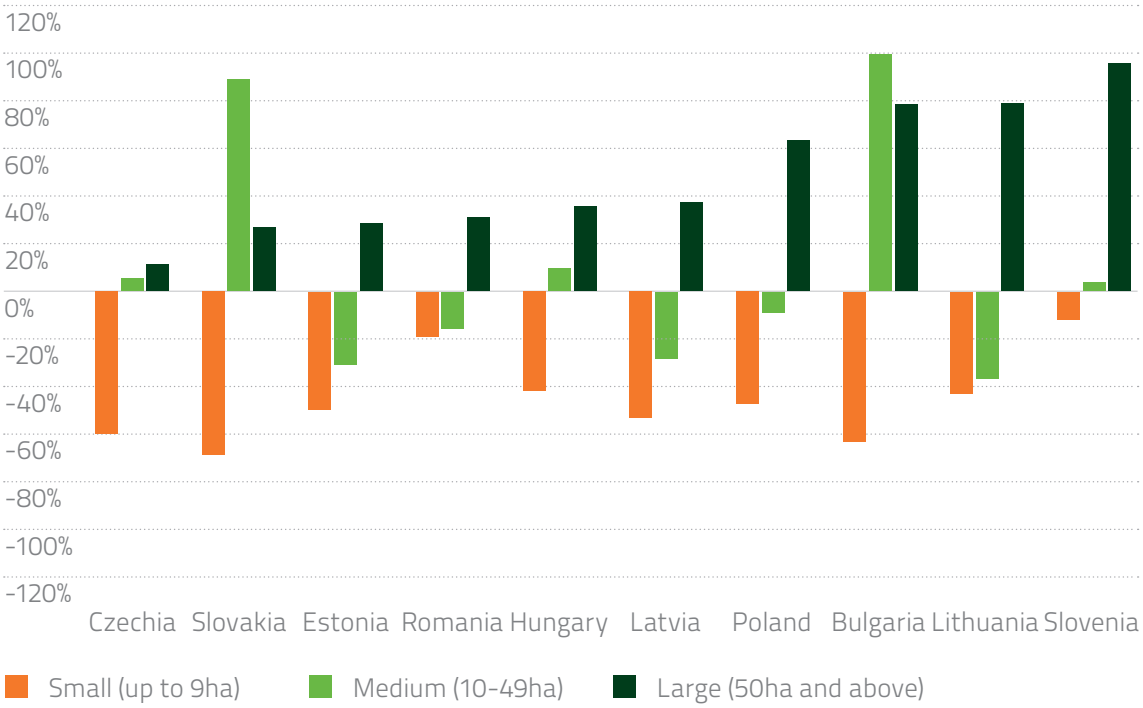
Source: own elaboration based on Eurostat

Figure 13: Number of farms in CEE Countries



Source: own elaboration based on Eurostat

Figure 14: Change in number of farms of different sizes between 2005 and 2016



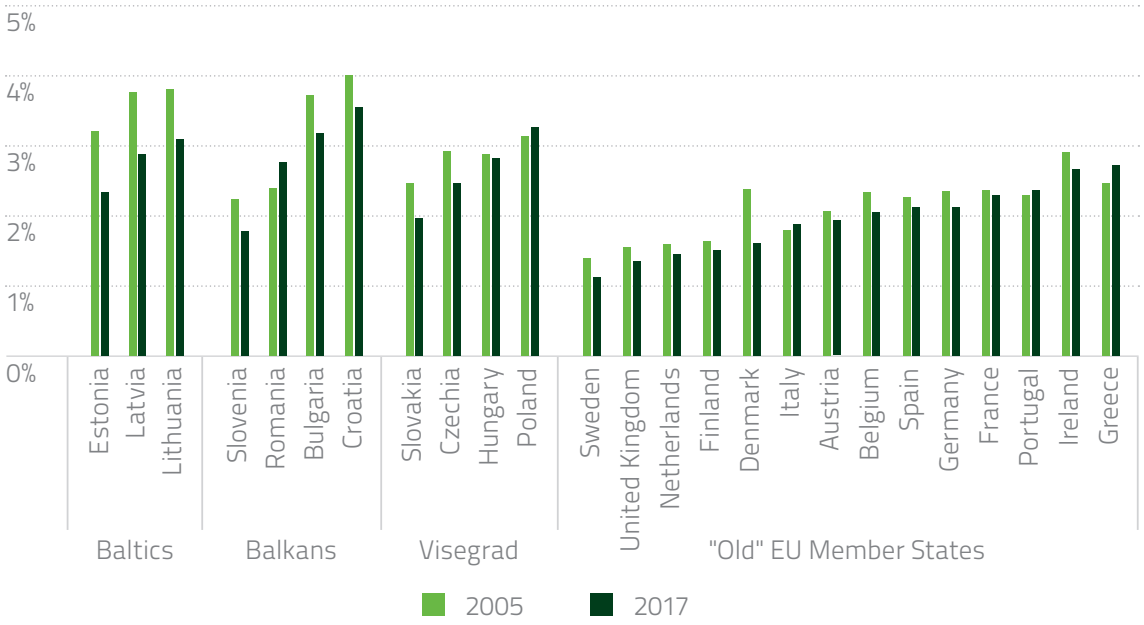
Source: own elaboration based on Eurostat

Employment in manufacturing of food and beverages in CEE Countries remains higher than in the old EU Member States, however, this share is still gradually decreasing in majority of the countries. Differences in employment size in this part of the agri-food industry are much lower than in case of agriculture, indicating that future adjustments most probably will also be more limited.

Employment in food and beverage service activities has grown in both Central and Eastern Europe and in the rest of the European Union. Growing employment in restaurants and other catering services is a part of broader phenomena of the growing employment share of services. Manufacturing appears to follow the pattern of agriculture as it has become more automatized, and employment has been outsourced due to shifts toward services in Western Europe. The same pattern is visible in agri-food in CEE, as employment in agriculture is falling, employment in manufacturing of food and beverages is slightly decreasing, but employment in food and beverage service activities is growing. Furthermore, during the last 9 years the growth of employment in this sector in CEE was slightly slower than in the old EU member states, despite a lower starting position, which indicates the scope for future catch-up.

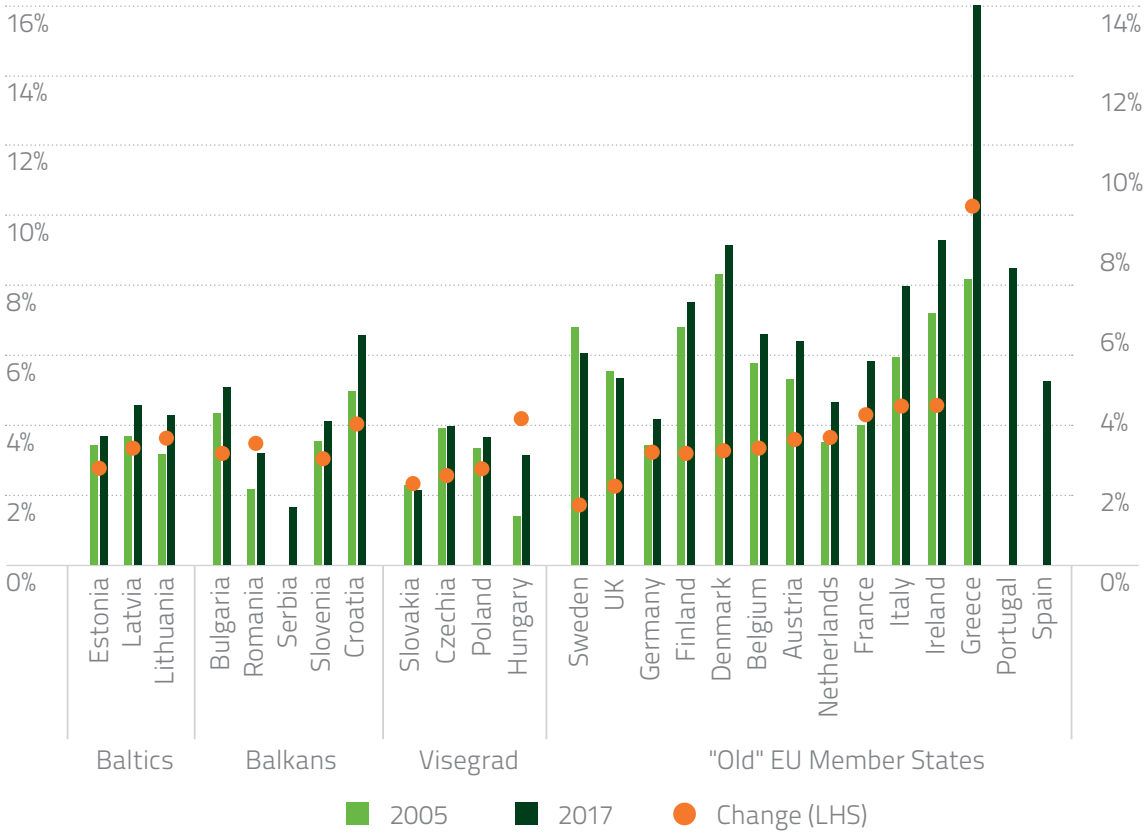
Nevertheless, this sector is among the most affected by COVID-19 and the degree how pandemic will change operations of restaurants in longer-term remains open.

Figure 15: Employment in manufacturing of food and beverages (C10 - C11) in 2005 and 2017 (as % of total employment)



Source: own elaboration based on Eurostat

Figure 16: Employment in food and beverage activities as share of employment in business economy[iii]

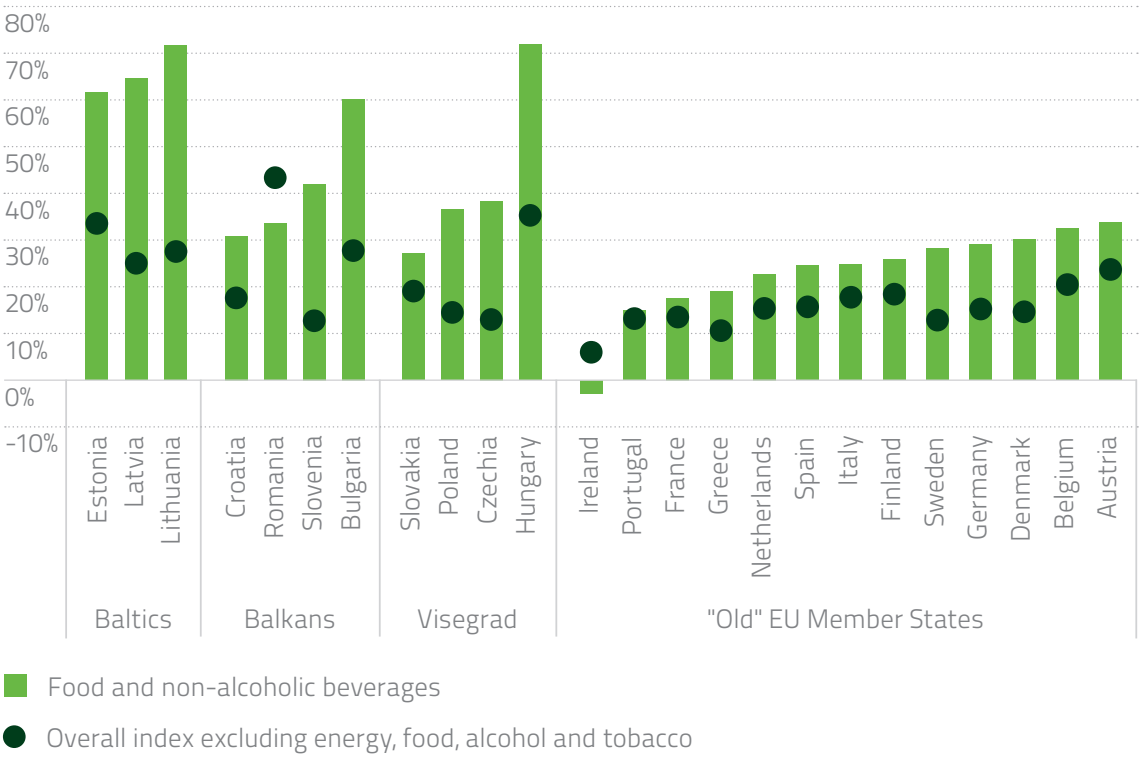


Source: own elaboration based on Eurostat – Business Structural Statistics

[iii] Because data for food and beverage service activities (I56) are not available at the level of national accounts (they are aggregated with Accommodation (I55) into Section I Accommodation and food service activities), we refer here to statistics on enterprises compiled by Eurostat in Structural Business Statistics. The business economy is a grouping of the following economic activities: industry ((NACE Rev. 2 sections B to E); construction (section F); services (sections G to N, excluding activities of holding companies – K64.2). It does not include agriculture, forestry and fishing (section A) and public sector and non-market activities (sections O to U).

While labour productivity has increased, the nominal labour productivity measure has been affected by growing prices. Countries with higher incomes tend to have higher prices, which is caused by Balassa-Samuelson effect. As one of the studies on this subject puts it: "(...) According to the Balassa-Samuelson effect (Balassa 1994, Samuelson 1964) on which this professional wisdom is based, productivity growth in the open sector usually exceeds that in the sheltered sector. Given that wages are expected to be approximately the same across sectors, faster productivity growth in the open sector pushes up wages in all sectors, thus leading to an increase in the relative prices of non-tradable goods. (...)"[3]. In other words, strong productivity and wage growth in, for example, the automobile industry in CEE countries also pushed up the prices of hairdressers, as without such increases their wages would lag behind other sectors and no one would stay in the profession. In case of agri-food, however, the classification of the sector is not straightforward – it is subject to whether its goods are tradable and subject to international competition or rather non-tradable. In the second case, their prices depend mainly on the wage and price level in the economy. On the aggregate level, studies omit agriculture or classify it as tradable sector[4], but more detailed studies point that at least significant part of sector output is non-tradable[5]. Nevertheless, food prices in CEE countries after 2005 tended to grow faster than not only overall price level but also food prices in Western Europe indicating structural adjustments. Growing prices supported nominal output growth and labour productivity growth in the agri-food industry.

Figure 17: Price changes 2005 - 2017

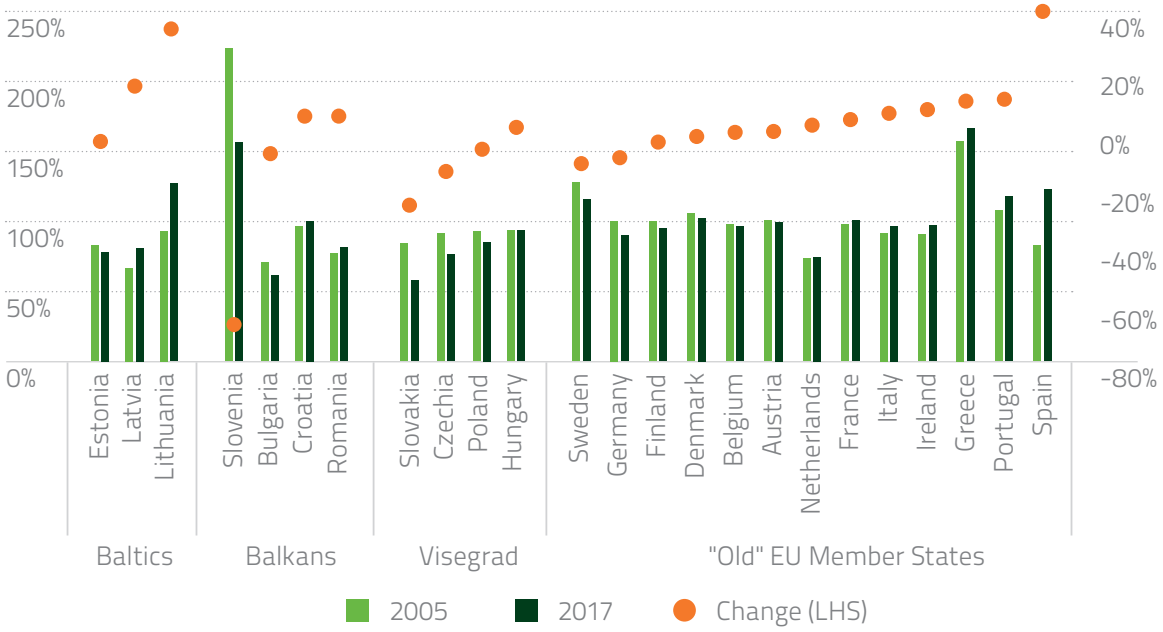


Source: Eurostat

Labour productivity in Agriculture is below the nationwide average in majority of both CEE and old EU countries. In many European countries, labour productivity in agriculture is a fraction of nationwide average, but there are notable exemptions like Netherlands or Hungary and Slovakia. Over the last 12 years for which data are available however in majority of CEE countries, labour productivity in agriculture was growing faster than labour productivity in other sectors, which should be considered impressive, taking into account strong economic growth in CEE countries. This growth was supported probably by earlier mentioned structural changes in agriculture and growth of prices.

Labour productivity in manufacturing of food, beverages and tobacco in most of CEE countries is slightly below nationwide average. The difference between labour productivity in food manufacturing and total economy is definitely smaller than in case of agriculture, but still the sector lags behind the rest of economy with notable exceptions of Romania and Lithuania.

Figure 18: Labour productivity in manufacturing of food, beverages, and tobacco (C10-C12) as % of labour productivity in the total economy[iv]



Source: Eurostat

[iv] Total economy excluding agriculture (A1 and A3) and manufacturing of food, beverages and tobacco products (C10-C12).

Identified Vulnerabilities

This section aims to present the macroeconomic vulnerabilities that may threaten further development of the agri-food industry in Central and Eastern Europe under the external economic shocks, such as the one caused by the COVID-19 pandemic. Such vulnerabilities are identified on the basis of both historical trends in the agri-food industry, which have been described in detail in the two preceding sections of this report, as well as macroeconomic structural issues not related directly to the agri-food industry, which are discussed in the last part of this section. This section concludes the historical analysis of the agri-food industry in Central and Eastern Europe. Both the COVID-19 Impact Mapping (Section 2) and the Foresight Analysis (Section 3) will utilize the vulnerabilities identified as a starting point for understanding the current and near future of the industry.

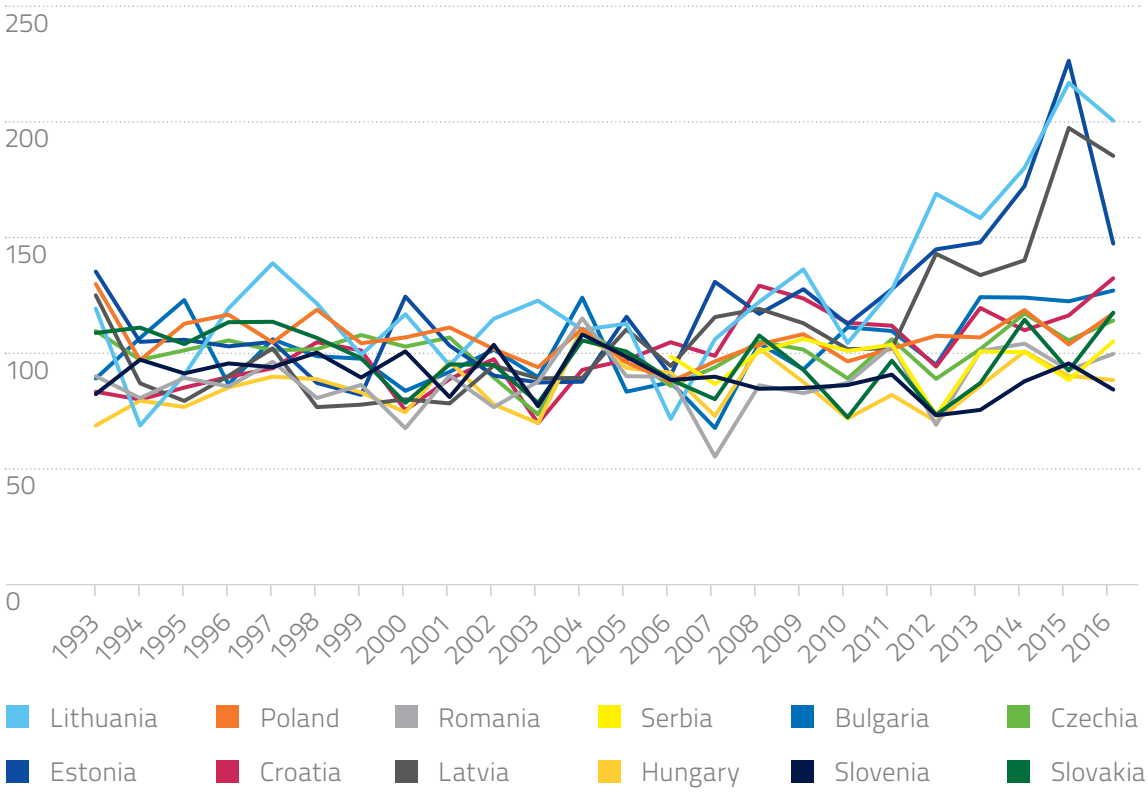
Domestic agri-food vulnerabilities

Farmers and Input Providers

- **Decreasing employment share and ageing workforce.**
  As mentioned in the previous section(1.2), the agricultural sector is seeing a decreasing share in employment. For one, individuals entering the labour market are entering sectors with higher projected salaries and growth potential. With agriculture not being considered an attractive sector to enter, the average age of farmers is continuously increasing.[6] Second, workers already working in agriculture are also transitioning to jobs outside of the industry.[7]

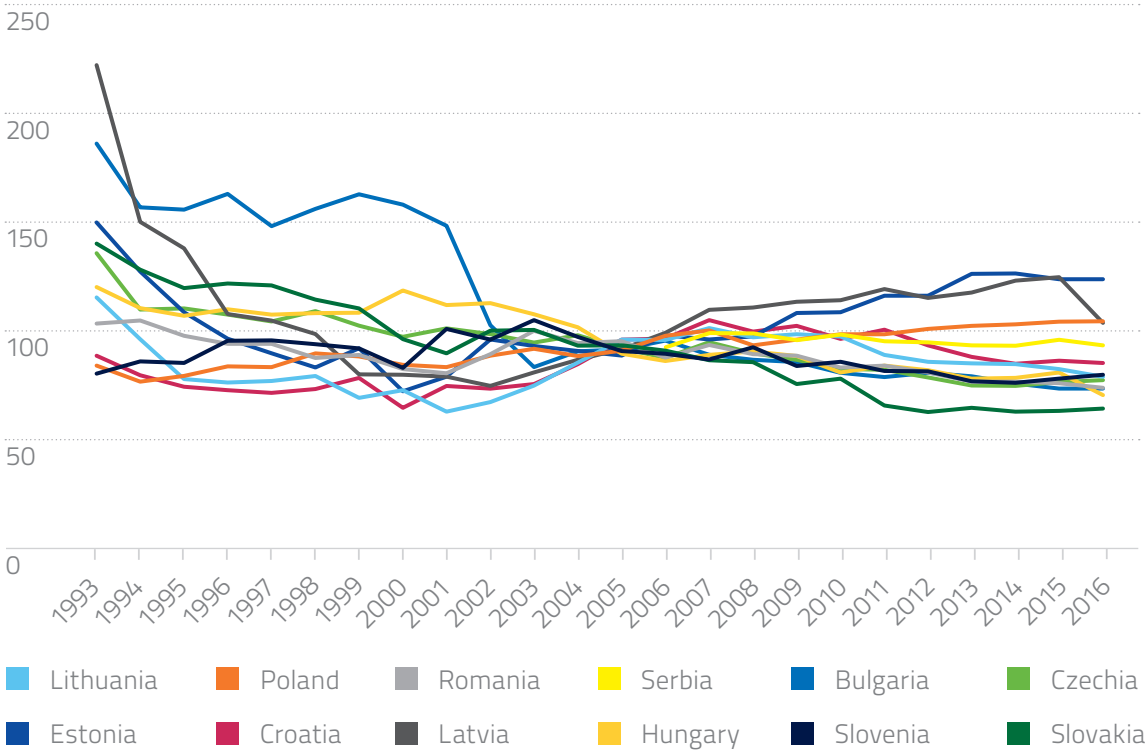
- **Volatility & seasonality in production output.**
  Agricultural production is subject to seasonality. A changing climate, coupled with other factors can make harvest yields unpredictable, means that the sector has an inherent level of volatility in its output. Such volatility is particularly visible in year-to-year crop production (see Figure 19). Livestock is subjected to weather-related externalities to a lesser extent, and, therefore, is significantly less volatile (see Figure 20). When looking at the crop production index and the livestock production index together, the latter has significantly smaller variability. The coefficient of variance for the index equals 21.9%, while for livestock production it equals 16.7%. What is also interesting to note in this data is the significant increase of crop production in the Baltics, which one could infer is the result of growing foreign demand and integration with European markets.

