

Türkiye's Food Security Outlook

Gül Yücel

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Main Messages

- Efficiency gains in agricultural production are slowing down
- Comparatively lower progress in food security outlook
- Food price inflation adds further pressure on affordability
- Currency stabilization required to curb down food inflation
- Climate crisis posing threat on water resources
- Despite awareness on food security, progress of policy actions are unclear
- Ample opportunities across the value chain: tech, logistics, supplies, etc.

A primer on food security

Food Security

«Gıda Güvencesi»

All people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life.

Food Safety

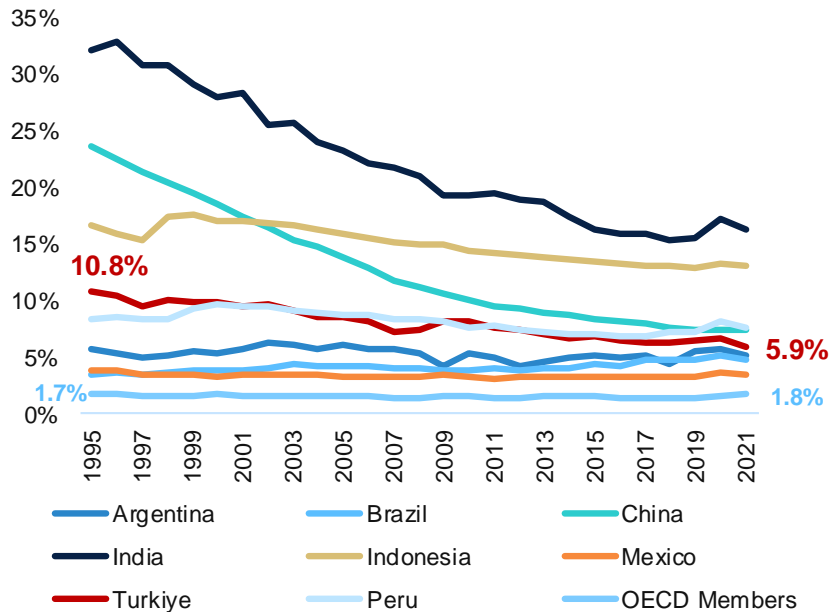
«Gıda Güvenliği»

Set of measures taken to eliminate all kinds of hazards that may occur in foods including those of a physical, chemical, biological nature.

Food security is a broader concept than food safety as it also covers affordability, availability, and the state of natural resources

Agriculture output contributes with almost 6% of total value added

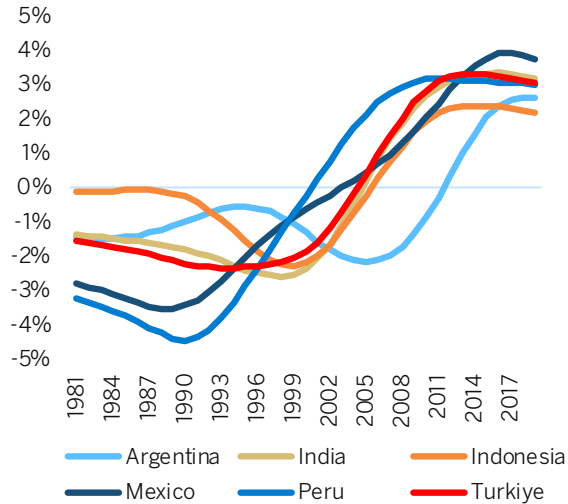
SHARE OF AGRICULTURAL VALUE ADDED IN GDP (2015 CONSTANT PRICES, %)