Figure 19: Crop production index (2004-2006 = 100)



Source: FAO

Figure 20: Livestock production index (2004-2006 = 100)



Source: FAO

Food Processing

- **Costs of production adaptation.**
  As technological progress replaces sheer labour, food production is becoming more complex and specialized. Therefore, food manufacturers may find it difficult to easily adapt their production processes to changing consumer demands. Such changes are subject to significant time and cost constraints. In situations of sudden changes, such as economic shocks or pandemic-related behavioral changes, food manufacturers may find quick adaption difficult.

- **Growing number of smaller players exploiting niche markets.**
  The aforementioned cost of adaption is most burdensome to smaller producers, who have a more specialized product and specific clientele. The presence of such food manufacturing small-and-medium sized enterprises (SMEs) has significantly increased in the last years, as customers become more informed about their food purchases, and as technology allows for smaller players to easily access to specific groups of customers both at home and abroad.[8]

Retail and Restaurants

- **Growing dependence of the agri-food industry on HoReCa.**
  As discussed in 1.1 Historical Trends – Demand Side, people living in Central and Eastern Europe are spending more money on eating at restaurants. This is a predictable trend, considering growing household incomes. As the role of food and beverage services continues to increase, farmers and food processors, alike, are growing interdependent with each other. In situations where the hotel, restaurant, and catering services sectors (HoReCa) is significantly adversely impacted, the negative effect can carry over directly to producers who depend on the demand from the sector. This dependence is particularly important in tourist-heavy economies. In the case of Central and Eastern Europe, the most tourist-dependent economy is Croatia.

The role of trade in the agri-food industry

- The agri-food industry in the CEE region has a fairly low reliance on imports of intermediate inputs (0.24).
- Majority of households depend on import for fish products (68%).
- Only 3 out of 10 households rely on food, beverages and tobacco products from import.
- Imported crop and animal products make up less than 25% of total final consumption of households.
- Out of final goods produced by the agri-food industry, the fish and aquaculture goods are mostly imported by the government sector (45%).
- The highest direct import dependence of gross capital formation can be observed in Croatia and it relates to manufacturing of food products, beverages and tobacco (0.56).
- Agri-food in CEE region is not a highly export intense industry – only 19% of crop and animal produce, 30% of fish and 28% of food, beverages and tobacco is exported.

Over the last few decades, significant internationalization of the production process has been observed around the globe. Some of the factors to which this phenomenon

can be attributed include the liberalization of international trade, falling transportation costs, reduced barriers to capital mobility, and the increasing development of information and communication technologies. These phenomena can also be observed in CEE countries across all sectors and industries, including the agri-food industry.

Numerous economic advantages for both producers and consumers can be derived from the increasing fragmentation and dispersion of processes, which contribute to the development of global value chains (GVCs). However, this also poses certain risks, especially during unexpected shocks in the economy, an example being that demand shocks in one country may be passed upstream through the global production network (through to input suppliers), magnifying the initial shock, while supply disruptions can likewise be transmitted downstream.

In order to evaluate specific vulnerabilities resulting from supply chain linkages, import and export dependencies of the agri-food industry in CEE countries were analysed. A two-fold method was applied. The first method relates to imports of intermediate inputs, such as for instance: seeds, fertilisers, feeds and power. Here, the import requirement ratios (comprising of direct and indirect linkages) were calculated using the Input-Output technique.[v] The second method is conceptually straight forward,and relates to the exchange (import and export) of finished goods.

Import-dependence of the agri-food industry

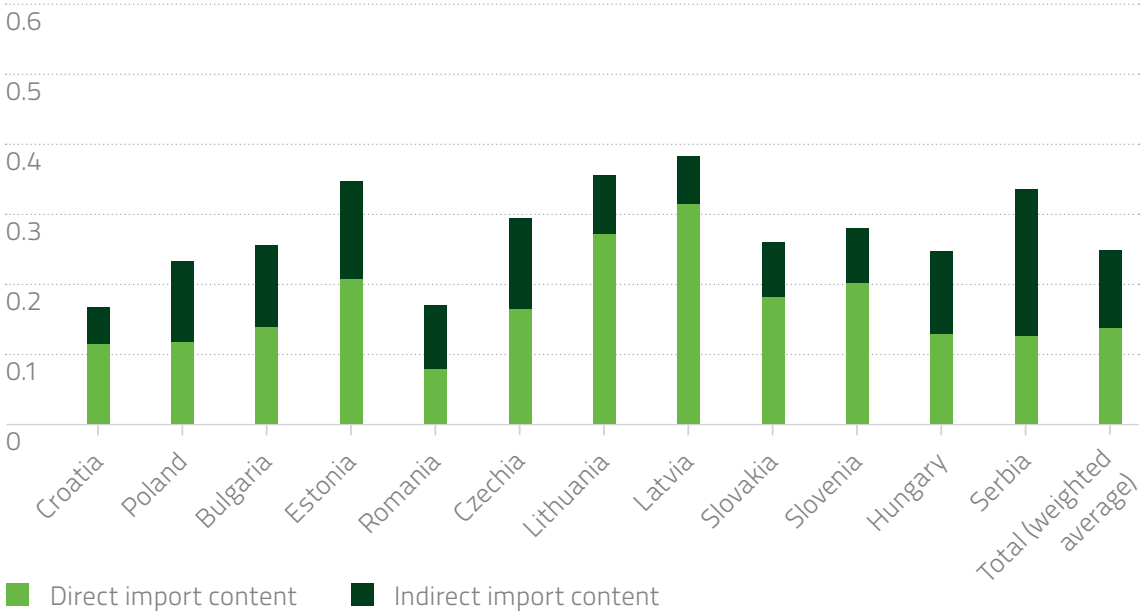
Import-dependence related to the intermediate inputs.
The use of imported intermediate inputs, goods and services in a given economy represent a stream of money flowing out of the domestic economy to foreign countries.

In the case of intermediate inputs, the outflow of money, as a result of import, is double-faceted – on the one hand, it's the value of intermediate goods and services used by a certain sector or industry required to produce a unit of value of output, defined as direct import dependence (or direct import content). On the other hand, there is also an indirect import dependence which relates to the imported goods and services, which have not been directly used in the production process of the sector or industry (in this case the agri-food industry), but were used as intermediate inputs by other sectors in the domestic economy, which deliver intermediate inputs to agri-food industry. A sum of these two indicators gives a complete picture of the total amount of intermediate inputs required to produce one unit of output of the agri-food industry. The higher the value of total import content, the stronger the import dependency, hence the greater potential vulnerability to trade shocks. Countries should not however strive to minimize their import content, but rather look for a healthy balance, as studies suggest that increased access to imported inputs may facilitate product diversification and trigger pro-competition effects, including cost reductions and quality improvements in the final product.[9] The balance between imported versus domestic intermediate inputs is also important since it's argued that a country that relies highly on imports of intermediate inputs may experience lower growth rates consistent with balance-of-payments (BoP) equilibrium.[10]

The agri-food industry in the CEE region has a fairly low reliance on imports of intermediate inputs – the weighted value[vi] equals 0.24, with detailed results as follows.

[v] The input-output technique is a modelling technique based on the use of the so-called Input-Output tables. The most recent Input-Output tables were used for each of the countries – for Serbia, the data is from 2015, for the rest of the countries – from 2014. Based on the literature review, the assumption on stability of technical coefficients (defined as the input requirements (amounts of commodities) per unit of output (for each commodity)) is probably not violated (as the technology is not rapidly changing), therefore the data not being recent should not be a concern.
[vi] Weighted by each country's share in the total GDP of the analyzed countries.

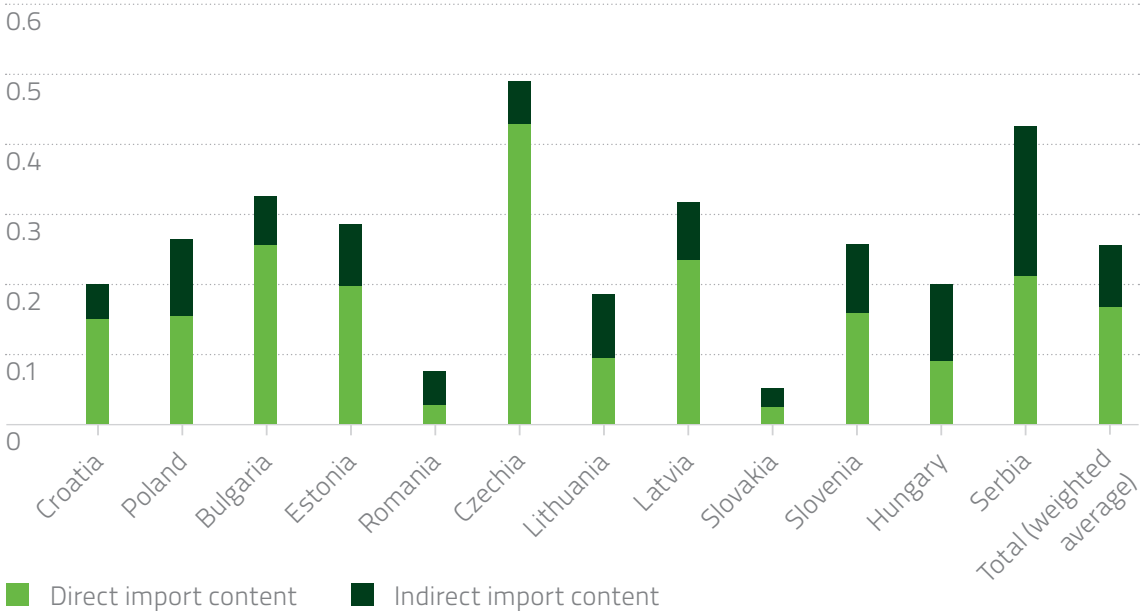
Figure 21: Total import dependence of intermediate inputs of the crop and animal production, hunting and related service activities sector



Source: own elaboration based on input-output calculations

The highest total dependence on imported intermediate inputs in the crop and animal production sector can be observed in Latvia and Lithuania, whereas the lowest in Croatia and Romania.

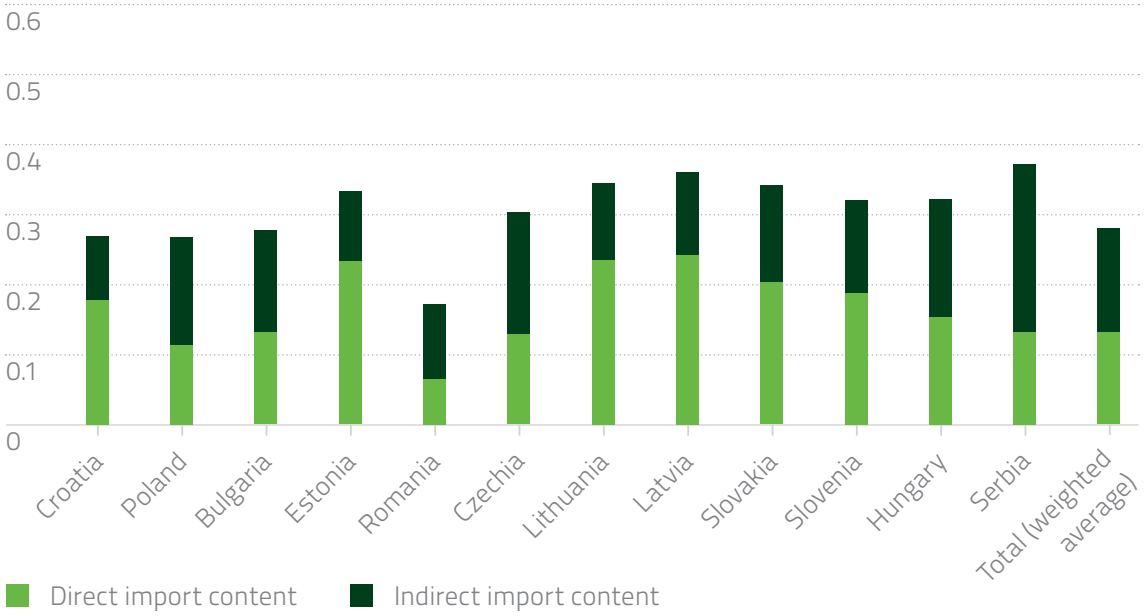
Figure 22: Total import dependence of intermediate inputs of the fishing and aquaculture sector



Source: own elaboration based on input-output calculations

The highest total dependence on imported intermediate inputs in the fishing and aquaculture sector can be observed in Czechia and Serbia, whereas the lowest in Slovakia and Romania.

Figure 23. Total import dependence of intermediate inputs of food, beverages and tobacco manufacturing sector



Source: own elaboration based on input-output calculations

Serbia and Latvia record the highest total dependence on imported intermediate inputs in the food, beverages and tobacco manufacturing sector with Romania recording the lowest total dependence on imported intermediate inputs across the analyzed countries.

When compared with other sectors in the CEE region, the agri-food industry has a relatively low total import content of intermediate inputs[vii] with some sectors, like manufacturing of coke and refined petroleum, manufacture of computers, electronic and optical products or manufacture of vehicles exceeding 0.5 of the total import content value.

Import-dependence related to the final demand components.
Imports of goods and services, which are consumed in the economy without any transformation, can be defined as direct import for final demand. It comprises the following components: personal consumption, government consumption, investments (gross capital formation) and exports. Final demand satisfied directly by imported products (e.g., household expenditures on computers and electrical appliances) does not affect domestic activity; meaning does not create additional GDP, employment or incomes.

Our analysis shows that direct import dependence varies significantly across final demand components as well as the agri-food sectors in the CEE region.

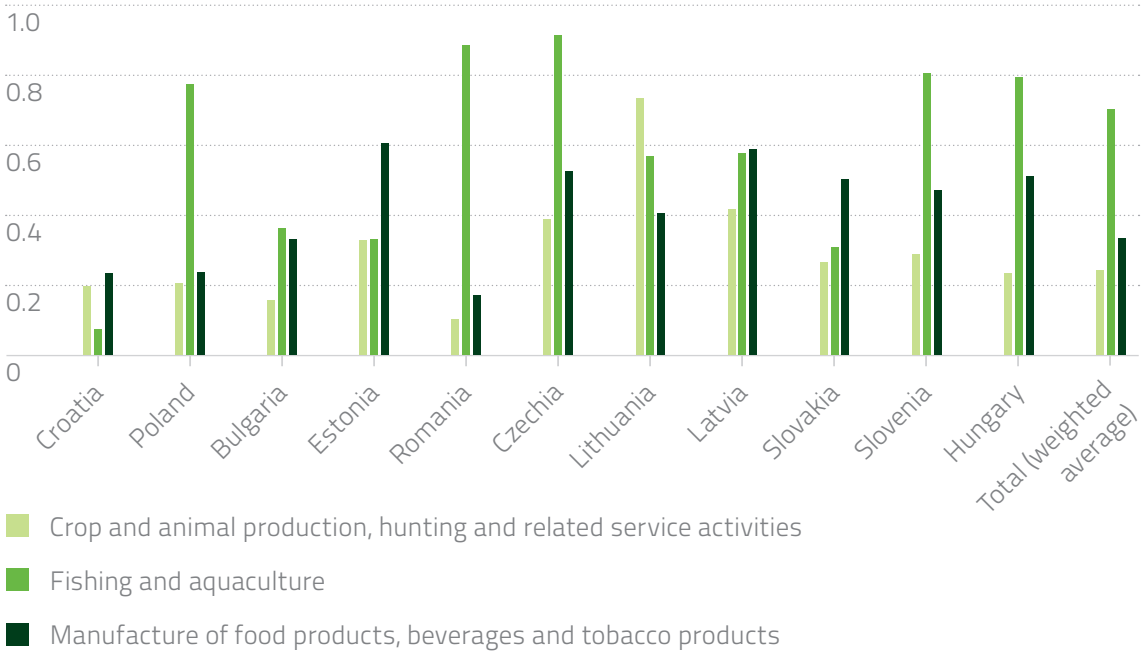
[vii] It's worth noting that the value of the total import content is dependent both on the share of imported intermediate consumption in the total intermediate consumption as well as the share of total intermediate consumption needed to produce a unit of output

- **Households' import dependence.** The highest dependence of households for imported goods can be observed in relation to the fishing and aquaculture final products – over 68%[viii] of total household expenditures on products from the fishing sector concern imported products. This is understandable when considering the nature of this industry – not all CEE states have access to the sea, and through this fact alone are likely to have smaller value adding processing facilities for fish products. Fish typically require quick processing and shipping of the final products.

Food products, beverages and tobacco have a fairly low import ratio – on average only 3 out of 10 of products of this sector come from import. This ratio however differs across countries, and is the highest in Estonia Latvia (6 out of 10 products) and lowest in Romania and Poland (around 2 out of 10 products).

Finally, goods from the crop and animal production, hunting and related service activities sector, are amongst those that the least imported in the agri-food sector, with an average direct import dependence of 0.23. The highest import in this sector can be observed in Lithuania (0.71) and the lowest in Romania (0.10) and Bulgaria (0.15).

Figure 24: Direct import dependence of households related to the agri-food industry: Direct import dependence of households related to the agri-food



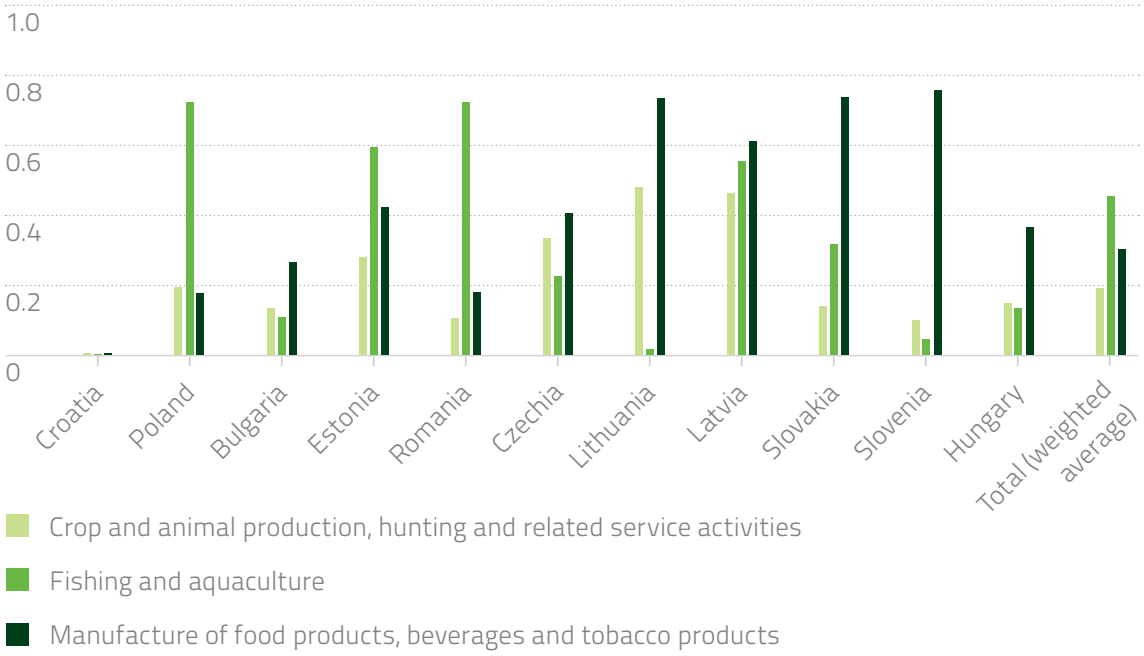
Source: own elaboration based on input-output calculations

[viii] All presented values are weighted by each country's share in the total GDP of CEE region.

- **Government sector import dependence.** Final consumption expenditure by general government includes the value of goods and services purchased or produced by general government and directly supplied to private households for consumption purposes.[ix] Hence, the higher the imports of the government sector, the more detrimental the consequences of potential supply disruptions resulting from closing borders or slowing down of the transboundary movements of good.

  The situation in the agri-food industry across the CEE countries with regards to the government sector import dependence is highly variable – the highest dependence in most countries relates to the fishing and aquaculture – this is consistent with the results for the other two components of final demand. The direct import dependence of the government sector is especially high (when fishing and aquaculture is concerned) is especially high for Poland (0.73), Romania (0.72) and Latvia (0.56). There are however on the other hand a few countries with this indicator below 0.5 – Croatia, Lithuania and Slovenia. In the crop and animal production sector the highest import dependence is recorded for Latvia and Slovakia (still with both below 0.5), and in the food and beverages manufacturing - for Slovenia, Slovakia and Lithuania.

Figure 25: Direct import dependence of government sector related to the agri-food



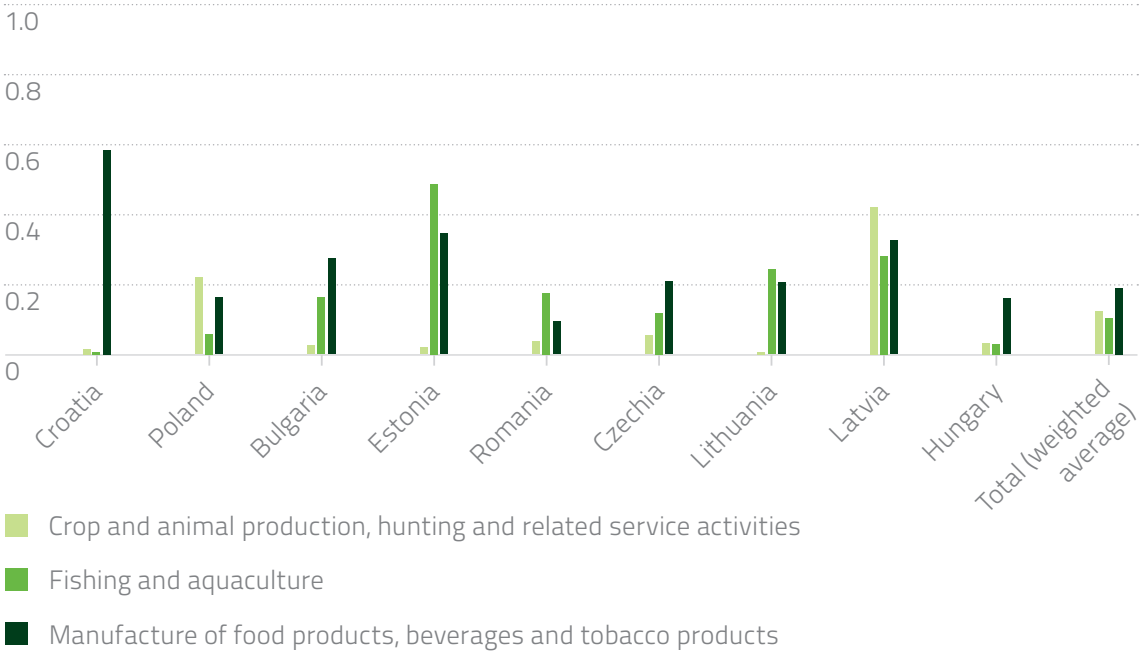
Source: own elaboration based on input-output calculations

[ix] https://ec.europa.eu/eurostat/web/products-datasets/product?code=tec00010

- **Gross capital formation import dependence.** Gross capital formation, defined as additions to fixed assets, plus the net change in inventories is an important measure, since capital is a fundamental component of agricultural production – local producers rely on, amongst other things, spare parts for machines, and replacements needed to maintain structures such as barns, stables and storage facilities.
  A high share of imported goods in fixed capital, in the event of trade disruptions, might contribute to a shortage of these capital goods and in turn, lead to their replacement with labour, which would, ceteris paribus, reduce the profitability of operations or lead to slower growth in production over the medium term.

In the CEE agri-food industry however, the possibility of these negative consequences is fairly low, as the direct dependence of gross capital formation does not exceed 0.2 for any of the three agri-food sectors. In just a few cases, the values reach values higher than 0.4 – in Croatia (0.56) in the manufacturing of food and beverages sector, in Estonia (0.47) in the fishing sector and in Latvia (0.4) in the crop and animal production sector. Detailed results are presented below:

Figure 26: Direct import dependence of gross capital formation related to the agri-food sector



Source: own elaboration based on input-output calculations

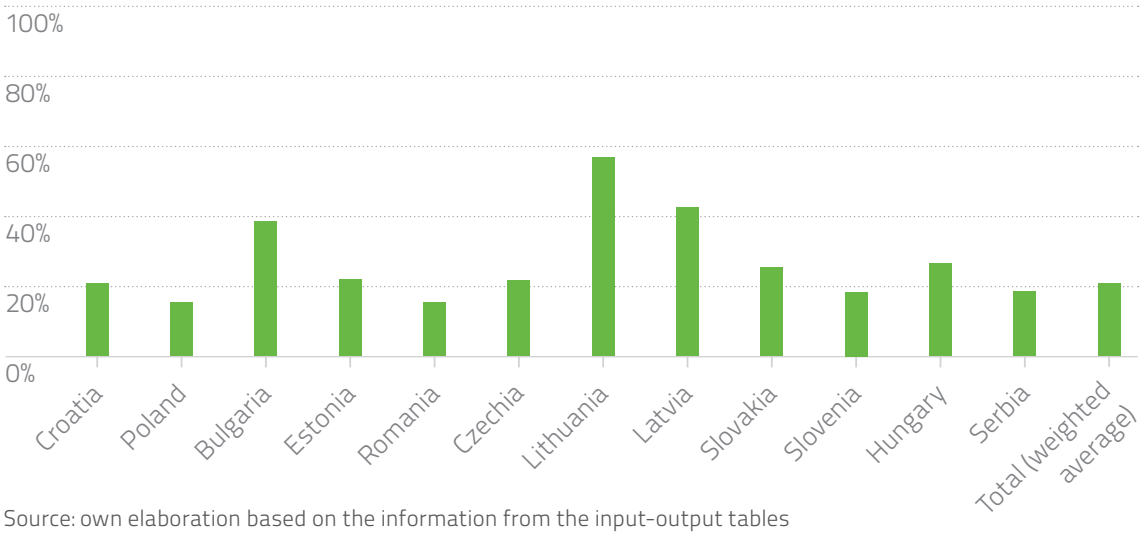
Export-intensity of the agri-food industry

Due to the liberalisation of trade on global markets, including the agri-food markets, export competitiveness has become increasingly important in ensuring long-term success of companies by contributing to the creation of their competitive advantage.

Export-intensity of the agri-food industry in the CEE region is low, and below average for all sectors. It equals 19% in the crop and animal production sector, 30% in fishing and 28% in manufacturing of food beverages and tobacco.

The country where the largest percentage of crop and animal production is exported is Lithuania (50%), making it more vulnerable to potential shocks resulting from a lower demand from trading partners, whereas the smallest percentage of total output comes from Poland (14%).

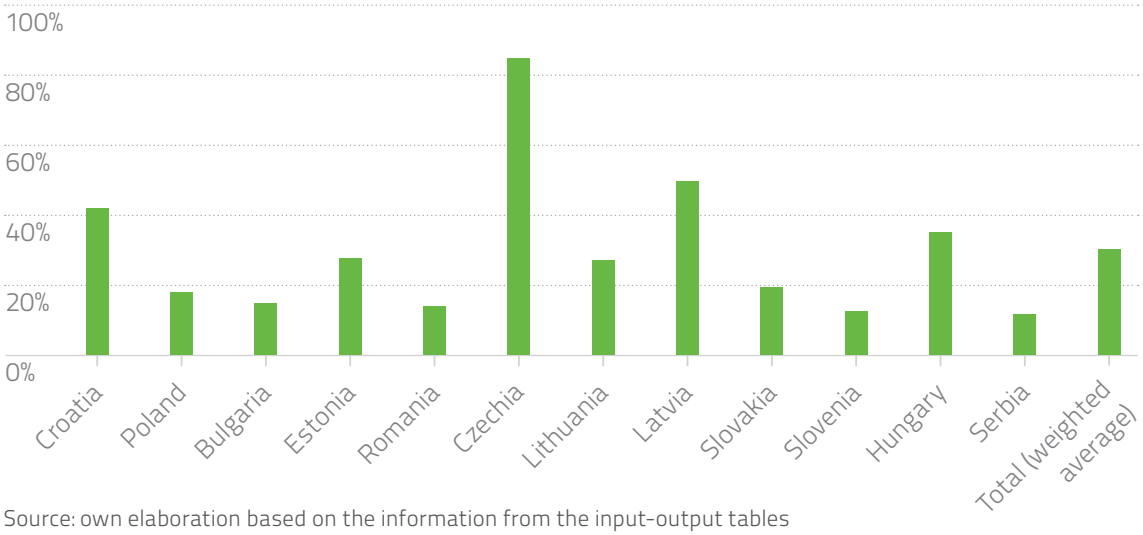
Figure 27: Export intensity of the crop and animal production, hunting and related service activities sector



Source: own elaboration based on the information from the input-output tables

In the fishing sector, as much as 84% of total output produced in Czechia is exported. On the other hand in Serbia only about 12% is sent abroad, and the rest is being used domestically.

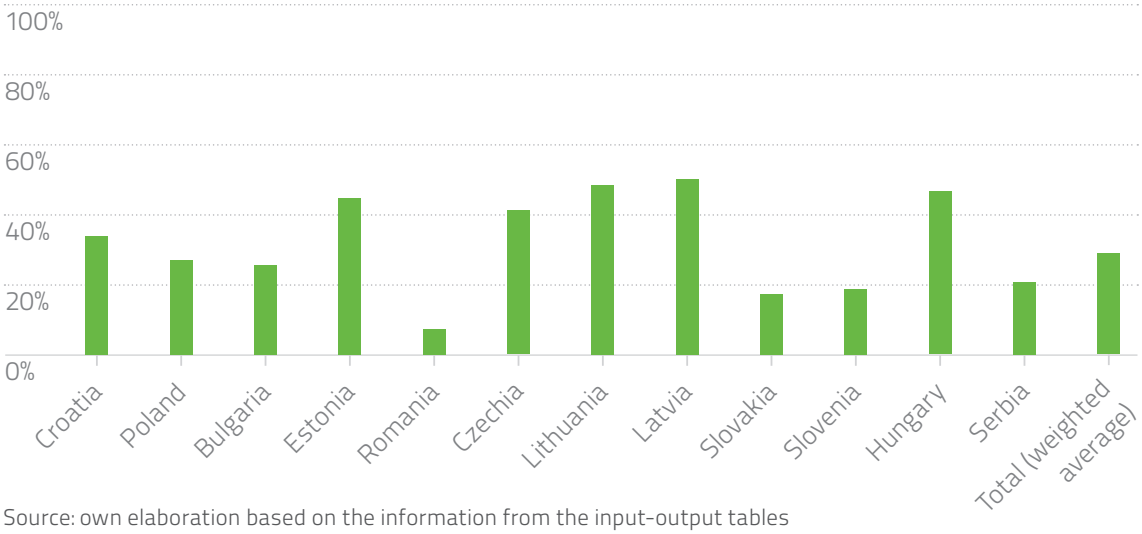
Figure 28: Export intensity of the fishing and aquaculture sector



Source: own elaboration based on the information from the input-output tables

In the manufacturing of food, beverages and tobacco sector almost 50% of output in Latvia is produced for exports. On the other hand, Romania consumes as much as 93% domestically and sends only 7% of its output abroad.

Figure 29: Export intensity of the food, beverages and tobacco manufacturing sector



Source: own elaboration based on the information from the input-output tables

Macroeconomic & demographic vulnerabilities

The macroeconomic & demographic vulnerabilities in Central and Eastern Europe vary depending by country. Therefore, the main vulnerabilities identified are presented below on a country-by-country basis.

However, there are still vulnerabilities, which are significant issues in majority of the countries, and therefore, can be presented at the regional level.

Regional-level

Significant regional-level vulnerabilities	Description
Ageing population	An ageing population is a demographic issue seen throughout the CEE region. This trend leads to a lower share of working-age population and puts a strain on both public budgets and employers seeking adequately skilled workers.
Labour & skill shortage	Through the CEE, employers are often finding it difficult to find the necessary workers they need. There are various reasons behind this, of which the significant ones include, the ageing population, emigration into Western Europe (i.e. "the brain drain"), and skills mismatch.
Pressure on cost competitiveness	With economic growth, capital and labour costs are also increasing. Currently, many CEE countries have to transition away from the low- labour cost competitiveness model that was a significant driver for foreign investors in the past.
High dependence on external markets	Foreign Direct Investment (FDI) has played a significant role in the development of Central and Eastern European economies. Today, the economies are still vulnerable to external market shocks. This is especially true for smaller nations, such as the Baltic States.

Country-level

Aside all of the above-mentioned macroeconomic and demographic vulnerabilities visible at the regional-level, each country within Central and Eastern Europe also has its own most pressing vulnerabilities. At the country-level analysis, the vulnerabilities listed below are considered the most important non-pandemic related risks to a sustainable economic recovery.

Bulgaria	Croatia	Czechia
Low level of FDI	Income not rising fast enough to catch up to EU-average levels	Labour and skill shortages
Adverse demographic trends	Ageing population	Continuous increases In unit labour costs – threatened cost-competitiveness
High level of economic inactivity and labour shortages	Significant exposure of private sector debt to foreign exchange risk	Ageing population
Subject to external risks in near-term outlook	Emigration and brain-drain issues	Decreasing consumer confidence

Estonia	Hungary	Latvia
Skills shortages	Low productivity growth	Slow investment growth
Pressure on cost competitiveness	Shrinking working age population	Slowing foreign demand
Low investment in research and innovation	Skilled worker shortage	Concerns for cost-competitiveness
Elevated early school leaving		Skills shortages
Slowing economic growth		

Lithuania	Romania	Poland
Dependent on external markets	Consumption-led growth model	Ageing population
Increased spending pressures	Rising deficits	Labour shortages
Deceleration of productivity growth	Negative trade balance	Increasing fiscal deficit
Low FDI rates	Significant labour shortages	Low household savings and investment rates
Low innovation	Low labour force participation	

Serbia	Slovakia	Slovenia
Ageing population	Ageing population	Ageing population
High unemployment	Fast-growing expenditure	Decelerating economic growth
Low FDI rates	Labour shortages	Exposure to uncertainty at global level
Low-added value on exports	Labour costs outpacing productivity	Faltering investments in machinery and equipment
	High household indebtedness	Imports outpacing exports

COVID-19 Impact Mapping across CEE

COVID-19 in CEE – Containment Measures across Countries

The COVID-19 Pandemic has directly affected thousands of people across Central and Eastern Europe. As of mid-September 2020, in the twelve countries analyzed in this report, there have been over 335 thousand confirmed cases of COVID-19. In this same timeframe, nearly 10 thousand people in the region have died as a result of COVID-19.

The most cases and deaths per capita have been reported in Romania, where 5.69 out of every 1000 inhabitants has at one point tested positive for the virus and 0.23 out of every 1000 inhabitants has died from it. The lowest rates for both cases and deaths are visible in Slovakia, Latvia, and Lithuania. As of mid-September, it is still too early to talk about a recovery or decline in cases. With several countries currently recording a second spike in positive cases, the rate of infection is still not slowing down in the region

As the pandemic continues to be active, with time, individuals, businesses, and governments alike have begun to adjust.

Costumers are returning to a more normal life, cautiously, while businesses are adapting to the changing customer needs and hygiene requirements. Governments are also learning to put in place more localized, effective containment measures. The foresight analysis will focus not on the raw number of cases and deaths, but rather on the economic and political reaction. The latter is defined by both containment measures put in place and support mechanisms.

During the onset of the pandemic, the governments of the countries in the region all to took the necessary measures to ensure both a slow of the spread and support for impacted businesses. The nature of these measures varied and therefore, this report refrains from generalizing them across the region. Instead, in the next two sections, each country's containment measures and support mechanisms are presented individually. The countries are grouped by their assigned sub-region, which serve no analytical purpose and are only used to increase the readability of the sections:

Baltics
Estonia, Latvia, Lithuania

The Balkans
Bulgaria, Croatia, Romania, Serbia, Slovenia

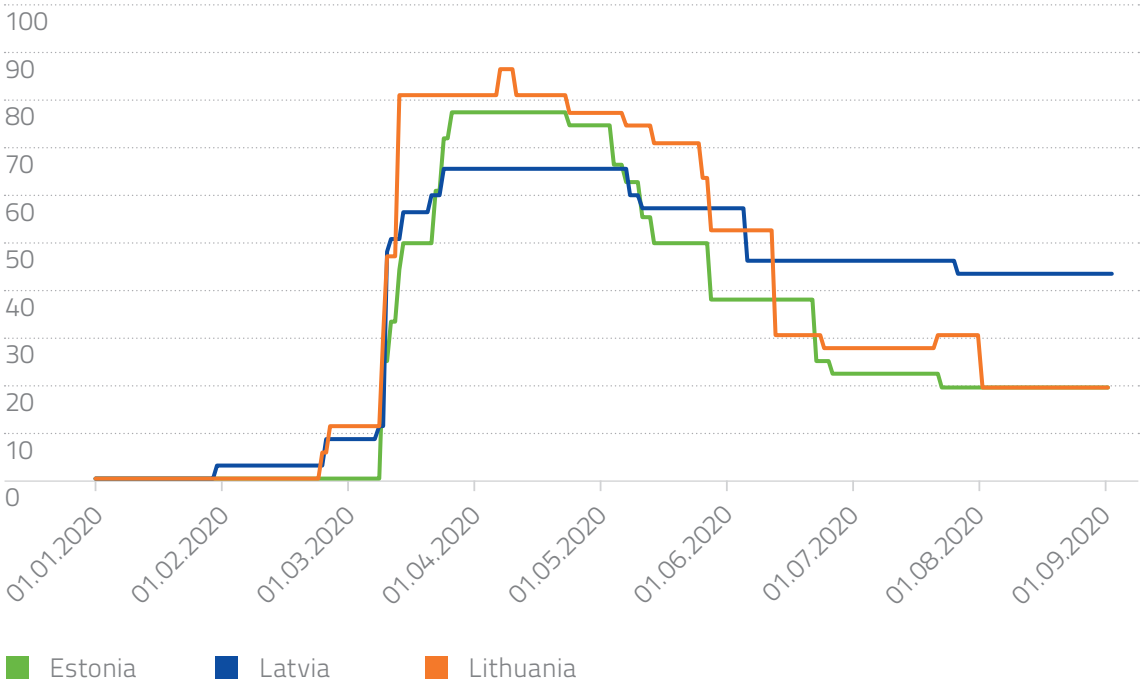
Visegrad Group
Czechia, Hungary, Poland, Slovakia

Stringency Index defined

The measure of stringency adopted and published by the Oxford COVID-19 Government Response Tracker (OxCGRT) measures various ways in which governments responded to the COVID-19 pandemic. It compounds the score of nine indicators for an ultimate result between 0-100, 100 being the most restrictive. In the indicator included are the responses to school closures, workplace closures, cancelled public events, restrictions on gatherings, closing public transport, public information campaigns, stay at home orders, restrictions on internal movements. It also includes measures of the country's testing policy and contact tracing. The Stringency Index is not necessarily a rating of the country's effectiveness on dealing with the pandemic, but it helps to understand the development of preventive measures over time.

Baltics

Figure 30: Stringency Index, Baltics



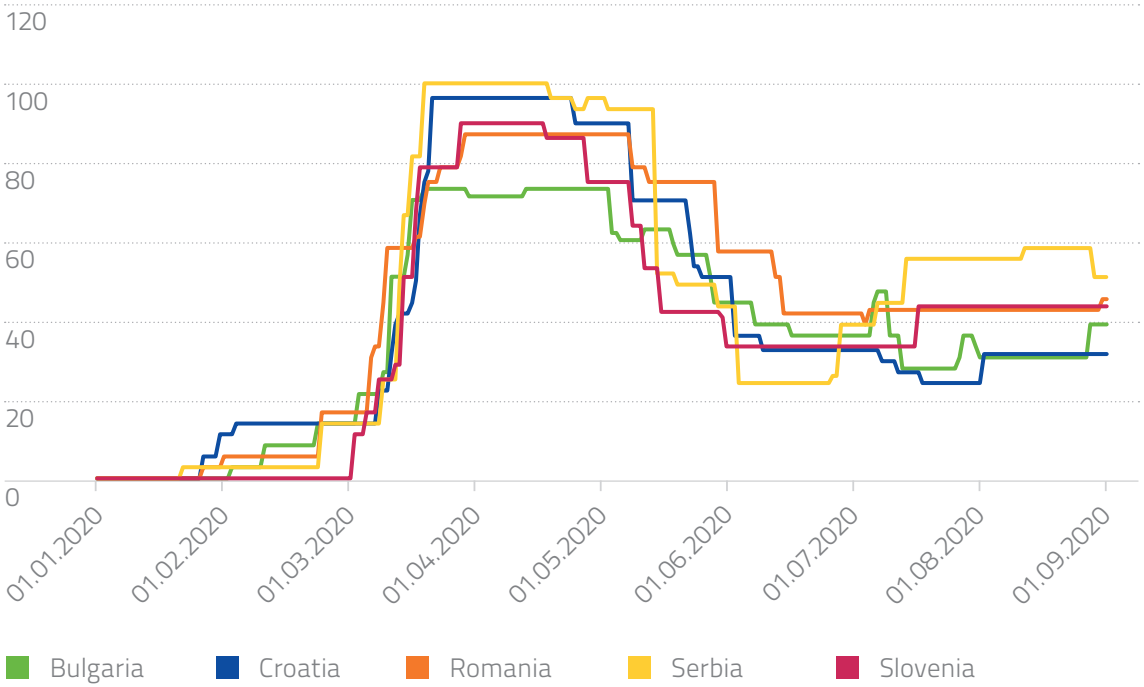
Source: Deloitte, Oxford (OxCGRT)

Country	Containment measures
Estonia	State of emergency in place between 12 March and 17 May. For a time, restaurants, bars etc. were forced to close down. As restrictions loosened they were able to begin operating again. Non-essential businesses were also locked down.
Latvia	Latvia introduced a state of emergency on 12 March. Social distancing, hygiene, information access and health monitoring measures in place. Non-essential businesses, including restaurants, had to close down in March and April, with some reopening in May and June.
Lithuania	Quarantine effective between 16 March and 16 June 2020. For a time, the activities of restaurants, bars, cafes etc. were prohibited, except for the delivery of food. Other stores were also closed down, except for essential services such as groceries, pharmacies, etc. Hotels and other such facilities would be used to isolate individuals on the basis of an agreement between the business owner and municipalities. Starting from 27 April, non-essential businesses began gradually reopening again, starting with catering services being able to serve customers outdoors. Restaurants and bars opened fully since 18 May, with social distancing requirements.

Source: Deloitte, IMF Policy Responses to COVID-19, European Commission Policy measures taken against the spread and impact of the coronavirus – 17 July 2020

The Balkans

Figure 31: Stringency Index, The Balkans



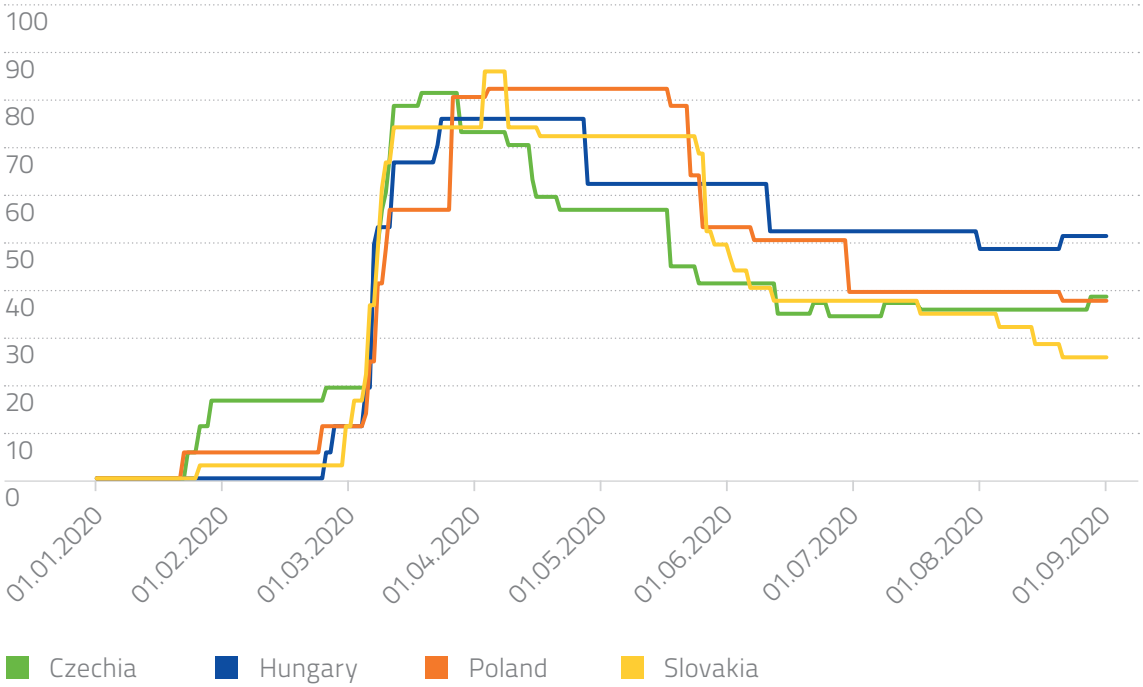
Source: Deloitte, Oxford (OxCGRT)

Country	Containment measures
Bulgaria	Around 3 months of strict business closures, including restaurants, shopping malls and hotels. Most groceries, supermarkets, pharmacies etc. remained open. Since 3 June, indoor restaurants and cafes are allowed to operate again. Lockdown measures in place until 31 July.
Croatia	Lockdown measures in place since March. Non-essential businesses, such as restaurants, cafes, etc. were closed. Groceries, supermarkets and pharmacies open with certain hygiene and distancing restrictions.
Romania	State of emergency introduced on 16 March. Replaced by a state of alert on 15 May. Businesses, schools, museums and other public institutions were closed. Since 15 May, the economy was gradually reopened in several stages.
Serbia	A state of emergency was declared on 15 March, as well as a curfew being introduced on 18 March (between 5 pm and 5 am). For a time, citizens aged 65 and above were forbidden from leaving their homes. Schools, public institutions and non-essential businesses were closed.
Slovenia	Provision and sale of goods and services directly to customers was halted, with the exception of essential services (restrictions eased from 20 April onwards); The Slovenian government announced the end of the coronavirus pandemic on 14 May; Public transport had been banned and has been resumed from 11 May, international transport ban lifted on 12 May; All stores opened on 18 May and restaurants were able to serve customers indoors from that date; Tourism has reopened on 18 May, beginning with smaller accommodation businesses; As of 25 June, wearing of face masks and disinfection of hands is again mandatory in indoor public places and in public transport

Source: Deloitte, IMF Policy Responses to COVID-19, European Commission Policy measures taken against the spread and impact of the coronavirus – 17 July 2020

Visegrad Group

Figure 32: Stringency Index, Visegrad Group



Source: Deloitte, Oxford (OxCGRT)

Country	Containment measures
Czechia	State of emergency lasting for 67 days. Sales of goods and services on the business premises was prohibited – excluding essential businesses. Accommodation services were also disallowed except for guests who needed accommodation for work or business purposes. Later, restaurant and cafes were allowed to start operating outdoors and gradually most restrictions were lifted.
Hungary	State of emergency declared. Non-essential businesses had to temporarily shut down. Between 9 and 12 am, only people aged 65 and above could enter grocery stores, pharmacies and other essential businesses.
Poland	A state of emergency was never declared. Non-essential businesses were temporarily closed down. Access to forests was also prohibited for a time. Essential businesses, such as groceries, supermarkets, pharmacies were open with social distancing enforced and customer limits based on the total area or the amount of cash registers. Until 4 May, between 10 and 12 am, stores were only open to customers above the age of 65. Beginning from 20 April, the restrictions were being loosened in 4 stages with churches, hotels, shopping malls, cinemas gradually reopening.
Slovakia	A state of emergency was declared on 12 March, resulting in closures of non- essential businesses. Controls on borders were reintroduced, as well as a compulsory 14-day quarantine for those returning from abroad. Face masks were also deemed compulsory, first in public transport and stores, and later on also outside. Starting from 22 April, a four-stage process of lifting restrictions has begun. Fourth stage was initiated on 20 May, allowing for looser face mask rules and accessing restaurant interiors.

Source: Deloitte, IMF Policy Responses to COVID-19, European Commission Policy measures taken against the spread and impact of the coronavirus – 17 July 2020

COVID-19 in CEE – Support Mechanisms

Once it became clear that the pandemic and resulting containment measures were going to place a significant strain on the economy, governments began to put in place support mechanisms to offset the costs and lost revenue incurred by impacted businesses and workers. Standard support mechanisms included:

- Wage subsidies for workers in affected sectors
- Deferments on loans for businesses
- Deferments on loans to individuals
- Loan guarantee schemes
- Deferral of taxes and social security contributions
- Financial support to vulnerable groups (discretionary welfare programs, etc.)
- Discretionary public spending on investments

This section presents the support measures taken by each of the 12 countries analyzed. No attempt is made to assess the scale or effectiveness of specific programs. Rather, the section is meant to illustrate the comprehensive efforts of the actions and allow the reader to gain insight into countries of their interest.

Baltics

Country	Public Support Mechanisms
Estonia	• Support package worth around €2 billion (7 percent of GDP); • Subsidies to compensate employee's wages for up to two months (March – May 2020). The amount of the subsidy will be 70% of the average monthly wage of the employee but no more than €1000; • Guarantees/collateral for bank loans to allow for rescheduling of payments; • Taxes had to be paid on time wherever possible, but the calculation of interest was suspended; • Business loans for rural companies as well as loans to maintain liquidity.
Latvia	• The government had announced a support package of about €3.4 billion (12% of projected 2020 GDP); • An allowance for idle employees (incl. self-employed) for 75% of prior wage (no less than EUR 180, but capped at EUR 700 per month); • Employees and self-employed not qualifying for the allowance received downtime payment of EUR 180 per month and a supplement of EUR 50 a month for a dependent child; • The allowance period ended on 30 June 2020, with a total of EUR 42,8 million paid, downtime payment with child supplement amounted to EUR 1,3 million; • Sick leaves caused by COVID-19 are covered by the state; • Moratoriums of loan and mortgages payments; • Deferral of tax payments for up to three years per company's request. Deadline for submitting FY19 reports extended by 3 months. Faster refund of excess input VAT; • Expenditure measures supporting idle workers and social benefits; • A sectoral support package of €875 million covering the air and transport industry, health and education sectors as well as infrastructure projects; • Support for affected agricultural, fisheries and food production sectors and school catering of EUR 45.5 million; • Farmers in need of additional current assets to lessen negative impact of COVID-19, are eligible to advance payment of the single area payment as a short-term interest-free loan; • Subsidies for purchases of protective gear, laboratory equipment, medical supplies, premium for medical personnel.

Lithuania	• The government announced an overall fiscal package of 2.5 billion euros (5 percent of 2019 GDP), later on an additional 1 billion was added. • Wage subsidies for employees in affected sectors and companies; • EUR 3 million allocated towards an around 15% increase in salaries of healthcare workers; • Extended wage subsidies for persons returning from downtime or unemployment, as well as job search allowances offered for those who dropped out of the labour force; • EUR 56 million to provide SMEs with interest compensation for deferred loans or to finance lease payments; • Moratoriums for natural persons – up to 12 months for mortgages and up to 6 months for leasing and consumer credit; • Moratoriums for businesses – postponement of loan payments for up to 6 months; • The government expanded guarantee schemes, including guarantees for agricultural as well as SME loans by around 1.3 billion euros (2,6 percent of 2019 GDP); • Deferring or arranging the taxes in instalments according to agreed schedules without interest to be paid; • The government has increased financial support to the agricultural sector through the Agricultural Loan Guarantee Fund. Affected dairy farmers will receive additional state aid of 18.5 million euros; • Additional help for micro-enterprises.

Source: Deloitte, IMF Policy Responses to COVID-19, European Commission Policy measures taken against the spread and impact of the coronavirus – 17 July 2020

Southeastern Europe

Country	Public Support Mechanisms
Bulgaria	• Wage subsidies for workers in affected sectors; • Deferments of loans to individuals; • Loan guarantee schemes; • Corporate tax deferral until 30 June; • VAT reduction for restaurant services, books and baby food from 20 to 9 percent until the end of 2021; • Possibility for registered unemployed to sign labor contracts with agriculture producers without losing their unemployment benefits; • A minimum wage subsidy for the duration of three months to companies that hire an unemployed person.
Croatia	• Employee protection mechanisms – grants for preserving jobs in the affected sectors, effectively meaning compensation of salary costs in the amount of the minimum net salary per employee for three months, starting 1 March 2020; • A three month moratorium on all loan related obligations to banks, whether for businesses or individuals (with possible extension by another 3 months); • Deadline for VAT payment extended until 30 June; • Personal Income Tax returned earlier; • The government has resorted to purchasing unsold stocks of finished goods in agriculture, food processing industry, medical equipment, and similar strategic goods.

Romania	• Announced key tax and spending measures amount to about 2 percent of 2019 GDP. On top of that, another 1.5 percent of GDP was put towards guarantees and subsidized interest for working capital and investment of SMEs. • Partial covering of the wages of parents forced to stay home for the period in which the schools were closed. • Partial covering of the wages of self-employed and workers in danger of being laid off. • Bonuses of approximately EUR 500 per month for health workers treating COVID-19 patients. • A parliamentary bill granting 30% salary increase to medical personnel dealing with Covid-19 infections, for the state of emergency period and the following 3 months. • The Government has issued legislation that banks will defer loan repayments for households and businesses affected by COVID-19 for up to nine months.
Serbia	• Adopted fiscal measures amounted to about EUR 3 billion, which is 6,5 percent of the country's GDP; • 10 percent wage increase for the public health sector; • Wage subsidies for SME employees and entrepreneurs for 3 months and payment of 50% of the net minimum wage for employees in large private sector companies and the currently unemployed; • A moratorium on loans for businesses and individuals; • A state guarantee scheme for bank loans to SMEs; • New loans to SMEs from the Development Fund; • Three-month deferment of labor taxes and social security contributions for all private companies; • One-time payment for all pensioners; • Universal cash transfer of EUR 100 for each citizen above the age of 18.
Slovenia	• A stimulus package of EUR 1 billion (2,2 percent of GDP); • Wage subsidies for parents, quarantined people and workers suspended due to pandemic-related closures; • Affected individuals and businesses could defer their loan repayments for up to 12 months; • Portfolio guarantees under the European Cohesion Policy Funds to finance SME's investments and operations; • Tax deferrals for up to 24 months or tax payments in installments; • Reduction of the tax base (by 50%) from potential market income from cultivation on farmland by 50% from cadastral income and reduction of the tax base from potential market income from production in hives by 35% of the lump-sum estimate. • Pensioners with pensions below EUR 700 were entitled to a one-off crisis bonus in the amount of EUR 130-300; • One-off crisis bonus would also be paid for all students (EUR 150); • Holders or members of farms who are sick receive financial assistance of • 80% of the minimum wage; holders of commercial fishing licenses are entitled to 40% compensation of total mooring fees for fishing vessels in 2020; for aquatic organism growers, the payment of water fee is reduced for 40% of the total value in 2020. • The National Assembly has adopted a bill on emergency measures for agriculture and food products, meat and food products (allowing the government to set prices for individual groups of food products and limit their traffic).

Source: Deloitte, IMF Policy Responses to COVID-19, European Commission Policy measures taken against the spread and impact of the coronavirus – 17 July 2020

Visegrad Group

Country	Public Support Mechanisms
Czechia	• Total value of announced measures reached 20.8% of GDP; • State support to maintain employment, salary contributions; • Moratorium of loans and mortgages for either three or six months (debtor's choice), available for both natural persons and businesses; • Operating loans available for SMEs; • Loans for export-oriented large companies; • Tax submission deadline extension, reduced penalties for late payments of social securities by employers; • Compensation of wage costs, support for parents and the self-employed; • Help aimed at the agricultural sector - "Support and Guarantee Agricultural and Forestry Fund, Operation 2020 - reduction of the loan principal".
Hungary	• On 4 April, the authorities announced the creation of two funds, for a total of HUF 2.000 billion (4.3% of GDP); • A wage supplement of HUF 500,000 due in June/July for health care workers, which will cost the budget around HUF 70 billion (0.15% of GDP); • Moratorium on loan payments for companies and individuals until the end of the year; • Short-term loans to businesses were extended to 30 June; • Credit guarantee and capital programmes have been announced to boost corporate liquidity; • Most severely affected sectors are exempt from paying social security contributions, payroll taxes and small business tax; • Employers are exempt from paying contributions and taxes on their workers' wages in several agriculture related sectors.
Poland	• At the beginning of March, Polish government announced a support package amounting to around EUR 47.3 billion. • Guarantees increased to 80% of a loan's value; • Wage payment for those who cannot work; • Helping employers cover 40% of their employees' wages (up to the average wage level); • Financial aid for the self-employed and working on commission; • Companies offered loan guarantees, liquidity support and micro loans (up to EUR 1100); • Healthcare support aid, medical equipment, etc.;
Slovakia	• Public support spending amounted to around EUR 1.7 billion, or 1.8% of GDP; • Lump-sum contributions and wage compensations for affected employers and the self-employed; • A subsidy aimed at maintaining employment, reimbursement of 80% of employee's gross wages if the company had to suspend its activity due to the government's decision; • SMEs, the self-employed and individuals could defer their loan payments for up to 9 months, rent moratorium was also imposed up until 30 June; • State guarantee scheme covering both SMEs and large companies; • An extension of the deadline for the submission of income tax returns and the payment of tax.

Source: Deloitte, IMF Policy Responses to COVID-19, European Commission Policy measures taken against the spread and impact of the coronavirus – 17 July 2020

Impact Mapping

This section begins with a brief theoretical framework on how to structure different impact channels through which COVID-19 can adversely affect the agri-food industry. The framework is formulated on the basis of historical information and the identified vulnerabilities in the previous sections. With this framework in mind, the remainder of the sections presents out the quantitative and qualitative information on the pandemic-related impact felt in the agri-food industry in from March into September 2020. The impact channels and disruptors identified here are broken down by agri-food value chain segment. The list focuses on significant disruptors confirmed in multiple countries within the region.

Theoretical framework for COVID-19 impact on the agri-food industry

Table 2: Impact Mapping Framework

Impact channels	Demand-side effects (agri-food perspective)	Supply-side effects (agri-food perspective)
Real shocks (impulses in the real economy)	• Changes to domestic demand and its structure (e.g., reduced demand in restaurants and hotels) • Changes to foreign demand and its structure (due to restrictions in transportation, border closures, etc.) • Payment gridlocks and bankruptcies affecting recipients and suppliers	• Lower supply or higher cost of intermediate consumption (goods and services used in food production & processing; e.g., reduced access to animal feed, fertilizers) • Lower supply and/or lower productivity of the labour (absences, illness, quarantine, lack of seasonal workers etc.)
Financial shocks (impulses in the financial sector)	• Lower demand for the capital to finance investments in the agri-food industry • Higher demand for the capital to maintain liquidity	• Lower supply or higher cost of the capital for the agri-food industry (e.g., due to tightening credit conditions) • Risk of credit crunch and/ or "sudden stop" regarding international capital flows and/or defragmentation of the financial market
Expectations and behavioural changes	• Increased uncertainty and risk aversion among customers (fear of contagion can result in lower animal protein consumption, reduced visits to restaurants, and increased e-commerce deliveries)	• Increased uncertainty and risk aversion affecting food producers and processors' decision towards accumulation of capital (e.g., investments in new equipment/human capital) • Increased uncertainty among policy- makers leading to implementation of food protectionism measures

Source: Deloitte

Initial disruptors

Despite the fact that many structural statistics regarding the impact of COVID-19 on the agri-food industry have simply not yet been made available due to the typical delay in such reporting, initial insights into how the pandemic has already disrupted the industry have been identified. The adverse effects of the pandemic, whether it be through containment measures, decreasing consumer confidence, or financial shocks related to an economic downturn, has been visible in statistics, case studies, and in the perspective of various experts and industry leaders. This section first presents sectoral heat maps showing the impact of COVID-19 on output and turnover, and then discusses specific disruptors across agri-food value chain segments.

During the COVID-19 disruption, manufacturing of food products and beverages was one of the most resilient industries in terms of recorded production. In April 2020 majority of the analysed economies were in trough (bottom of the recession), particularly due to the severe lockdown measures and elevated uncertainty in the private sector. Production of foodstuffs in CEE countries was only about 13% lower compared to the April 2019 (or equal to the 87% of the production level achieved 12 months before), while production of durable consumer goods fell by 43% on an annual basis. Even worse recession occurred in manufacturing of capital goods, where production almost halved.

Table 3: COVID-19 Heat Map - Manufacturing Output

Production of selected goods CEE GDP-weighted average	March 2020 as % of March 2019	April 2020 as % of April 2019	May 2020 as % of May 2019	June 2020 as % of June 2019	July 2020 as % of July 2019
Manufacture of capital goods	81%	51%	65%	84%	93%
Manufacture of durable consumer goods	84%	57%	79%	101%	112%
Manufacture of non-durable consumer goods	98%	84%	91%	96%	98%
Manufacture of food products and beverages	104%	87%	93%	98%	101%

Source: Deloitte, Eurostat

Table 4: COVID-19 impact heat map – wholesale and retail

Turnover (constant prices) CEE GDP-weighted average	March 2020 as % of March 2019	April 2020 as % of April 2019	May 2020 as % of May 2019	June 2020 as % of June 2019	July 2020 as % of July 2019
Wholesale trade, except of motor vehicles and motorcycles	105%	90%	94%	100%	N/A
Retail trade, except of motor vehicles and motorcycles	98%	87%	98%	100%	102%
Retail sale of food, beverages and tobacco	106%	94%	97%	97%	99%
Retail sale of non- food products (including fuel)	93%	83%	98%	102%	104%
Retail sale in non-specialised stores with food, beverages or tobacco predominating	106%	94%	97%	96%	99%
Retail sale of food, beverages and tobacco in specialised stores	99%	86%	92%	97%	97%

Source: Deloitte, Eurostat

COVID-19 Heat Map – Whole & Retail Turnover

Interestingly, similar trends to those visible in manufacturing sector were present among different segments of retail trade. Broad category of retail trade (trade except of motor vehicles and motorcycles) experienced significant drop in sales only in April, while in May it almost rebounded to the level seen last year. Retail sale of food, beverages and tobacco proved to be more resilient than broad category of trade (94% vs. 87% recorded in April 2020 compared to April 2019). Particularly affected was retail trade of non-food products, which fell by 17% on the annual basis. Among stores offering foodstuffs, specialised ones were more affected by the crisis and their sales fell by 14% in April, compared to 6% drop in non-specialised shops.

In general, broad categories of retail trade experienced relatively mild recession compared to the manufacturing industries, particularly those producing capital-intensive goods or durable consumer goods. Such a trajectory is in line with the evidence from

previous recessions or crises: gross fixed capital formation and inventories are much more volatile and contribute highly to the slump in the GDP, while consumptions usually plays a role of stabiliser.

Monthly retail data from old EU member states and CEE confirm stability of food purchases. Comparison of growth rates of retail sales of food (including beverages and tobacco products) and non-food products (excluding fuels) in CEE and old EU member states leads to two important observations:

- Both sales of food and non-food products grew much faster in CEE than in EU-14 (average growth rate of 2.8% vs 0.4% and 5.7% vs 1.3%); solid economic growth in CEE countries steadily catching up with western counterparts meant stronger income growth than in the West and as a result faster growth of consumption.
- Food sales growth was slower, but steadier than sales of non-food products in both country groups. Just as economic theory predicts - changes in food purchases are smaller than changes in purchases of other goods. Even before COVID-19 nearly all the time growth rate of sales of non-food products was faster than growth rate of food products, with three notable exceptions, with two of them linked to serious economic troubles. During global financial crisis both in CEE and EU-14 sales of non-food products contracted deeper than sales of food. Later during debt crisis in Eurozone, non-food sales suffered more in EU-14 than food sales. Only the last episode was slightly different, when in CEE countries in the second half of 2014 and at the beginning of 2015 food sales were growing stronger than non-food sales.

What has COVID19 taught us about the functioning SMEs in the agri-food industry and how can the EU use these lessons?

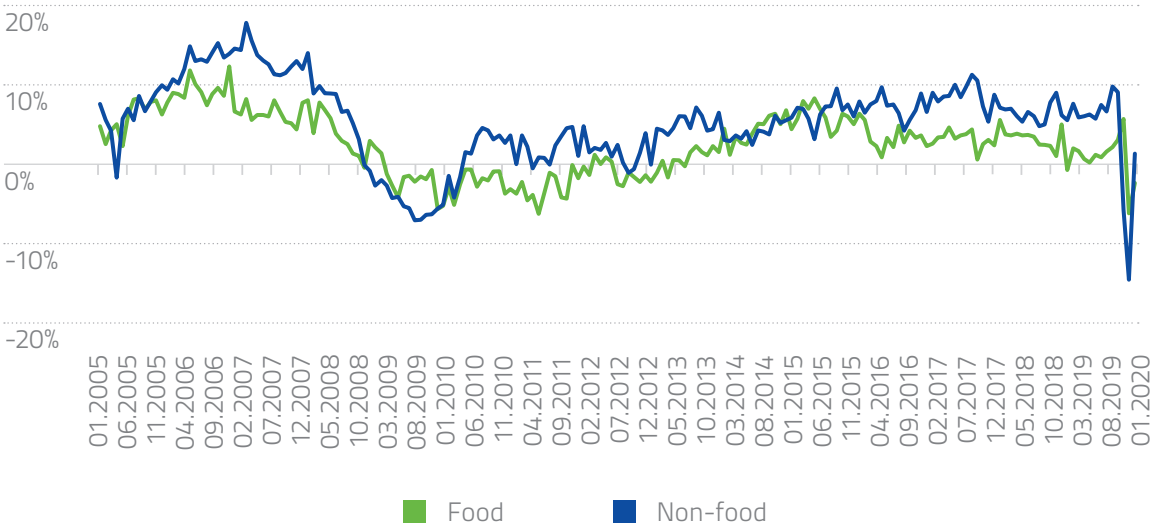
Small and medium sized enterprises throughout various industries have been negatively impacted by the COVID-19 pandemic. A key issue for SMEs has been access to credit and financial liquidity. In fact, according to Business Impact Assessment for COVID-19 conducted by SME Europe in May, 71% of SMEs had noted new liquidity is the key support mechanism needed to get through the pandemic-induced crisis. Through Europe, SMEs in many industries are in need of short-term loans in order to offset the threat of bankruptcy resulting from the drop in demand.

In regards to the agri-food industry specifically, the most at-risk small and medium-size enterprises are those connected to the HoReCa sector. With around 75% fall in tourist consumption in the first few months of the pandemic, any small firm that was dependent on demand from the tourism industry is in dire need of direct and immediate support. This support is necessary to both ensure liquidity within the firms, as well as to retain jobs during the period of slowdown.

Within the agri-food industry, it is also important to note the specificities of the agricultural sector. Within specific countries in Central and Eastern Europe, such as Slovakia and Hungary, small farmers have already been disadvantaged by policy prior to the pandemic. Thus, it is key that in response to this pandemic, adequate action is taking in regards to the allocation of funding aimed at supporting smaller farmers specifically.

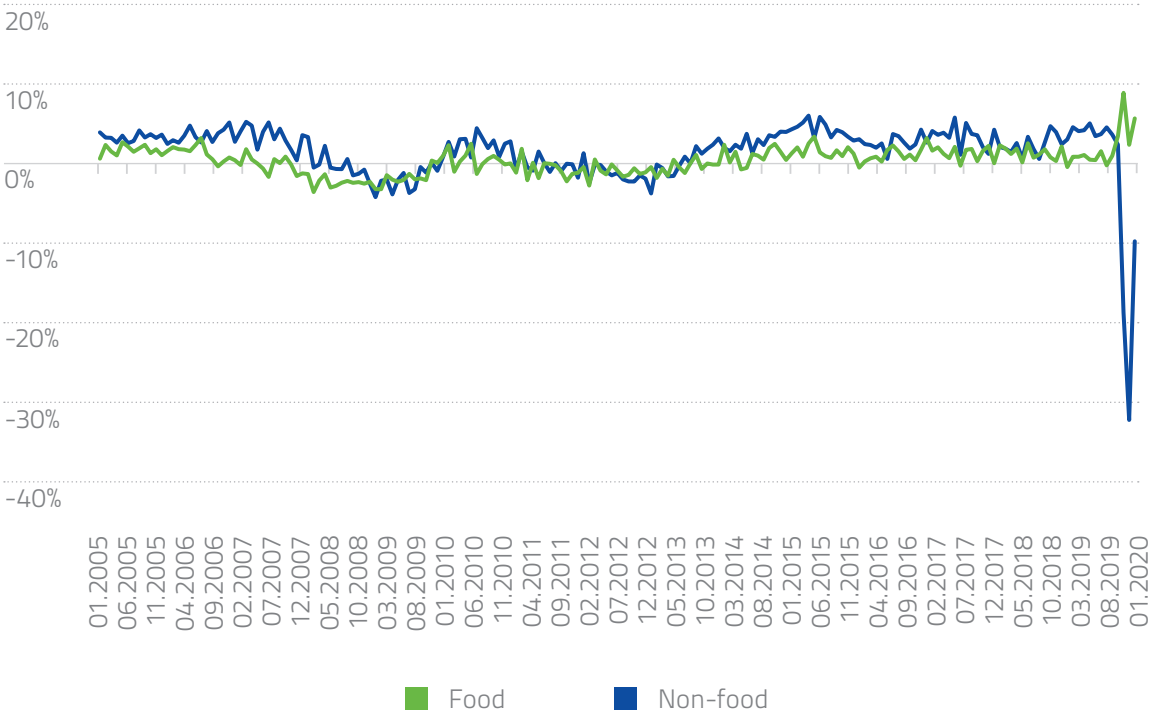
Ivan Štefanec
Member of the European Parliament

Figure 33: Retail sales of food and non-food products, CEE



Legend: change over corresponding month of previous year of Retail sale of food, beverages and tobacco and retail sale of non-food products (excluding fuel), working day and seasonally adjusted.
Source: Eurostat

Figure 34: Retail sales of food and non-food products, EU-14 (weighted average)

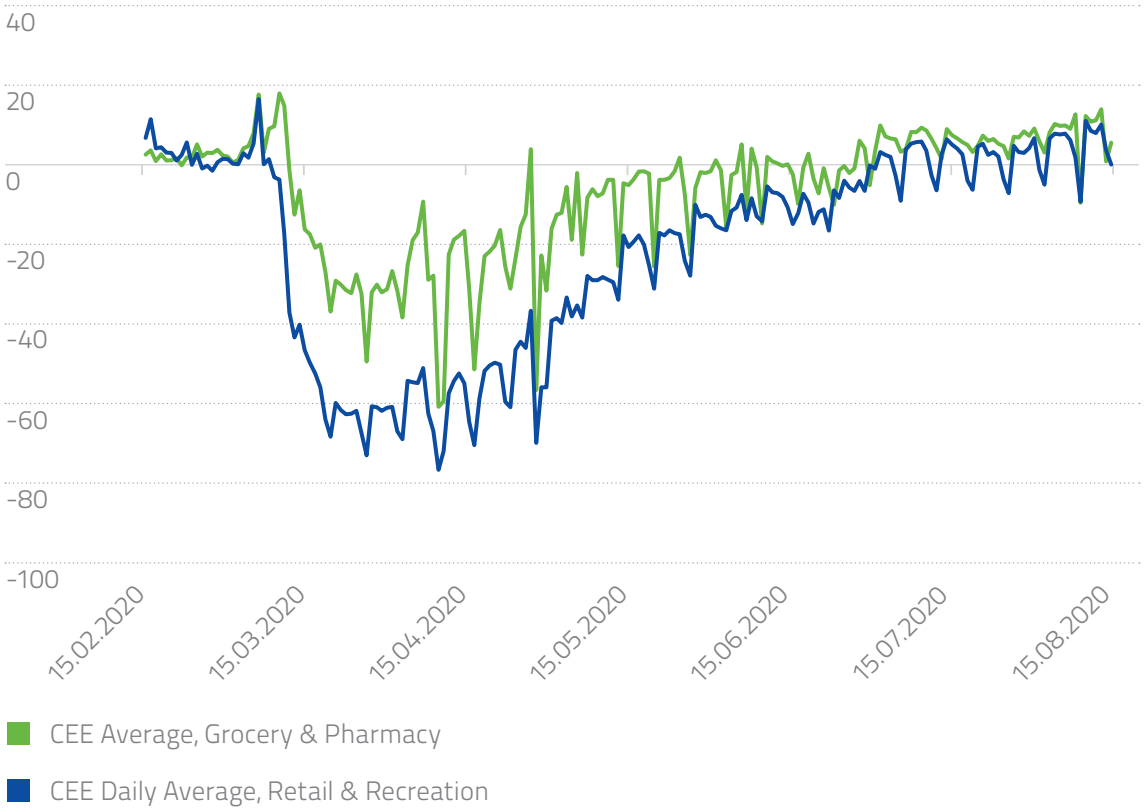


Legend: change over corresponding month of previous year of retail sale of food, beverages and tobacco and retail sale of non-food products (excluding fuel), working day and seasonally adjusted.)
Source: Eurostat

Accommodation and food services were the most negatively impacted among all services during the early months of the pandemic in the European Union. Necessary precautionary measures, such as countrywide lockdowns and travel bans effectively halting tourism are mostly to blame for the crisis within the HoReCa sector. Businesses within it were forced to either close down or adapt to the situation and lean into delivering food. While food delivery and takeaway alleviated pressure on restaurants to some degree, these sales channels were not a viable alternative available to cafes and bars selling alcohol. Restaurant capacities were drastically reduced with the implementation of customer caps and social distancing rules. Statistics show however, that the food and restaurant sector in the European Union was able to strongly recover after the introduced restrictions were lifted, showing an increase of 84.5% between May and June 2020[11]. The HoReCa sector remains highly exposed to future lockdown risks in response to recurrent "waves" and consequent containment measures.

Stability of retail sales confirmed in mobility data. The idea of food as a necessity is well visible in the mobility data for presence in groceries and pharmacies versus presence in retail and recreation spaces (see Figure 28). Even when one looks at the period of time when the lockdown measures were the most severe (March through May), a clear link is visible between the stringency of restrictions and consumption of non-food (see Figure 29), but no such link is observed in the case of consumption of food (see Figure 30).

Figure 35: Mobility, Compared to Baseline (Daily %)



Source: Google Mobility Reports

How will COVID impact food producers?

The FMCG sector is less affected by COVID-19 compared to other industries. This is due to the fact that the food sector has good defense in the forms of stable demand. However, trends are changing in some categories, including the HoReCa segment, which has been permanently affected by the pandemic. We are seeing price increases due to inflation and the uncertain economic situation.

Changes in consumer behaviour are also visible. Customers are betting on trusted brands and greater consumption at home. They are paying more attention to product safety - how the product is packaged and what preservation processes have been applied, which is in conflict with product freshness. The environmental trend is also accelerating, and the criteria of localisation seems to be stronger than it was before the pandemic - the surge in demand for food is therefore an opportunity for local producers to develop. Consumers rely on healthy products (e.g. juices 100%, with added value and a condensed dose of body strengthening ingredients) and safe - for individual consumption at once. There is a growing interest in ready-made products and dishes - habits from the pandemic period, where ready-made meals were bought due to lack of time to prepare them at home, will stay with us for longer. Return to work after the lockdown and sanitary restrictions have made products that can be eaten "at the desk" very popular.

Business customers, on the other hand, rely on proven strong partners and, therefore, also expect them to be flexible and adapt to suddenly increased demand in the event of further restrictions. This, in turn, imposes obligations on FMCG companies to be ahead of the time to reduce the risk of product shortages. Disturbances in the supply chain, which took place at the turn of the first and second quarter of this year, inspired the search for alternative sources of supply of raw materials and packaging necessary for production on the Polish market, which in turn undoubtedly influenced the development of domestic production. The restrictions on the movement of workers for seasonal production (fruit and vegetable harvests, seasonal production e.g. cucumbers, preserves) were also significant in this respect. This trend had a negative impact on the labour force this year and resulted in problems with securing the required production.

COVID-19 has also resulted in restrictions on exports to certain markets, such as those in Africa and the Middle East, where there is a lockdown - much longer than the one we have seen in Europe. Food producers, who have so far exported some of their products to export markets, which collapsed during the pandemic, were forced to redirect their products to the local market, which in many cases increased competitiveness. However, the lack of exports can be a major challenge for those companies whose percentage of foreign sales was a significant source of income.

The coronavirus situation may also affect investment, business development and the expansion of companies - this is due to an inherit uncertainty about what the future will bring.

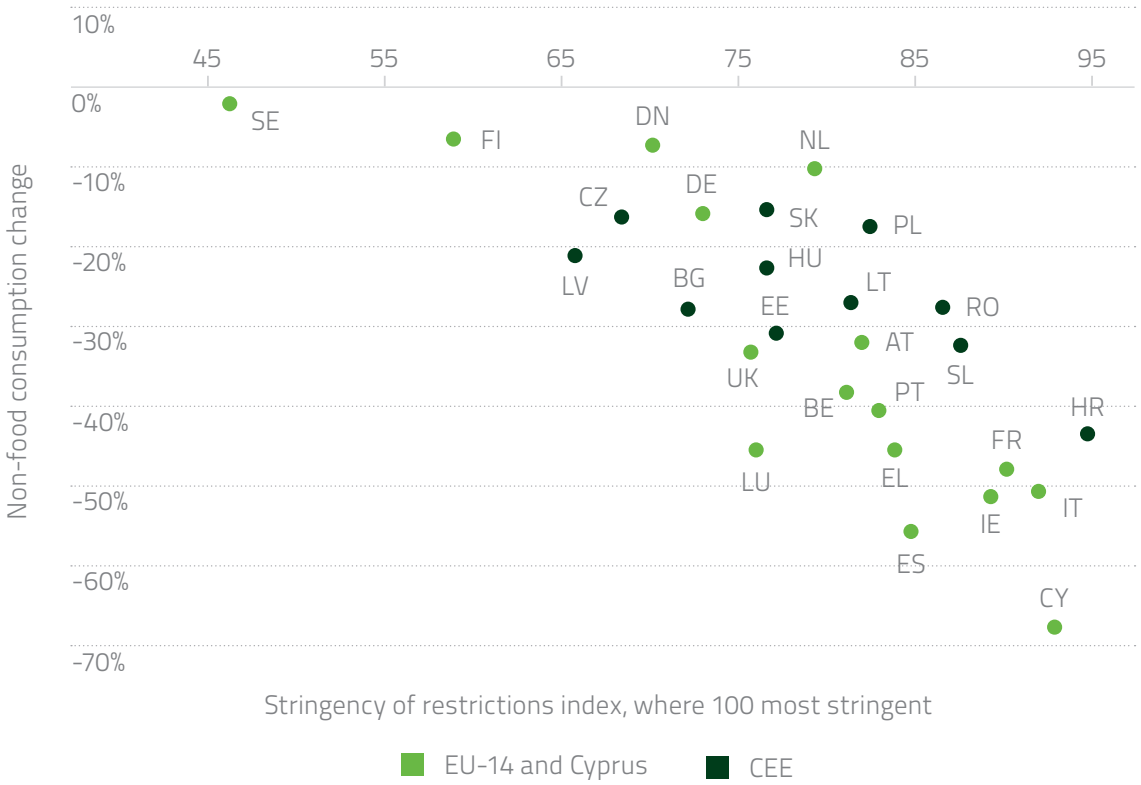
Magdalena Rohde-Krempa
General Manager of Business Unit Beverages, Maspex Group

How will the COVID-19 pandemic impact consumers?

By analysing the pandemic's impact on the consumer behaviour, several key attitudes could be observed. A group with a strong fear of the pandemic and the virus itself stood out by making impulsive, big purchases early in the lockdown as a way to tame their fear. Some consumers, forced to eat out less, began to cook at home more often and experiment with cooking (for example, bread baking became very popular even though there was no bread shortage on the market). Interestingly, sales of plants increased, which can be explained by the consumers switching from their previous ways of spending their free time (e.g. going to restaurants with friends, participating in cultural life - cinema, theater), to other activities related to the environment in which they stayed more due to the lockdown and for which they previously had no time.
These behaviours may only be temporary and resulting from the current pandemic situation. However, some of the changes, for example the increased use of online stores, can forever change the ways of the consumers. A part of the society that previously did not use virtual shopping, forced by lockdown and fear of the virus to shop online, could acquire new skills and thus become convinced of this alternative form.

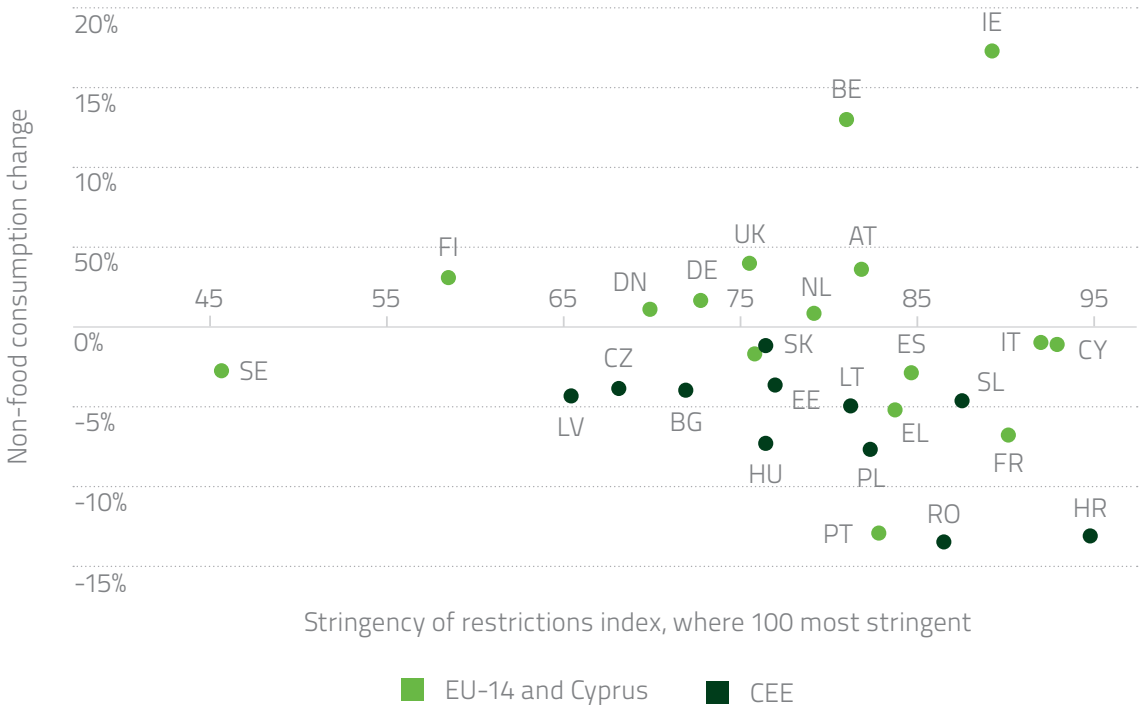
Prof. Dominika Maison
University of Warsaw

Figure 36: Stringency of lockdown restrictions and retail sales - non-food



Source: Eurostat and Oxford

Figure 37: Stringency of lockdown restrictions and retail sales - food



Source: Eurostat and Oxford

What has COVID19 taught us about supply chain of agrifood products?
The Case of Latvia

The COVID-19 pandemic has had a profound impact on the way people purchased and consumed goods and services. As the agri-food industry is largest processing industry in Latvia covering a range of businesses from farming to industrial processing to HoReCa SMEs, COVID-19 impact has been very diverse and unequivocal.

Farming and processing companies were affected only to small degree as most of the supply chains are located in close proximity and lockdowns and restrictions had little effect on operations. Moreover, industrial volume exports of mainstream products were also affected only marginally as demand remained strong and supply chains continued to operate. This shows strong resilience of both demand for staple food and mainstream food products as well as reliability and adaptability of supply chains within agri-food.

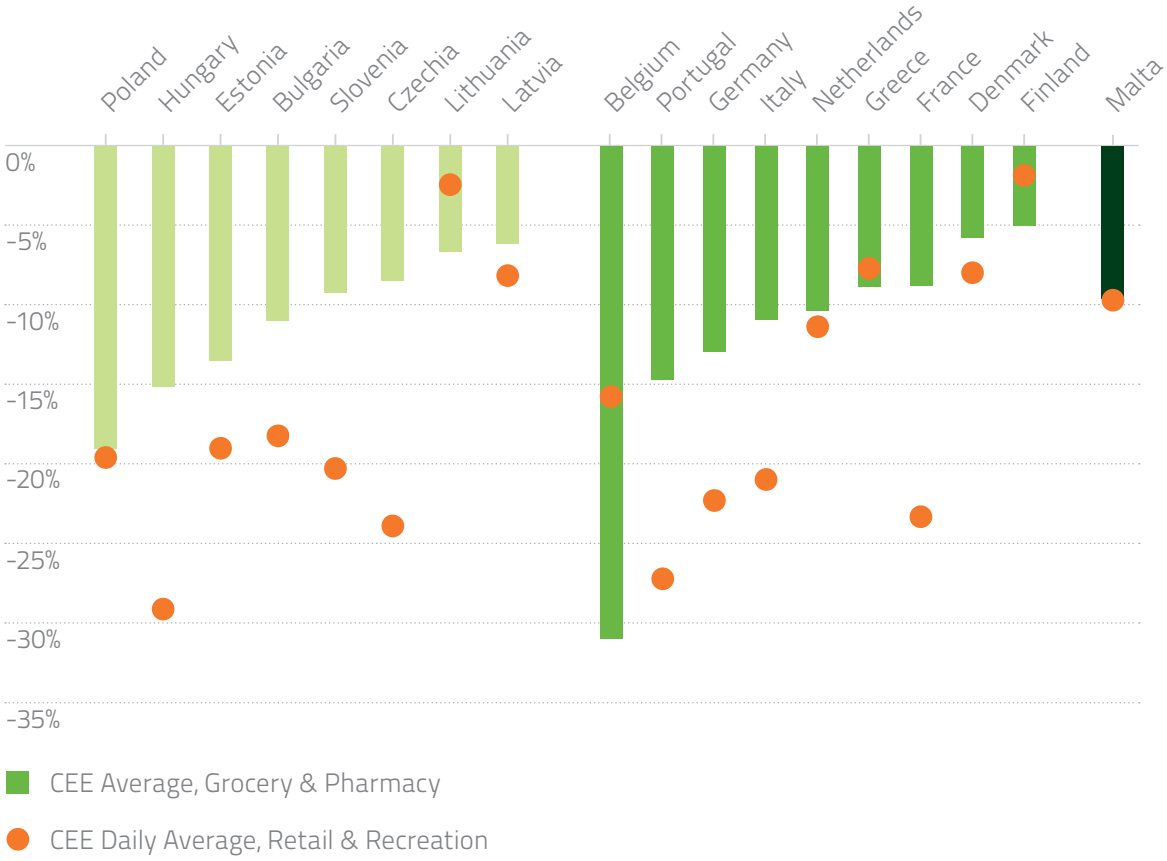
At the same time, HoReCa and tourism-oriented sectors of the food industry suffered greatly as tourism-related demand plummeted. Also, catering and small food outlets were largely affected, especially SMEs, which did not have resources to weather the lockdowns and restrictions. Most of the HoReCa companies saw large decreases in revenues and had to lay off significant numbers of employees. However, SMEs of HoReCa are also the most flexible and dynamic sector with the agri-food value chains and many companies were able to downsize, optimize, deliver innovative delivery solutions or simply close down and relaunch in few months. While SMEs have born the brunt of the losses in COVID-19 toursim downturn, many catering businesses were able to offer their services already a few months after first wave of the pandemic

Therefore, the key thing learned fromt he COVID-19 is the high resilience that the Latvian agri-food sector has shown through reserves and planning of large and flexibility and innovation of small enterprises.

Daniels Jelisejevs
Dynamind

Manufacturing of food products and beverages contracted during the lockdown to a lesser extent than the rest of manufacturing. As people during lockdown had to keep eating and purchasing food products, manufacturers of food products and beverages disruptions kept production going despite disruptions. In all EU countries for which data are available, there was visible drop in manufacturing of food between February 2020 and April 2020, but in great majority of cases this drop was smaller than in manufacturing as a whole (see Figure 31). Furthermore, putting aside Belgium, there is visible link between change in retail sales of food, beverages and tobacco and manufacturing of food and beverages[x].

Figure 38: Manufacturing and manufacturing of food products and beverages (Change of production between February 2020 and April 2020, seasonally and working day adjusted)



Source: Eurostat, Deloitte

[x] Data series differ by tobacco – unfortunately, data on retail sales include tobacco and although Eurostat publishes monthly data on production of manufacturing of food, beverages and tobacco, this time series cover fewer countries than data on manufacturing of food and beverages alone.

The financial markets confirm the stability of the agri-food industry

At the first glance performance of food producers at the Warsaw Stock Exchange, which is the biggest and liquid market in CEE, disappoints. WIG-food – a sub-sector index based on 'food and drinks' sector companies –underperformed after COVID-19 compared to more than half of other sub-sector indexes, with total return between February 2020 and July 2020 in line with broadest index of WIG. Such results are not something that might be expected from a sector that stands out among others with stable production and sales. The puzzle can be easily solved by looking at the companies that are included in the index – worse performing companies were primarily agri-food companies from Ukraine, which were affected by country specific shocks and most probably closed borders with EU. Among Polish agri-food companies on Warsaw Stock Exchange, the most volatile and worst performing company is a distributor of wines and spirits, that most probably was affected by lower demand from restaurants and food services. Putting aside such outliers, agri-food companies in Poland were among the less volatile companies on Warsaw Stock Exchange with only one out nine such companies loosing value. On two other stock exchanges in the region that provide food sector indexes (Zagreb Stock Exchange and Nasdaq Baltics) results were similar with food companies being rather stable, but taking into account much smaller size of those markets such conclusions aren't particularly strong.

How will COVID impact livestock and animal production?

The supply side of animal husbandry has been affected by the COVID-19 pandemic to a fairly limited extent. Within the lockdown period, labour resources in animal production remained resilient mostly due to only a small fraction of workers being seasonal. At the same time, should the pandemic continue for longer, the access to a high quality genetic material in the form of semen and/or embryos could be disrupted, resulting in jeopardised genetic continuity and deterioration of herd quality.

However, on the demand side, the disruptions caused by COVID-19 are more pronounced. Firstly, due to administrative decisions, mass catering facilities, including restaurants, were closed. Additionally, the lockdown itself has caused a decrease in caloric demand, resulting in a lowered meat consumption. The consequences cascaded: the processor limited production, but it affected the activity of breeders - the animals grew excessively and thus lost their value, with simultaneous higher costs of breeding. This often resulted in a loss of trust between contractors due to contracts not being upheld. After a partial recovery of the industry in the recent months, the risk of a repeated negative scenario still lingers.

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Foresight – Scenario Analysis

Defining and contextualizing the scenarios

Why Foresight Analysis?

The economic recovery following the pandemic-induced shock has not yet begun to formulate itself fully. It still remains unclear how GDP and other macroeconomic factors will recover moving into 2021. Such a recovery is contingent on not only the further trajectory of the virus spread, but also on a variety of other factors. This section attempts to categorize those factors, sans virus spread itself. Presented in Section 3.1 are the economic and public policy factors on which the foresight analysis is based. These factors are going to influence not only the recovery in the agri-food industry, but also formulate the way forward for a sustainable recovery. The changing market landscape develops dynamically with changing consumer and firm behavior and government involvement. Therefore, this foresight analysis does not consider one pathway forward, but rather looks at the future under multiple scenarios subjected to differently evolving factors.

The foresight analysis in this report employs a scenario-planning methodology[xi]. A matrix has been constructed based on two high-level variables (themselves encapsulating multiple relevant sub- variables), producing four alternative scenario quadrants, which between them represent pessimistic, moderate, and optimistic future environments. These scenarios are elaborated in detail on the basis of local market and regional analysis, and enriched through inputs derived from workshops conducted with EIT Food experts representing each region. This ensures that the Agri-food value chains within our scope are appropriately situated in their regional contexts within the foresight matrix, through the integration of "bottom-up" analysis within a "top-down" framework.

[xi] The foresight scenario planning methodology adopted in the report is founded on the methodology popularised by Royal Dutch Shell Plc, which to this day remains accepted as a robust model enabling better foresight of future risks and threats and strategy for mitigation.

Economic factors

Domestic Demand

A contracting or growing economy in a short-term horizon indicates the likely economic activity and consumption that in turn will shape the demand for goods and services from agricultural, food manufacturing, and retail sectors.

Positive
Consumer demand for goods recovers and supply chains feel minimal disruption.

Negative
Economic contraction (and unemployment) reduce consumer spending power and consequently demand. Consumer disposable incomes reduce and spending habits become more conservative, avoiding expenditure on premium foods.

External Trade Conditions

The COVID-19 crisis affects trade volumes, prices and risk along the global value chains. Exports are affected by COVID impacts in other countries, as demand destruction results in surplus supply of commodities, which depress prices in spot and futures markets. Similarly, import of production inputs or final goods is subject to risks related to the administrative shutdowns, labour shortages as well as disturbances in international transport hubs and networks. Furthermore, there is a risk of looming protectionist policies, both ad hoc and measures intended to change political and economic status quo.

Positive
As markets recover, local supply chains are able to return to typical trading activity, reflected in pre-pandemic prices. Pandemic-related trade barriers within and outside of the EU dissipate.

Negative
Demand-destruction on international commodity markets depresses the value of local exports and production. As a narrow margin market, local farmers suffer from external price shocks. Trade disruptions appear both case-by-case within the EU and in other foreign markets.

Consumer and business confidence

Consumer confidence, preferences, and changes in demand will directly filter up through Agri-food value chains, requiring the markets to adapt to new consumer needs. Tied to economic conditions, but also to pandemic outlook, consumer behaviour also accounts for safety, comfort, environmental issues and other factors related to buying and consuming.

Positive
Consumer demand for goods recovers in a sustainable way and supply chains feel minimal disruption. Risk-aversion related to a health is at the pre-shock level. Consumers become more informed and educated over time.

Negative
Consumers do not return fully to old spending habits and patterns, reducing expenditure on luxury and high value-added products, with retention of some shift towards cheaper staples and durables. Consumers are less willing to eat in restaurants and prepare food at home more often, using low value-added produce.

Public policy and other factors

Containment measures

Political and regional decisions relating to lockdowns and quarantines will be a major determinant that shapes future market developments, through their direct impact on labour and goods flows as well as consumer behaviour. Lockdown impacts on tourism are particularly devastating for hospitality industries (HoReCa), which will reshape leisure activities and associated structure of consumer demand. Prolonged and restrictive containment measures might also force many companies to exit the business, thus lowering the level of competition.

Positive
Lockdowns ease, ending disruptions to supply chains and labour flows.

Negative
Lockdowns persist with recurrent "waves" – quarantines and extra checks become a norm. Restaurants stay in restricted-states with limited capacity, directly destroying demand.

Policy support

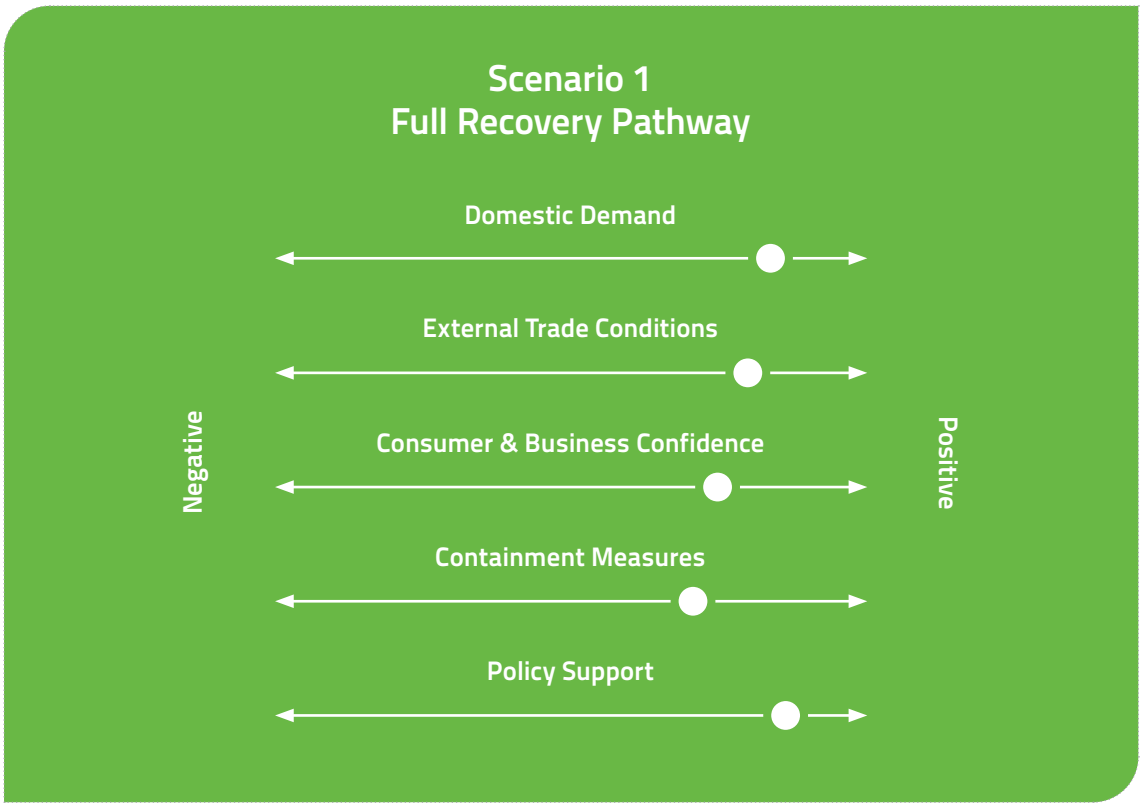
Horizontal policy measures supporting businesses and economic recovery (including COVID-19 relief packages), as well as agricultural sector-specific support, impact Agri-food markets. COVID-19 relief packages help secure places of work, which in turn secures consumer spending power and demand. Direct sector-specific support packages can determine whether local farmers can withstand supply-chain shocks, temporarily replace missing labour, or settle outstanding contracts for delivery, which COVID has disrupted.

Positive
Governments provide appropriate relief-packages, which support economic activity, supporting consumer and business confidence, as well as spending power – thus helping maintain demand for food and beverages.

Negative
Government support is inadequate to reassure consumers, preserve places of employment, and protect businesses.

Pathways Forward

The above mentioned factors are utilized to produce scenarios, which focus on pessimistic, moderate, and optimistic future environments (in the horizon of up to 2021). The scenarios are shown in matrix form, showing foresight under both favourable & unfavourable situations in regards to economic and public policy factors. The four pathways are:



Key takeaways

- Production surpluses dissipate as demand recovers.
- Lifting of containment measures eases labour flows, reducing wage pressures on farmers.
- Consumption recovers as consumer confidence grows.
- The HoReCa sector returns to pre-pandemic levels, boosting connected sectors and driving uptake in higher value added products.
- Agri-food industry returns to pre-pandemic trends and developmental direction, without significant investment in "pandemic-proofing".
- Business as Usual for large retailers, except for retained acceleration of e-commerce platforms after pandemic-time investments.

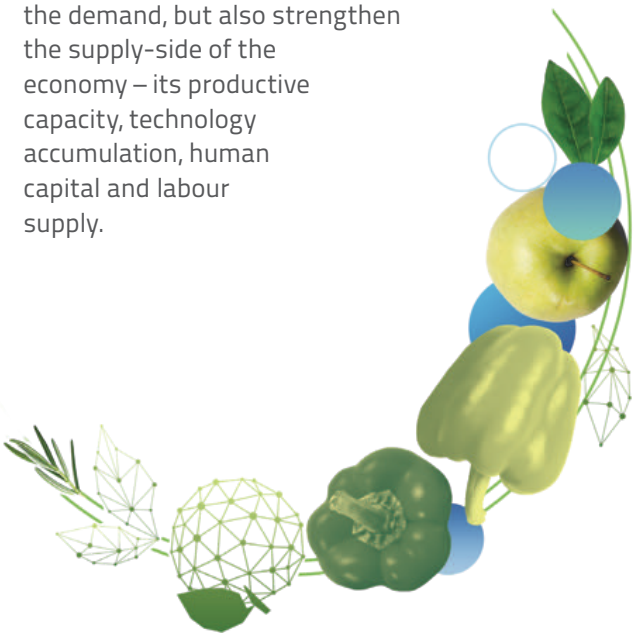
Overview

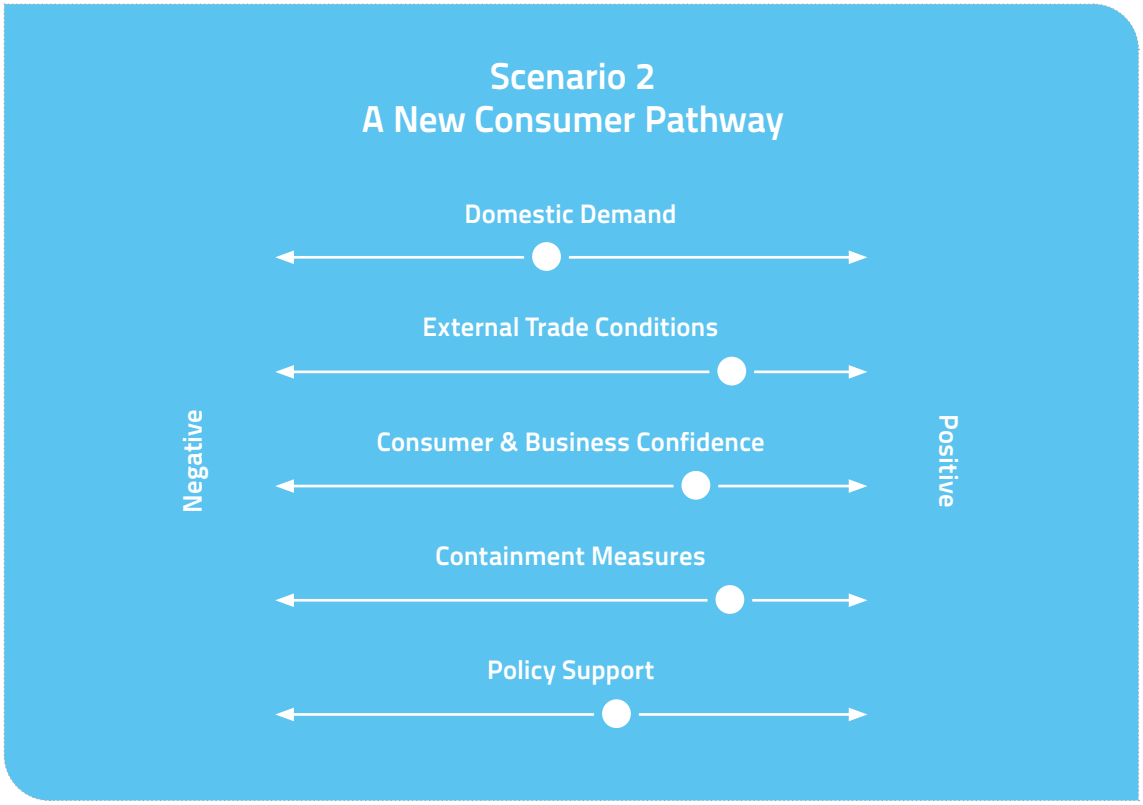
In order to see a "Full Recovery" scenario, one might expect a number of both endogenous and exogenous variables to move in a favourable direction. The requirement of favourable conditions across the board makes this what could be termed an "optimistic scenario".

First and foremost, containment measures (which are perhaps the biggest tangible disruptor to agri-food industry value chains) must be completely lifted. In this scenario, a vaccine or medicine has been developed and distributed with success, alleviating the need to continue with subsequent lockdowns and quarantines in response to recurrent waves. With this easing of the disruption to labour and trade flows and the HoReCa sector, one could expect an improvement in business and consumer confidence. The lifting of restrictions encourages consumers to return to pre-pandemic habits and lifestyles, and in this scenario, we see a return to business-as-usual from a consumer-base which has tired of pandemic lifestyles and is eager to return to what is socially considered a sense of "normalcy".

Global economic recovery is also a prerequisite for this scenario to crystalize. It is not enough that domestic conditions improve. For a "Full Recovery", key trading partners and tourist sources must have similarly favourable conditions.[12] Global markets must also recover to what could be termed pre-pandemic norms – meaning a disappearance of the agricultural supply surpluses resulting from COVID-related demand destruction (which depress commodity prices and thus disrupt domestic value chains which to some degree integrated with global spot and futures markets).[13]
For the CEE region, under this scenario, it is assumed that both trade within EU and trade with other global partners returns to normal following the period of pandemic-related disruptions in spring 2020. When key trading partners, tourist sources, and neighbouring states enjoy similarly favourable conditions, a positive multiplier effect emerges driving recovery.

In such an environment consumer sentiment grows further, and likely translates to favourable consumption patterns which boost domestic demand and further drive growth. A scenario such as this, however, will likely rely to some degree on effective policy support from national governments (in order to at the very least catalyse and trigger the early changes that will themselves self-sustain in the aforementioned positive multiplier effects). The most notable examples would be COVID relief programmes aimed at providing job security and training/reskilling, supporting small businesses, and supplementing incomes of workers with reduced hours (or made redundant) in a way that does not reduce incentives to seek another job. Such measures might serve to maintain and protect consumer spending power, confidence, and consumption, at the same time supporting the process of sustainable recovery, which might require some structural adjustments in the labour market to make it happen. In the years shortly before the pandemic, most CEE countries have seen growth in their agri-food industries which has been (to some degree) attributable to growing incomes and consequently changing consumer behaviour, with demand shifts towards higher value added goods. The "Full Recovery" pathway must to some degree be supported by governmental policies, which not only boost the demand, but also strengthen the supply-side of the economy – its productive capacity, technology accumulation, human capital and labour supply.





Key takeaways

- Retention of pandemic-time behaviour, which reshapes consumer preferences and demand.
- Growing importance of goods with nutritional value and/or locally sourced: potential reduction in demand (or growth in demand) for higher value added foods.
- Increased cooking at home potentially leads to demand destruction in HoReCa, consequent reduction in demand for associated value added goods, and shift of demand towards consumer staples.
- Food manufacturers may benefit from depressed global commodity market prices.

Overview

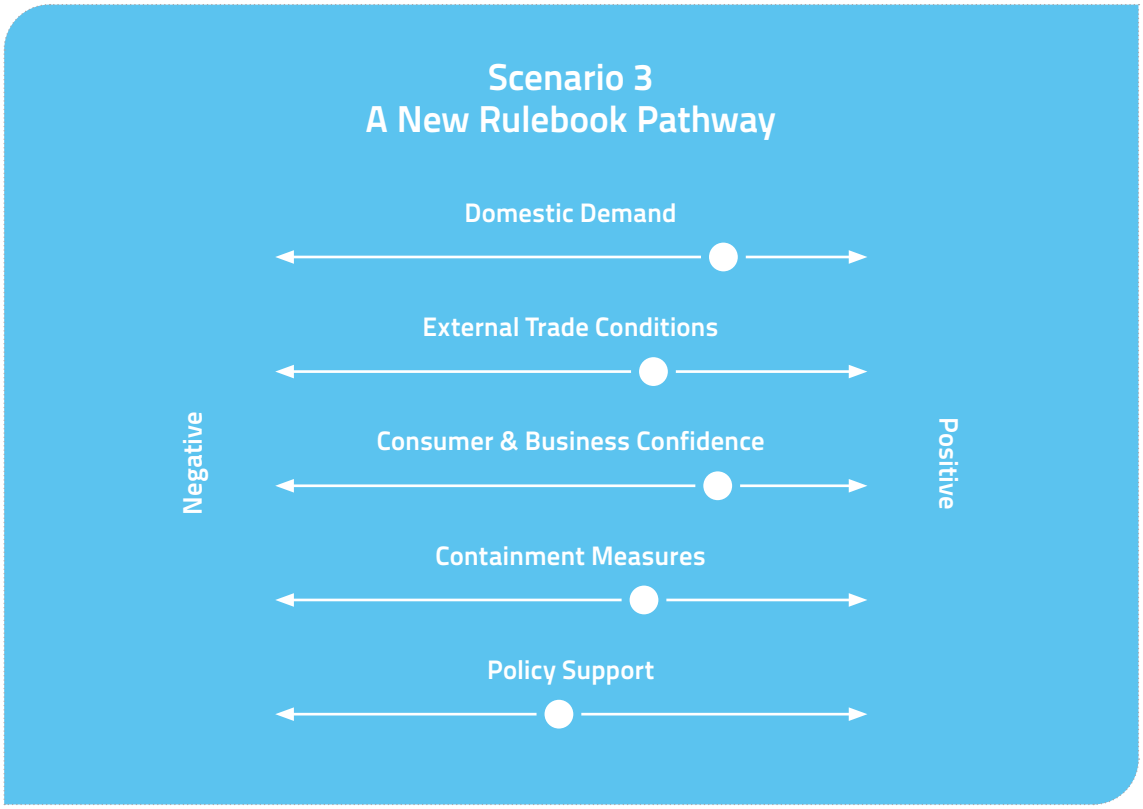
As one of the two "moderate" scenarios, the "New Consumer" scenario could be expected as the product of a particular mix of conditions which on the one hand give the opportunity of a full recovery, and on the other in practice prevent this, through significant and lasting impacts on consumer trends and behaviours which translate into demand shifts to which entire agri-food industry value chains must adapt to some degree.

As in the "Full Recovery" scenario (and in contrast to the "New Rulebook" scenario), the lifting of containment measures is a distinctive precursor. In this scenario, a vaccine or medicine has been developed and distributed with success, alleviating the need to continue with subsequent lockdowns and quarantines in response to recurrent waves. In contrast to the optimistic scenario, however, while consumers have the full ability to return to their pre-pandemic behaviour, this scenario assumes a retention of behavioural impacts which filter up through the agri-food industry value chain and require sectors to adapt to permanently realigned consumer preferences. Examples may be a retention of home-cooking practices (which will typically utilise lower value added and simpler produce) instead of previous restaurant dining (which by comparison utilises more higher value

added foodstuffs). This scenario assumes that some consumers do not wish to return to their previous consumption habits, and the key consequences are a shift in demand, most likely manifesting in a reduction of higher value added foods (as a result of consumers having grown accustomed to simpler eating during the pandemic). The HoReCa sector sees middling performance – neither staying in a depressed state (as in the pessimistic scenario), nor returning to a role of being a major (value added food products) consumption driver. More psychologically affected by the pandemic, the consumer base has slightly lower confidence as compared with the optimistic scenario, translating to reduced domestic demand, undercutting full growth potentials. Under this scenario, consumer expenditure habits remain conservative, with limited spending on non-essential and luxury goods.

Global economic recovery is a factor that must move in a positive direction for such a scenario. Agricultural and input providers, as well as food manufacturers, will likely rely on foreign markets having the capacity to absorb goods for which the domestic market no longer has adequate demand. Key trade partners are likely not in similar scenarios, and instead have managed to achieve either "Full Recovery" or "New Rulebook" states, which means growth in consumption on those markets is able to offer a buffer that can absorb new surpluses in the domestic market. This scenario assumes undisrupted trade within and outside of the EU. This may afford local producers and manufacturers a short amount of time to adapt – whether to the needs of international markets (and repositioning themselves for export markets), or to the needs of domestic consumers. While domestic consumption may be low, a return to normalcy internationally may be particularly important in reviving HoReCa sectors, which would be necessary to prop up the slump in demand.

While not a prerequisite, the New Consumer scenario may present low policy support, due to government budget constraints and/or actual inefficiencies in targeting and delivering aid to businesses and households. Low consumer confidence and hesitation to return to pre-pandemic spending patterns could to some degree be attributable to inadequate measures aimed at preserving consumer spending power and job security, as well as material risk of raising taxes or other public levies to curb budget deficit. Policy shortcomings are not as restrictive in the "New Rulebook" or the pessimistic scenario, however.



Key takeaways

- HoReCa sees strong decline relating to persistent containment measures and policy.
- Retail competition heavily depends on digital value proposition.
- Retailers may benefit from increased home consumption, via increased foot traffic.
- Risk of protectionism and retaliatory tariffs as nations strive to support domestic producers who are under pressure from demand destruction and depressed global commodity markets.
- New policies and regulations risk generating additional costs to producers.
- Food manufacturers may benefit from depressed input prices on global exchanges.

Overview

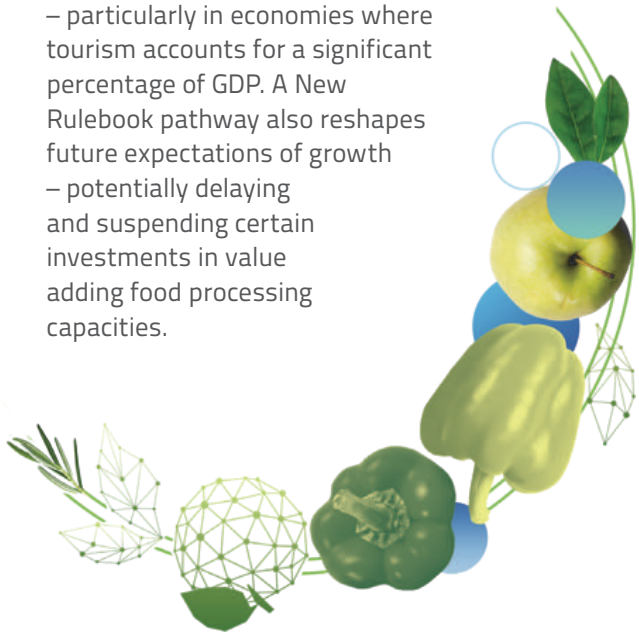
As one of the two "moderate" scenarios, the "New Rulebook" scenario results from a mix of conditions somewhat opposite to those in the "New Consumer" scenario. In contrast to the aforementioned case, here the consumer-base in fact is distinctly ready to return to a pre-pandemic state, however governmental policy implications – restrictive containment measures - are such that this is somewhat encumbered. A simplification of the differences between the two moderate scenarios, therefore, may be that in the "New Consumer" case, the market returns (approximately) to its pre-pandemic size, but with a new distribution and demand structure – whereas in the "New Rulebook" scenario, the consumers are eager to return to original preferences and market structures, however are prevented from fully doing so, resulting in a more prominent reduction-of-scale effect with a maintenance of sectoral structure. Here, the lifting of containment measures is not guaranteed. In this scenario, a vaccine or medicine may have been developed and distributed with success elsewhere, but this may not be the case domestically, resulting in a persistent risk of subsequent lockdowns and quarantines in response to recurrent waves. An alternative is that

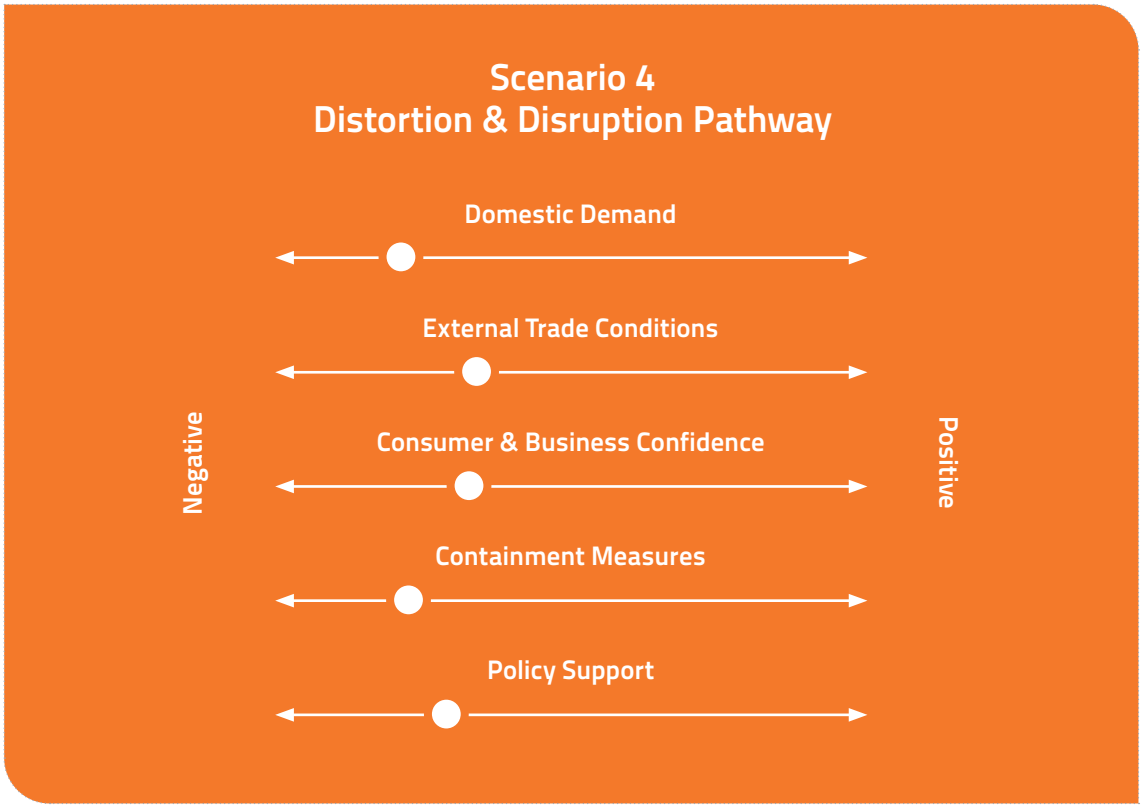
despite such a vaccine reaching the nation, no significant relaxation of policy seems to follow. Government policy may try to support businesses and attempt to secure purchasing power, however, this scenario is characterised by distinct restrictions, which persist even where neighbouring states have relaxed their own. Examples may include reduced shop hours, reduced shop and restaurant capacities, lingering travel bans and lock-downs, stringent quarantine rules, and even increased regulations relating to food & health, which could affect food safety and hygiene practices and codes in agricultural and food processing sectors.[14]

The HoReCa sector suffers, struggling to recover under an aura of lingering risks and lockdowns.[15] Tourists are reluctant to return on account of reduced access to amenities, potential quarantine obligations, and risks of full lockdown restricting their further travel. This naturally has a negative impact on the agri-food industry, insofar as tourists may well be a significant source of food consumption in the country, and the categories of this food tend to be of higher added value and thus margins to local companies. The structure of consumption between sectors and between goods within them will therefore change.

Global economic recovery is a factor that must move in a positive direction for such a scenario. Agricultural and input providers, as well as food manufacturers, will likely rely on global markets having the capacity to absorb goods for which the domestic market no longer has adequate demand. Trade outside of the EU may be subjected on a case-to-case basis. Key trade partners are likely not in similar scenarios, and instead have managed to achieve "Full Recovery" states, which means growth in consumption on those markets is able to offer a buffer that can absorb new surpluses in the domestic market. This may afford local producers and manufacturers a short amount of time to adapt – whether to the needs of international markets (and repositioning themselves for export markets), or to the needs of domestic consumers.

The "New Rulebook" scenario is so-called because though the market itself would like to return to "normalcy", exogenous factors in the form of political decisions reshape this possibility. Consequences include supply chain disruptions and barriers to flow of seasonal labour (important for certain sectors within agriculture and horticulture) - impacting total labour costs of farmers operating on already low margins. Changes to consumer demand (from depressed HoReCa sectors) also create a new reality to which local producers and food manufacturers must adapt – particularly in economies where tourism accounts for a significant percentage of GDP. A New Rulebook pathway also reshapes future expectations of growth – potentially delaying and suspending certain investments in value adding food processing capacities.





Key takeaways

- Containment measures persist, severely disrupting labour flows and the HoReCa sector.
- Retail competition heavily depends on digital value proposition.
- Demand destruction may lead to excess supply and consequent depression of commodity market prices, putting pressure on farmers.
- New policies may generate additional costs.
- Investment in new food processing facilities falters.
- Consumption patterns become more conservative in an environment of economic downturn, resulting in less frequent store visits and reduced demand for higher value added goods.
- Decreasing consumer consumption threatens growth opportunities.

Overview

The "Distortion & Disruption" pathway is the manifestation of a "pessimistic" scenario where both economic and public policy factors align unfavourably. A confluence of strong containment measures, unfavourable external trade conditions, and insufficient policy support, results in depressed consumer and business confidence and domestic demand on the crisis level, triggering negative multiplier effects where worsening conditions in turn encourage further decline.[16] On the one hand, domestic consumption and demand declines, perhaps catalysed by (COVID-related) mass unemployment decimating the consumer-base's purchasing power. Worsening trade conditions, in turn, result in depressed market prices which result in price shocks that threaten agricultural producers operating on low margins. Farmers struggle to move certain crops and products – particularly as storage facilities and silos quickly fill up due to global surpluses stemming from demand destruction.

There is a risk that the supply-side impact of the COVID-19 crisis will not only be temporary, but may be long-term or even permanent. The

reasons will be stricter sanitary standards, rules on social distancing and other changes in regulations, as well as changes forced by the market, i.e. customers and partners. The result will be an increase in the costs of running a business or a reduction in productivity, calculated as income per employee.

Many industrial farms and companies operate within global value chains, so recovery would be neither quick nor easy. It will be necessary to tackle the problems of, for example, disturbances in logistics and purchasing at each stage of value added, often in geographically and structurally different markets. In this scenario, both trade within the EU and outside of the EU is subject to disruptions. The disruptions caused by COVID-19 may induce some countries to limit economic integration with others, including protectionism (tariff and non-tariff measures) intended to improve competitiveness of national goods and services. Such restrictions might not be limited to a free movement of goods and services, but also include labour and capital flows. Market-based reaction to this might result in the following: production which is performed by cheaper labour in another country (offshoring) can be replaced by automatic on- site processes. This has already been observed this year, with the EU raising tariffs against U.S. maize imports – the price of which was heavily depressed by demand destruction in bioethanol markets (relating to reduced travel). While the tariffs were removed the same year, they are exemplary of the protectionist measures which themselves invite retaliatory tariffs and worsen trade conditions. Retaliatory tariffs levied by major non-EU states on EU imports will cause short-mid-term shocks to demand and CEE export margins. Domestic agricultural producers and food manufacturers may face short-term losses as they take time to adapt to new market prices and demand. Domestic surpluses may grow, giving food manufacturers an opportunity to capture some of the price depression as value gain in their link in the value chain.

As far as domestic demand is concerned, restrictions introduced in the fight against the pandemic disproportionately restrict access to work for poorer people, whose jobs cannot be easily transferred to remote mode. This means that the more vulnerable communities are more exposed to employment risks, which will likely translate into strong shifts towards more conservative spending and consumption habits from larger segments of the consumer-base. Young people often work in industries whose goods or services they eagerly use as consumers – e.g. shopping malls, cinemas, restaurants or bars. Many of them therefore will lose a double role on redundancy – as worker and as consumer. Indirectly, it will be a challenge for many companies that supply food products popular with Millennials. Due to the savings, many young people will cook at home every day. Still, protectionism is likely to increase the level of prices (or spur inflation), including prices of basic goods and services, further exacerbating effects of the crisis on the poor communities.

The labour market during and after the pandemic will be different than before, taking into account the sectoral distribution of jobs and vacancies. Hence, according to the OECD, it is crucial that governments ensure the least painful movement of workers between sectors. Otherwise, the situation will be moving in the opposite directions: lockdowns will continue to destroy jobs, companies and even whole industries, while financial support measures will try to desperately protect them, following the motto "whatever it takes" measures. Furthermore, a complete changed demand for labour will facilitate the need for workers flow from impacted sectors to thriving sectors, particularly those related to technology. The necessity of such flows will create a skills mismatch in the market, which before it is offset by retraining of experienced workers and altered career choices of new labour market entrants, will lead to higher unemployment.

The Agri-food industry in the CEE under each scenario

Farmers & Input providers

Public Policy & Other Factors
From Unfavourable to Favourable

A New Consumer

- Changing consumer preferences for more local produce, driven by an increasing awareness
- Growing importance of goods with nutritional value

Full Recovery

- Production surpluses dissipate as demand returns to pre-pandemic stage
- Price pressures on farmers ease
- Labour flows return to being undisrupted

Distortion & Disruption

- Disruption of season and international labour flows
- Excess supply depresses commodity markets
- Domestic demand decreasing as result of economic downturn

A New Rulebook

- Growing wage pressures on farmers
- Risk of trade complications
- Need to adhere to additional health & safety measures
- Consumer demand returns to pre-pandemic structure

Economic Factors
From Negative to Positive

Scenario 1: Fully Recovery Pathway

- Agricultural production surpluses (which visibly depressed global market prices for certain commodities during the course of the pandemic in 2020) dissipate with a revival in demand and return to pre-pandemic consumer behaviour – concurrent with global market recovery.[17] Price pressures on farmers ease, allowing agricultural & input providers to recover investments and maintain profits (despite operation on thin margins due to underlying structural problems relating to overinvested agricultural sectors).
- Lockdowns being lifted allows for the flow of seasonal and migrant labour to return to normal, removing wage pressure from farmers who found themselves short-staffed during the pandemic.
- Eligible farmers that were directly affected by the crisis might benefit from temporary support schemes (such as those offered in Romania).

Scenario 2: A New Consumer Pathway

- As consumer preferences shift (retaining pandemic-time characteristics such as an increased preference for low value added staple foods utilised In home cooking, as opposed to higher value added foods and restaurant dining), domestic demand for these primary commodities grows, posing an opportunity for local agricultural and input providers, and potentially propping up agricultural spot markets. It might result in better margins for local farmers, however partially at the expense of higher costs of selling to the higher number of small customers.
- Consumers might also pay higher attention to ingredients and preservatives added to raw or low-processed products, as a way to sustain good immunity.

Scenario 3: A New Rulebook Pathway

- Persistence of containment measures and lockdowns maintains disruption to seasonal and international labour flows, exerting wage pressure on farmers who find labour in short supply. In some areas, even higher wages might not attract the necessary number of workers, as many of the rural and peripheral regions in CEE experience large depopulation, losing young inhabitants in particular. It is unlikely – except of territories with great natural beauty and well-connected – that this process will be counter-balanced by the inflow of remote workers, tired of living in the cities with lockdown measures.
- Risk of trade complications as deliveries face quarantine and sanitary procedures (particularly relevant to livestock sectors)
- Risk of extra regulatory health & safety measures being imposed, disproportionately raising costs for agricultural and input providers against intended outcomes.
- Structurally, consumers revert to demand for similar produce as consumed before the pandemic, however restrictions reduce the scale of total consumption. Demand for some agricultural products used as inputs for value adding food processing therefore may see disruption. Higher disruption might be expected for goods consumed mostly by poorer people, characterized by high sensitivity (elasticity) of the demand to changes in prices and disposable income.

Scenario 4: Distortion & Disruptions Pathway

- Persistence of containment measures and lockdowns maintains disruption to seasonal and international labour flows, exerting wage pressure on farmers who find labour in short supply. However, in times of deep economic crisis we can expect that wages in the majority of sectors will be contracting, partially alleviating structural problems with labour supply in agriculture.
- Wage pressures are compounded by worse external trade conditions, with supply surpluses depressing commodity markets. This leaves farmers with difficult choices relating to contract execution (if they had not hedged appropriately). Prolonged recession might translate into permanent reduction of productive capacity in agricultural activities, especially those, which are capital-intensive. Significantly larger than now part of agricultural land will be abandoned.
- Domestic demand slumps, partly as a consequence of worsening economic conditions. With unemployment growing, purchasing power is reduced. Consumer confidence falls and demand shifts away from value added goods and towards staples. Higher disruption might be expected for goods consumed mostly by poorer people, characterized by high sensitivity (elasticity) of the demand to changes in prices and disposable income To a degree this supports demand for certain agricultural sectors, but not others. Livestock and higher end meat production suffers.

Food Processing, Storage, and Transport

Public Policy & Other Factors
From Unfavourable to Favourable ↑

A New Consumer

- Altered consumer patterns away from restaurants and into eating at home
- Necessity for food producers to reposition themselves due to changing demand
- Food manufacturers benefit from lower prices on international market

Full Recovery

- Growth and demand levels return to past dynamic
- Sector remains competitive and attractive to investors
- Growing consumer confidence and spending power

Distortion & Disruption

- Food manufacturing impacted by HoReCa disruptions
- Conservative consumer consumption patterns undermines growth potential of processors and manufacturers.
- New policies and regulations generating additional costs
- Investment in food processing facilities and updated production processes stalls

A New Rulebook

- Food manufacturing impacted by HoReCa disruptions
- New policies and regulations generating additional costs
- Protectionism decreasing competition
- Food manufacturers to potentially benefit from lower agricultural commodity prices

Economic Factors
From Negative to Positive →

Scenario 1: Fully Recovery Pathway

- An optimistic scenario involves a return to what could be termed as "business-as-usual" consumption patterns, diffusing the need for any significant adaption on the production side to modified consumer needs. Additionally, the pandemic-induced shift of consumers towards more local products creates an additional benefit for local food producers.
- The food processing and manufacturing sector can meet demand and maintain appropriate levels of growth, as might be expected from past dynamics.
- This sector will remain competitive and attractive for national and foreign investors, offering reasonable profit ratio and relative stability in the era of record-low interest rates. Producers will be able to grow in a sustainable way, reaping the benefits of economic integration and good access to foreign markets.
- Favourable economic conditions support consumer confidence and spending power, allowing the market to return to pre-pandemic trends of growing demand for higher quality and higher value added goods (as tied to growing incomes).

Scenario 2: A New Consumer Pathway

- Despite recovery, consumer consumption patterns remain altered. During the pandemic consumers were forced to shift consumption away from restaurants and towards the home, which typically involves utilisation of lower value added foods.
- In the "New Consumer" pathway, while part of the consumer-base returns to old habits, part will retain habits acquired during the pandemic, resulting in a detectable reduction in domestic demand for higher value added products.
- The food processing sector must adapt to changes in domestic consumer demand,

or reposition itself towards exports, the viability of which will in turn depend on situational contexts of key trade partners as well as external trade conditions.
- Food manufacturers may benefit from any depressed prices on international markets, potentially capturing value in the form of cheaper raw materials and inputs. Such gains will apply only to certain sectors, but may go some way to offsetting reductions in demand.

Scenario 3: A New Rulebook Pathway

- Persistent lockdowns and threats of recurrent "waves" significantly disrupt the HoReCa sector, reducing demand for higher value added products. Domestic consumer demand remains high, though avenues for expressing it are restricted. Restaurant sales depend on the uptake in app-based food delivery services, which in turn affect demand in the food manufacturing sector.[18]
- Public policies and regulations might generate additional costs and risk to the sector. In order to compensate for prolonged lockdowns, governments might provide financial support in a way that favours some of the sectors/subsector or companies, thus distorting competition.
- Competition among producers might be also affected due to potential protectionist policies or other policies that might increase costs of entering into the sector. As a result, international competitiveness of food manufacturing might be lowered, while prices for domestic clients might go up.
- Food manufacturers may benefit from any depressed prices of agricultural commodities on international markets, potentially capturing value in the form of cheaper raw materials and inputs. Such gains will apply only to certain sectors, but may go some way to offsetting reductions in demand.

Scenario 4: Distortion & Disruptions Pathway

- Persistent lockdowns and threats of recurrent "waves" significantly disrupt the HoReCa sector, reducing demand for higher value added products. The beverages sector is significantly affected, with local breweries suffering significant reductions in demand on account of closed bars and restaurants.[19] Similar scenarios in key trade partners reduce the possibility of repositioning alcohols for export.
- This reduction in consumption is exacerbated by falling domestic demand, which results from unfavourable economic conditions and falling purchasing power, which is reflected in changing consumer behaviour. Consumption patterns become more conservative in times of crisis, and consumers move away from value added goods and instead towards staples.[20] This significantly undermines growth potentials of certain food processing and manufacturing sectors, with meat and livestock being notable examples.
- Long-lasting and deep crisis might require, sooner or later, a consolidation of fiscal policy in some countries, especially those exposed to high currency rate (FX) changes and large public debt. Volatility of FX rates as well as costs of budget consolidation in the form of higher taxes and reduced public spending will even further increase business risk.
- Public policies and regulations might generate additional costs and risk in the sector. In order to compensate for prolonged lockdowns, governments might provide financial support in a way that favours some of the sectors/subsectors or companies (over others), thus distorting competition. However, due to possible budget constraints any state support is expected to be small and temporary.
- Unfavourable external trade conditions, in turn, depress the capacity for global markets to absorb value added from food surpluses. Food manufacturers are forced to offer increasing sales, and must perhaps even sell products at cost to cover overheads.
- Investments in food processing facilities stalls.

Retailers

Public Policy & Other Factors
From Unfavourable to Favourable

A New Consumer

- Necessary for retailers to adjust marketing strategies to adapt to changing consumer needs
- Larger online shopping capacity required to meet client expectations
- High competition among retailers to meet need demand and expectations.

Full Recovery

- Business as usual for large retailers
- Growth opportunity for smaller local players
- Foot traffic & consumer spending power increase leads to consumption growth
- HoReCa sector returns to pre-pandemic levels, boosting connected sectors.

Distortion & Disruption

- Decreasing consumer confidence leads to lower consumption
- Conservative consumption patterns lead to less frequent store visits and lower expenditures
- Retailers faced with additional costs to ensure health and safety regulations are met.

A New Rulebook

- Retailers benefit from shift to home cooking
- Food services and catering suffering from low demand
- Competition subjected to digital value propositions

Economic Factors
From Negative to Positive

Scenario 1: Fully Recovery Pathway

- An optimistic scenario involves a return to what could be termed as "business-as-usual" consumption patterns, diffusing the need for any significant adaptation to modified consumer needs. Additionally, the pandemic-induced shift of consumers towards more local products creates an additional benefit for local food producers.
- Retailers benefit from reduction of containment measures, as foot traffic in malls steadily increases and consumption grows.
- Positive economic outlooks increase consumer spending power, and consumer demand for value added goods grows.
- Lifting of containment measures boosts recovery of the HoReCa sector, which in turn reignites growth opportunities for high valued added products. Intensity of competition in the HoReCa sector will rise again, however investments and market entry might be perceived by capital owners or creditors as more risky than it was prior to the pandemic. As a result, in a new market equilibrium prices of these services might be higher as companies will try to compensate for this specific risk.
- Even in a full recovery scenario, however, a portion of the consumer-base may retain online- shopping habits developed during the pandemic (in cases where they have grown accustomed to the convenience). Online retail can disrupt the profitability of "bricks-and-mortar" stores through reduction of their foot traffic, and the pandemic may have nevertheless accelerated this trend of digitalization.

Scenario 2: A New Consumer Pathway

- Retailers may need to adjust marketing strategies to adapt to new consumer needs, which have partly shifted away from higher value added products and returned to simpler foods utilised more frequently in home cooking.
- Changing consumer preferences require retail firms to upgrade their online shopping

capacity. This exhorts larger pressure on smaller firms to digitalize in order to compete with large retailers, for whom this process is much easier and quicker.
- Competition among retailers and delivery companies will rely more on the quality of overall service, including digital solutions, payments, delivery time and mode as well as reliability, while offered products might be similar.

Scenario 3: A New Rulebook Pathway

- Retailers to some degree benefit from enduring containment measures, as consumption previously situated in the HoReCa sector shifts towards home cooking (which relies on retail purchases).
- Dining venues, convenience stores and bars in downtowns and office areas will continue to suffer from low demand. Similarly, companies that delivered food in office spaces will be forced either to enter new markets or exit the business.[21]
- Majority of stores and HoReCa companies located in touristic areas will be able to continue operations, as lockdowns and associated risk favours domestic destinations.
- Competition, amongst restaurants in particular but also between grocery retailers, will increasingly depend on respective digital value propositions. In environments of frequent containment measures, consumers are increasingly driven to online channels, where marketing methods and needs differ to those of "bricks-and-mortar" stores. Those players whose logistical networks are able to most quickly adapt, and provide the greatest capacity of reliable and frequent delivery, will in such a scenario capture the greatest market shares.

Scenario 4: Distortion & Disruptions Pathway

- Persistent containment measures and risks of recurrent "waves" of lockdown combine with unfavourable economic conditions to depress consumer confidence, consequently lowering consumption.
- Economic downturn and failure to protect places of employment result in rising unemployment, reducing purchasing power and consequently consumption. As consumers shift towards conservative consumption patterns, product choices shift towards staples, and shop visits become less frequent.
- Public policies and regulations might generate additional costs and risk in the sector, resulting from sanitary and safety regulations, forced closures, limited capacity for serving customers etc.
- Foreign and domestic investment in developing and growing retail networks stalls.
- As consumers increase online shopping, retailers find it harder to market goods. The inability to employ in-store marketing techniques further affects sales.
- Demographic changes may impact sales. Reports suggest during lockdowns, men increasingly take over the role of primary grocery buyer for households, with retailers reporting consequent changes to what is bought and how.[22]

The importance of weather

Favourable weather conditions would be a welcome catalyst for recovery. Climate change brings with it unwelcome variability in weather, increasing weather extremes – whether in the form of atypically extensive rainfall (at an inopportune time), or unusually hot spells and heat records which spur the increasing trend of droughts and falling soil moisture across CEE. Falling soil moisture is particularly troublesome for agricultural and input providers, not only for reasons of increasing desertification and loss of arable land, but also reduced harvest volumes on account of drier soils failing to dissolve (and therefore retain) important fertilisers.

Weather is a variable of natural significance to an analysis for the agri-food industry. As a valid exogenous variable, it could be included in the matrices within "other" as a factor. For reasons of maintaining a cohesive set of variables that can be better influenced and predicted, it has been extracted from the above methodology. However, this by no means should diminish the importance of its presence in such a report, and should be borne in mind as a modulating factor which could impact each and every scenario favourably or unfavourably, acting as a catalyst of barrier to any particular change, particularly for the agricultural and input providers.

The Future of Agri-Food in CEE

Insights

On the basis of the scenario analysis, certain keys insights into how the agri-food industry will develop in the near future can be identified. These key insights are, as the scenario analysis themselves, based on both gathered quantitative data, qualitative literature and recent news, and expert opinions from both academics and industry leaders (See Appendix – Methodology for full description). The aim of this section is to present and discuss those insights and their significance for the future the agri-food industry.

Farmers and Input Providers

Decreased distance between farmers and consumers

Under lockdown, consumers began seeking alternate ways to get food. It has been widely noted, that during the pandemic consumers became more keen to buy directly from local producers and farmers, as opposed to the retailers, which they would usually frequent. For example, in a specific region in Romania, prior to the pandemic only 12% of respondents who purchased food online sought food from local producers. During the pandemic (March-April), 60% of the respondents who purchased food online did so through local producers.[23] Such a tendency for consumers to open themselves to an alternative, local source of food is a great opportunity for the agricultural sector to establish a new and direct client base.

Additionally, such a trend, which could not have been made possible without the necessary technology, is an opportunity to speed up the digitalization process in the industry and help smaller players compete with larger producers online. However, in order for this trend to continue into the long-term, policy mechanisms, such as the Farm to Fork Strategy (See Section 4.2 Opportunities for a Sustainable Recovery) need to effectively continue to shorten the distance between consumers and farmers.

Before the pandemic, the consolidation of farms through acquisition by larger agricultural players has been a primary mechanism by

which more advanced technological processes have seen wider application, as these large entities typically have the capital to invest in such technology (as opposed to the smaller independent farmer).

During the pandemic, containment measures disrupted flows of seasonal migrant labour. Where technology can assist in the reduction of labour intensity, the pandemic will likely have accelerated investments in such mechanisms (in order to help farmers reduce their reliance on such a pandemic sensitive labour source).

Return to (and potentially acceleration of) digitalization of agricultural production

The disruption to labour flows may be expected to play a role in the potential acceleration of trends which have been registered long before the pandemic. As an industry operating on thin margins, consolidation of smaller farms through acquisition by larger agricultural players has been an ongoing process for decades, and with these consolidations came increasing recognition of the need to deploy advanced technology in order to cut costs and maximize returns.

The year 2017 saw the world's first entirely machine-operated crop, which was sown, tended to, and harvested, without human manual labour. RFID sensors show potential for tracking food from field to store (which has been proposed as useful in tracing contamination of E. Coli or other harmful bacteria, which would help avert the need to recall produce nationwide).[24] Use of robotics and artificial intelligence has shown that spraying and weeding robots could reduce agrochemical use by up to 90%. Robotics start-ups are studying the possibility of reducing manpower needed for removing weeds and plant transplanting. What has for many years been too delicate a task for robots, is the picking of fruit and harvesting of nuts.[25] This is an area where for the short to mid-term, manual (and potentially seasonal migrant) labour will remain important. However, here too robotics startups are investing and researching automation processes.

Limited direct impact resulting from containment measures

Containment measures did not affect farms significantly, as the open-air and relatively large farms were not at risk of being a place where cross-contamination may have easily occurred. This is confirmed throughout the CEE through the changes in output during the peak pandemic months. There is no reason to believe, that should the pandemic continue, that farms may have an issue ensuring proper protective measures to their employees.

While the daily operations of farms were for the most part able to continue relatively unencumbered, certain agricultural producers felt pressure where harvests rely on seasonal migrant labour (which lockdowns and quarantines obstructed). Farmers felt consequent wage pressure in some cases, where this seasonal labour required substitution of more expensive local workers.

Labour shortages in the short-term

The peak of the lockdown measures occurred during peak harvest times for specific crops. The border closures made it difficult for farmers in many countries to find the necessary labour force, as the free flow of people was disturbed in a way not seen in the last three decades. The initial shock of disrupted labour flows has been widely noted through Central and Eastern Europe. However, according to both data and experts, such shortages were only a short-term effect. Still, many countries in Central and Eastern Europe are faced with structural labour shortages in the agricultural sector, irrelevant of pandemic-related impact channels.

Stable domestic demand

The agri-food industry in Central and Eastern Europe has two characteristics sought after by investors: limited risk and attractive growth rate. Risk is limited due to the nature of the goods produced in the sector – the world is changing, but people will always need to eat, which means stable demand for food. This is also visible in the data regarding food consumption and production during the pandemic (see 2.3 Impact Mapping). Irrespective of the future trajectory of the

pandemic, demand for food is expected to continue to increase in the long run in the region. CEE countries are still converging toward their Western peers and as result household income is growing at hefty pace. So while it would be unreasonable to expect that demand for food will keep the pace with income growth, as most probably people will predominantly increase their spending on other items then food, still in absolute terms expenditure on food will grow at higher rate than in less dynamic economies of old EU.

Export-dependent livestock and crop production most vulnerable

Beef, poultry, fish, dairy, and grain production in various CEE countries have been identified as the most likely to be negatively affected by the pandemic due to heavy reliance on export to Western Europe.[26] In Poland, from mid-March to mid-April, the price for poultry fell by 37%, which was significantly above the EU average of 8.4%. With the aforementioned trend towards local producers and the direct impact of border closures, farmers supplying foreign markets are most at risk of being adversely affected both in the short and long-term. Under the pessimistic scenario where both trade disruptions and tendencies for consumers to stay away from luxury goods takes place, export-dependent farmers are most at risk.

HoReCa-driven demand most at risk

Hospitality has been the sector most impacted by the pandemic. Direct closures followed by largely limited tourist season have had critical effects on the sector. Therefore, it is no surprise that agri-food actors who are most dependent on supply into this sector have been adversely effected. As the historical analysis has shown, the food services have increased in importance in Central and Eastern Europe in the last years. As the industry is still not mature, many firms may find it difficult to survive the crisis. This could be detrimental to further growth of specialized farmers and fisheries[xii],especially those producing high-end product supplied to restaurants.

Will COVID accelerate digitalization in agriculture?

There is no doubt that COVID will accelerate digitalization in agriculture. The impacts of COVID as a catalyst for digital transformation are in fact being widely referenced across many sectors. The benefits of "being digital" quickly became apparent during the pandemic.

Overall, the agri-food industy is considered to be one of the most conservative when it comes to utilisation of new technology. In many cases, digital transformation was neglected simply because there was low (or even no) understanding how digitalization should become a part of the business. So far, the crisis has revealed that if we want to survive, the utilization of new technology must be accepted in one way or another. In general, this is an opportunity for the digital business, as the sector begins to feel the importance of digitization in different ways.

The acceleration of digitalization has become distinctly visible in recent months. While the agri-food industry is working through a number of challenges on this path, this is true for many other industries undergoing the same process. It is understood that there is still some work to be done before these challenges can be overcome.

The changes to the traditional approach have been given a new name, the "Digital Agricultural Revolution", which is a term seeking to explain the fundamental

[xii] For example, this has already been seen in Poland, where the first sales of fish dropped by 30% in January – May 2020 relative to the same period in 2019. www.eumofa.eu

transformation we are witnessing. Digitalization offers significant opportunities through the availability of highly interconnected and data intensive computational technologies as part of Industry 4.0. With this, naturally, come new struggles and challenges in adopting new modes of operation. We see a challenge to globalization mechanics, and see attempts to revert back to localized/nationalized supply and distribution systems. The agri-food value chain is expected to change fundamentally. This is where technology really steps in. Based on the research conducted, there is still a major mismatch and lack of understanding when trying to pick the right digital skills needed for the certain business. In many cases, the digital transformation is neglected simply because there is limited understanding of how digitalization should become the part of the agri-food industry. How and where the technologies might help not only the SME's or farmers directly, but also their end users, to whom products and services are provided.

It seems that agri-food industry is very conservative in digital transitioning. In many cases for a stakeholder, it is quite hard to describe what digitalization should really be. It is therefore not surprising that market is saturated with many different "solutions", all presented as digital transformation.

Mobile, social media, precision agriculture, and remote sensing technologies are not new in the Agri-food indusrty and have been in use for a while. Big Data, cloud analytics, blockchain, deep learning, machine learning, Artificial Intelligence, robotics and autonomous systems bring a completely different level of meaning to the word "technology". This is the point where the cyber security role becomes crucial. With cyber threats coming everyday from the internet, the agri-food sector seems to be very sceptical about going fully digital.
For many years agri-tech solutions have been seen as being expensive, and in many cases they were. The perception of high expense, in combination with a lack of trust in technology providers (which comes from not understanding the actual calculated costs), has created the thriving environment for such a scepticism to grow. The fear of additional costs in excess of normal operating expenses therefore plays an important role too.

Keeping all that in mind, it is clear that such services as skills development and training, innovation development, test before invest, support to find the investments must be provided for the sector.

In this case, the European Commission programme "Digital Europe" with its initiative "European Digital Innovation Hubs" (E-DIH) comes in play. The policy paper on European Digital Innovation Hubs in Digital Europe Programme states a recommendation "to ensure that agri-food is covered as an area of expertise in at least one digital innovation hub in each Member State, which could be a dedicated agri-food digital innovation hub or a more general one".

Europe as a whole is now concentrating on creating E-DIHs, which will mainly lead different sectors (including the agri-food industry) towards digital transition. ART21 is an agri-food tech company and technology provider which is also participating in one such initiative – AgriFood Lithuania DIH (www.agrifood.lt). It has joined the consortia to become the E-DIH in the long term. Another phenomenon which has become more visible is the surge in organizing "hackathons" on agri-food challenges and/or events, where the start-ups in the agri-food industry have the chance to pitch their ideas.

In summary, we can see a twin transition of sorts which has become an increasingly hot topic. This has taken the form of the green deal (with its "From Farm to Fork" strategy"), and digitalization. The COVID crisis has simply accelerated the inevitable.

Kristina Šermukšnytė-Alešiūnienė
Art21

Food Processing, Storage, and Transport

Manufacturing of food more directly impacted by containment measures due to closer work proximity

Firms in the food manufacturing sector had initial difficulties in ensuring that proper containment measures could be enforced inside the workplace. Countries such as Poland have noted such difficulties in production plants and slaughterhouses. This directly carried a negative effect on employee productivity. While such plants were later exempt form measures that comprised their ability to operate effectively, scenarios under which stricter measures may be put in place do still pose a risk for the productivity in the sector.

Established green corridors largely combated initial difficulties with transport within the EU

Coordinated action across the European Union ensured that road food transport disruptions were successfully combated in the very early stages of lockdown-related border closures.

Manufacturing of food relatively resilient

The manufacturing of food and beverages was significantly less affected by the pandemic than other sectors within manufacturing. This confirms the intuition that demand for food products are relative inelastic and thus, demand for them will not fluctuate significantly during economic recessions.

Smaller producers more at risk due to cost adaption

With rapidly changing demand under certain future scenarios, smaller producers are going to have a harder time to adapt production to changing demand. Producers dependent on niche markets are more likely to not be able to adapt should that market opportunity falter. However, certain smaller products can also benefit from the changing consumer preferences. As consumers become more keen to shop in specialized stores or shift their purchasing habits to different products, smaller producers already producing such goods may experience a significant increase in demand.

What has COVID19 taught us about the food safety and how EU can use these lessons?

We used to take the availability and access to food, as well as the safety of our foodstuffs for granted. Consumers became more conscious about the source, availability and safety of their food during the Covid-19 pandemic. The pandemic and related fears highlighted the importance of food safety and did raise awareness towards it all over the food supply chain. One should not underestimate the importance of basic food hygiene measures. If anything could be considered positive about Covid, it was the widespread knowledge of (food) hygiene and it's application.

We have also learnt how vulnerable the food system and our environment was. The pandemic has highlighted our reliance on long, complex (and fragile) supply chains, and on just-in-time delivery. One of the few good things to come out of the pandemic is that it has made people think in terms of their interdependence on each other and on our planetary resources. Having seen the high volume production and the complex global food chains during the last decades, it is unavoidable to focus on quality, nutritional value and local production, as it is highlighted in the green transition objectives of the EU. The Covid-19 pandemic has underlined the importance of a robust and resilient food system, that is capable of ensuring access to a sufficient supply of affordable, high quality and nutritious food for citizens and that should function in all circumstances. Our health was and still is at stake so hopefully we will acknowledge the importance of a balanced diet in maintaining our health.

Prof. Diana Banati
University of Szeged

Retailers and Restaurants

Consumers more willing to reach for local products

The insight gained from the analysis and accompanying expert discussion that very well may create the most opportunities for the agri-food industry as a whole is that fact that during the pandemic, consumers were more willing to reach for local products. Various case studies from across the European Union show that this was the case. Individuals were significantly more likely to search the term "local food" on Google[27], while local co-ops saw record memberships and larger average transaction volumes.[28]

Acceleration of e-commerce in grocery sector plausible after pandemic-time investments

During the pandemic, the e-commerce and online grocery shopping space became a primary medium for competition between large retailers. Suddenly, delivery became a very plausible vector for significant sales; this demand emerged as a result of containment measure policies which triggered far faster than retailers were able to keep up with and prepare for, resulting in delivery windows becoming fully booked weeks in advance. Large retailers would inform potential customers on their websites about investments being made in their logistical network to reflect the increased demand for grocery delivery. Once such investments have been made, it is highly likely the momentum for online grocery shopping will remain post-pandemic, as demand for such services will likely remain, and the investments in logistical distribution networks will be sunk costs retailers will likely seek to maximize their returns on.[29]

Tourism sector most directly impacted, restaurants and food service companies linked to the sector in dire need of support into the medium-term

While restaurants and food services sector was itself significantly impacted by COVID-19, the long-term outlook for those firms mostly dependent on tourism is most bleak.

Increased consumer demand for canned and non-perishable foods could remain high under pessimistic scenarios

In the situation that the pandemic-induced economic downturn continues into 2021, consumer preferences will change towards cheaper and non-perishable foods. It is expected, that under such a circumstances, canned goods and foods with longer shelf life will be favored over more expensive and perishable alternatives.

How has the pandemic accelerated changes in the agri-food sector?

The pandemic has forced the agri-food sector to innovate. Digitalization process is being accelerated, as consumers behavior is changing towards online shopping. Food producers should accommodate this need, through expanding online shopping capacity. Consumers are shifting towards local products and food with higher nutritional value, which, for example, could be achieved by adding plant proteins. With growing number of people working from home and less consumers willing to eat in restaurants, it can be anticipated that there would be increased demand for food that could be easily prepared at home. Rebranding and promoting of upgraded agri-food products will be a consequence of changed consumer preferences.

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European Commission Horizion 2020 BBI JU
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Opportunities for a Sustainable Recovery

This section concludes the report. On the basis of the comprehensive analysis, opportunities for a more sustainable recovery post-pandemic in the agri-food industry are identified. After identifying the opportunities per value chain segment, tangible policy and investment actions are presented, through which these opportunities can be utilized to ensure a sustainable and effective agri-food industry in the long-term across Central and Eastern Europe.

The COVID-19 pandemic continues to be a significant threat to the economy as whole. As this analysis has shown, it has also disrupted processes across all segments of the agri-food industry. These disruptions, one could say, have changed "the rules of the game". Farmers came in direct contact with consumers more frequently, retailers were forced to quickly improve their online ordering capacity, and consumers more considerate of the nutritional value of their food purchase. Such dynamic developments create opportunity for growth and innovation within the agri-food industry. Various stakeholders across the agri-food value chain have to prepare for structurally larger changes that will impact the sector, among them climate change and more stringent environmental regulation. To a certain extent, the pandemic is a preamble to those changes. The pandemic has accelerated the processes of change that are necessary for the agri-food industry to innovate. Various stakeholders, including the whole agri-food industry as well as policymakers, have to, for one, identify the opportunities that have arisen, and, secondly, create a pathway forward for these opportunities to be utilized.

What has the COVID-19 pandemic taught us about sustainability in agriculture and how can the European Union use these lessons?

The COVID-19 pandemic has shown us that a resilient and sustainable agriculture is essential to tackle crises. Food security is key, and cutting the transportation opportunities to third countries due to the COVID 19 crisis pointed out the importance of short supply chains. Also, the closure of borders between the Member States reminded us especially in Central and Eastern Europe, how big achievements the Schengen Area and the European Union itself are. In my opinion this situation taught us, that the Member States can most effectively tackle crises when they coordinate their actions and work together. Digitalisation can be a further tool for increasing the effectiveness of the European agriculture, as it is highlighted also in the Farm to Fork Strategy. It is not only important from marketing and sales points of view but also it can radicalise the farming methods, which could have an important role in times when physical contact is highly recommended to avoid. Moreover, we need more than ever to implement the European Green Deal in order to improve the competitiveness of the European agriculture, in harmonisation with the new CAP. A green transition is essential and topical so is the proper funding of agriculture.

Attila Ara-Kovács
Member of the European Parliament

Key Opportunities for a Sustainable Recovery

Farmers and input providers

Opportunity	Source
Potential new consumer base	More individuals seeking local products
Innovations in the production process towards better resource efficiency and lower environmental impact	Changing demand and social preferences requiring alterations to the production process
More direct contact with consumers and higher margins	Shortened distance between farmers and consumers as a result of changing consumer preferences
Economies of scale through increased national and regional cooperation	Disruption of larger international supply chains but continued investments in transport infrastructure in CEE

How will the COVID-19 Pandemic impact sustainability in the overall agri-food industry

In order to understand the impact of the pandemic on sustainability in the agri-food industry, we first have to define what sustainability really is for this sector. At Danone, our understanding of sustainability in our operations is three-fold. Under the umbrella of "One Planet. One Health" vision, we consider sustainable sourcing and positive farming practices, the health impact of our products, and packing circularity. With the COVID-19 pandemic, it has become clear how interconnected all of these sustainability operations are with themselves, and with the core business operations of agri-food firms.

The COVID-19 pandemic has had a massive impact on the agri-food industry. Impact that has already been visible includes growing preferences for local foods, rising importance of food sovereignty, and changing consumer choices. In regards the latter, what we have seen specifically is a higher regard for nutritional value of food. According to Ipsos global study from last month, 86% of people want the world to change significantly and become more sustainable and equitable rather than returning to how it was before the COVID-19 crisis. For Poland, this number is 85%. Moreover, 72% of people (all over the world and in Poland) want their lives to change. Today, we live in a time where consumers are prioritizing health as a way to improve their immune system. More educated and aware consumers have high expectations in regards to their demand for good products and plant-based alternatives. Therefore, we responded to that trend introducing Nutri-score labelling at part of our portfolio, to enable conscious choices.

The pandemic has generally made consumers more concerned about the planet. The spread of the pandemic has made us all more aware of how health is connected to our environment, and how, as consumers, we have a responsibility to make smart

choices not only for ourselves but also for the sake of others. This awareness is key in a sustainable recovery, which will involve all the aspects of sustainability. In order to "build back better" we have to consider not only changing consumer preferences but also investments in new more environmentally-friendly packing and, what is key, in sustainable and transparent supply chains.

Paulina Kaczmarek
Sustainable Development Manager, Danone

Food processing, storage, and transport

Opportunity	Source
Opportunities for local suppliers to showcase their own products	Growing consumer interest in local goods as well as products will lower environmental footprint
Opportunity to "green" the food production process	Changing demand requiring alterations to the production process
New and effective solutions transport solutions	Transport disruptions
Need for higher self-sufficiency within the country or region	Trade and supply chain disruptions

Retailers, restaurants, and consumers

Opportunity	Source
More informed consumer choices and new fields of competition	Growing tendency to prepare food at home and sustainability-awareness
Higher interest in local food retailers and markets and resulting positive effect on margins	Growing consumer interest in local products
Growing interest in specialized stores and resulting positive effect on margins	More demanding consumers due to continued socio-economic development or health & dietary needs
Digitalization – rise of online ordering and home delivery of food	Necessity or desire to remain home

Supportive measures

1. **Policy changes – both containment measures and support schemes – should be set in a balance between the need for protection, stability and need for sustainable recovery.** Moreover, policymakers should communicate any plans for implementing or lifting restrictions well in advance and include also as eligibility and other conditions regarding financial aid.

2. **Each of the major policy changes intended to prevent pandemic or alleviate its impact should be backed by a transparent and comprehensive economic impact assessment.** Since March, many governments and other stakeholders gained necessary and valuable knowledge regarding adequacy, costs and effects of different programs and instruments. Particularly there is a large body of evidence and data regarding impact of COVID-19 crisis on retail trade, including foodstuffs.

3. **Policymakers must ensure proper monitoring and reacting to risks that might disturb local markets and international trade.** Crisis management, including containment measures, border controls and other administrative decisions that might affect agri-food industry should be a subject for more intense and effective intergovernmental cooperation.

4. **CEE governments and regional agri-food industry should consider European Green Deal rather as an opportunity than solely a challenge.** At the same time, proper structural policies are required to improve CEE agri-food industry position in the global value chain as well as to address pressing sustainability issues and social expectations.

5. **Further improvement of transport infrastructure and development of clusters in CEE is required to gain new markets, boost growth of SMEs and thus reach satisfactory economies of scale in agri-food industry.** CEE governments should continue to invest in road and rail networks, improving accessibility of major cities, ports as well as rural areas.

6. **Branding and promoting products of agri-food industry as reaction to changing consumer preferences.** Local and regional governments should cooperate with industry representatives and work together to improve business environment for sustainable recovery.

The European Green Deal as a catalyst for further change

The pandemic has accelerated various forces of change in the agri-food industry. The opportunities listed above could be utilized to ensure sustainable and inclusive growth within the industry. In fact, as process of change induced by the pandemic take fold, farmers and producers alike should already be thinking not only about how to combat the changing economic landscape post- pandemic, but also the policy landscape being greatly changed by the European Green Deal. The European Green Deal[30], a set of EU policy initiatives, indicates how to achieve the major European goal – be the first climate-neutral continent by 2050. It maps a new, sustainable and inclusive growth strategy to boost the economy, improve people's health and quality of life, care for nature, and leave no one behind. The agri-food industry is in the center of this policy, with a new Farm to Fork Strategy[31], issued on May 5th, 2020, of which the major ambition is to transition towards a new, sustainable food system.

This new policies, along with upcoming new legislation (firsts proposals to be issued on Q1 2021) are a major disruptors for the agri-food industry. The key opportunities and risks arising from them are described below:

Necessary changes for the agri-food industry related to the European Green Deal

- The big pressure on EU decarbonisation will require significant investment in the energy sector (to transition from coal-based to the renewable energy). The investment that the energy companies will have to bare will result in the higher energy prices. Mass production of poultry and greenhouse farming, for example, are highly energy intensive. The higher costs of energy will have a direct impact on operational costs and might results in higher food prices.
- The switch to more sustainable farming methods has been determined as an urgent action to be taken. The use of pesticides and antimicrobials and fertilization has to be significantly reduced. The industry has to work on increasing organic farming, improving animal welfare, and reversing biodiversity loss. In the long term, this might help not only decrease the environmental footprint but also build farming that is more resilient. In the short-term, it will cause challenges for farmers and agri-sector, as it will require significant changes in the farming models (e.g. use of bio-fertilizers) However, the EU is fully aware of the possible difficulties arising from the new policy and plan to provide significant funds for i.e. R&D activities (see overarching opportunities below).
- The minimization of plastic packaging use is required by new legislation (e.g. Single Use Plastic Directive[32], EU Directive on Packaging and Packaging Waste[33] and Waste Directive). The new financial obligations related with placing the packaged good on the market (e.g. new EPR schemes, Plastic Tax etc.). As a result the alimentary products will be either more expensive (which might result in decreased demand) or in a lower profit for the producers.
- Pressure to decrease the GHG emissions by all sectors of economy, might have a significant impact on meat industry, as this is one of the most carbon intensive sectors. Although it is not clear for the moment, which legal institutions/specific legislation will be introduced, the initial proposals (non-official) focuses on imposing new taxes on meat production. Together with consumers tendencies to shifting towards more plant-based diets, the potential increase of prices, it might result in significant decrease in demand for the meat. Therefore, the sector of production and processing meat will face major challenges. Certain companies are already preparing for that by producing plant-based sausages, steaks and burgers along with traditional meat-based products.

- The proposed new Carbon Adjustment Mechanism (currently in the public consultations[34]) – more commonly referred to as a carbon border tax. The tax would reflect the amount of carbon emissions attributed to goods imported into the 27-nation region and would be imposed on the goods imported to the EU might also have serious implication on meat production. The majority of farm animals (e.g. chickens, beef) are fed with soy-based feed, which is mostly imported to the EU. As such, it is highly likely that the price of animal feed will be influence by the new tax and that the costs of meat production will be higher.

Opportunities for the agri-food industry related to the European Green Deal

- To enable the required changes, the EU plans to allocate significant funding to the agri-food industry. Under Horizon Europe, the EU proposes to spend EUR 10 billion on R&I initiatives in the area such as food, bio economy, natural resources, agriculture, fisheries, aquaculture and the environment. It also plans to allocate necessary resources to boost the use of digital technologies and nature-based solutions for agri-food. A key area of research will relate to microbiome, food from the oceans, urban food systems, as well as increasing the availability and source of alternative proteins such as plant, microbial, marine and insect-based proteins and meat substitutes.
- Despite the new policies that might result in increased costs of food, the EU declares that the major goal is to preserve the affordability of food. It should be done by fostering the competitiveness in the EU supply sector, promoting the shorter supply chains and promoting the fair trade, as well as through creating new business opportunities.
- Emphasis on a circular bio-based economy is a big potential for farmers. The increasing interest in bio-fuels, bio-fertilizers and bio-based plastics will result in higher demand for these goods and will help to diversify the income source for farmers. It will also allow use the certain bi-products that are of no or low value today in an innovative way (e.g. packaging made of bran, anaerobic digestion to generate heat and power). It is crucial to support farmers by limiting the market and legal barriers to development of this market.
- Fight with food loss and food waste – every year almost 20% of produced food end up on the landfill. The new bio-based circular economy has to introduce the 3R (refuse, reuse, recycle) rule to prevent the food waste on every stage of supply chain. The agri-food sector should grasp opportunity and invest into production of renewable energy from biogas from other sources of waste and residues, such as from the food and beverage industry, sewage, wastewater and municipal waste. It will have a significantly positive impact on the environment but it will also result in costs reduction for farmers (utilities costs)
- Promotion of healthy diet (especially fresh products) and push to minimize the consumption of the highly processed food rich in additives and conservatives. The EU enhances member states to impose higher VAT rates on the highly processed, reach in fat, sugars and salt food. Moreover, the EU considers to ban or at least restrict the possibility to advertise such food. This may result in even higher demand for fresh, healthy food which bring a significant opportunity for the farmers. The shorter supply chain (less processing) might result in lower prices for consumers and higher profit for farmers who will be able to sell their products to consumer with fewer intermediary.

Appendix – Methodology

Countries covered

This project covers 12 countries with Central and Eastern Europe:

Bulgaria	Croatia	Czechia	Estonia
Hungary	Latvia	Lithuania	Poland
Romania	Serbia	Slovenia	Slovakia

Agri-food industry defined

This project covers the broadly defined agri-food industry, which includes manufacturers of food products, wholesalers, retailers, as well as restaurateurs. It is therefore, this grouping of sectors and actors, which this report collectively considers the agri-food industry:

The Agri-Food Industry	
Sector	Relevant NACE Rev. 2 Sector Codes
Input Providers & Farmers	A01, A03
Processing, Storage, and Transport	C10, C11, C28.9.3, G46.2, G46.3
Retailers	G47.2, G47.8.1
Food services	I56

Project aims

The overarching aims of the analysis are:

- To identify the impact of COVID-19 on specific areas within the Agri-food industry of each country.
- To identify opportunities for sustainable recovery post-pandemic.

Methodological approach

The project methodology combines both quantitative analysis of sector-level data and qualitative analysis of insights gathered from literature and discussions with expert. Upon finalizing the research on historical data and the current situation within each country, foresight analysis to study how impact across sectors will develop under multiple COVID-19 scenarios. Based on this, specific short and medium-term consequences of the pandemic on specific areas of the industry are mapped. This, in turn, will allow for the drafting of to draft short and medium-term actions that various stakeholders including public officials can take to ensure a sustainable recovery in the Agri-food industry.

Quantitative analysis

Methods

1. Descriptive statistics and cross-sectional analysis from national accounts and business sector statistics regarding production, turnover, employment, output, value added among others.
   Sources: Eurostat, National Statistical Offices, FAO, OECD
2. Input-output analysis of import and export dependencies across agri-food sectors.
   Sources: WIOD Input-Output Tables for each country
3. COVID-19 related statistics, including number of cases, deaths, and stringency index of containment measures
   Sources: Macrobond, the Oxford COVID-19 Government Response Tracker (OxCGRT)

Qualitative Primary Information Analysis

Methods

1. **Brainstorm sessions with various industry experts and academics from CEE**
   Throughout the month of August, Deloitte hosted seven brainstorm sessions regarding the impact of COVID-19 on specific segments of the agri-food industry. A total of 17 experts from all nearly all of Central and Eastern European Countries attended.

A brief Thank You

We would like to take this opportunity to thank all the experts who participated in the brainstorm sessions for all their contributions, which provided valuable catalysts for the ensuing subject matter explored in the report.

2. **Individual interviews with industry experts and academics**
   Individual interviews were held with various experts in order to gain additional insight into the situation in a given country or for a specific topic.
3. **Individual interviews with Members of the European Parliament**
   Individual interviews with Members of the European Parliament were held in September and October to gain further insight into selected channels of impact and how it related to EU-level policy.
4. **Initial impact questionnaires**
   In July, academics and industry experts from CEE countries were asked to fill out a short questionnaire regarding visible impact channels of COVID-19 on the agri-food industry. It was requested that each channel be verified by specific sources.

Qualitative Secondary Information Analysis

1. Literature review of relevant reports from international organizations and national-level agencies
2. Literature review of newest economic and health published academic papers and working papers
3. Literature review of media articles discussing COVID-19 related impact
4. Review of containment measures and support measures from third-party sources and directly from respective government websites

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About EIT Food

EIT Food is Europe's leading food innovation initiative, working to make the food system more sustainable, healthy and trusted.

The initiative is made up of an innovation community of key industry players across Europe, consisting of over 90 partner organisations and over 50 startups from 16 EU member states. It is one of the Knowledge and Innovation Communities (KIC) established by the European Institute for Innovation & Technology (EIT), an independent EU body set up in 2008 to promote innovation and entrepreneurship across Europe.

You can follow EIT Food via www.eitfood.eu

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