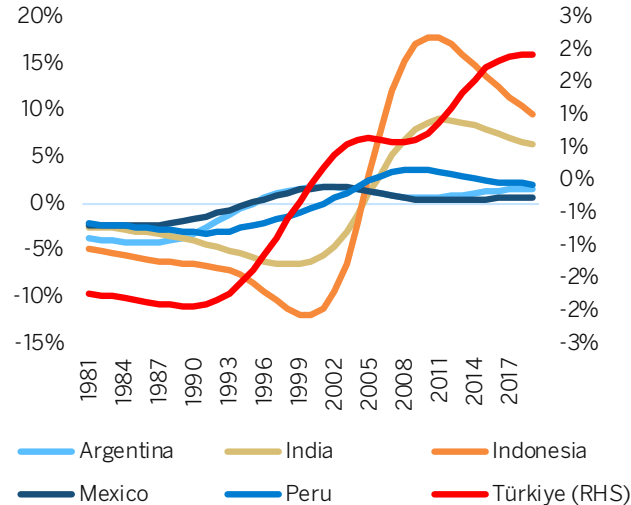
- Türkiye's agricultural value added was US\$66.3bn in 2021, representing 5.9% of total GDP, down from 10.8% in 1995
- The downward trend in the share of agricultural value added is common across many emerging economies
- The share of agricultural value added in OECD countries has remained stable at roughly 1.8%
- These trends reflect a shift of economic activity from agriculture to industry and services, consistent with urbanization, economic development and increases in agricultural productivity

Agricultural productivity has slowdown in recent years

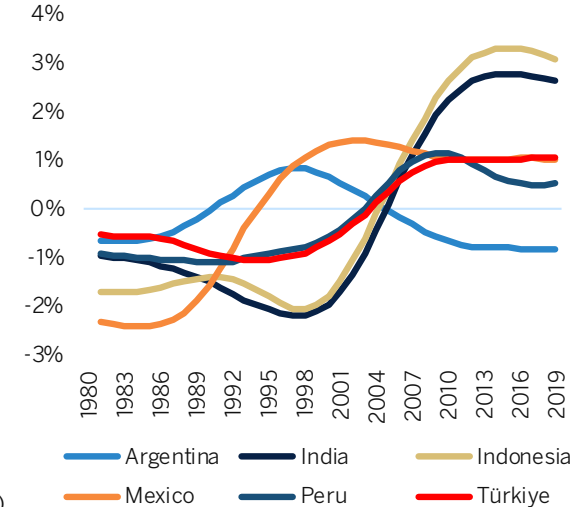
AGRICULTURAL LAND PRODUCTIVITY (% YoY)



AGRICULTURAL LABOR PRODUCTIVITY (% YoY)



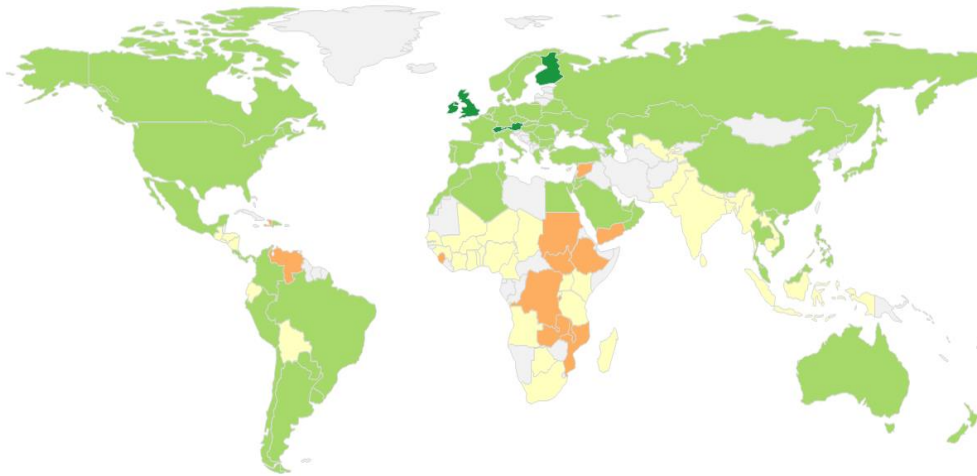
AGRICULTURAL TOTAL FACTOR PRODUCTIVITY (% YoY)



Agricultural output per unit of land and labor increased throughout 2000s across emerging economies. However, during the 2010s, agricultural productivity slowed down

Türkiye ranks 48th in the global food security index

FOOD SECURITY INDEX BY COUNTRIES (2021)

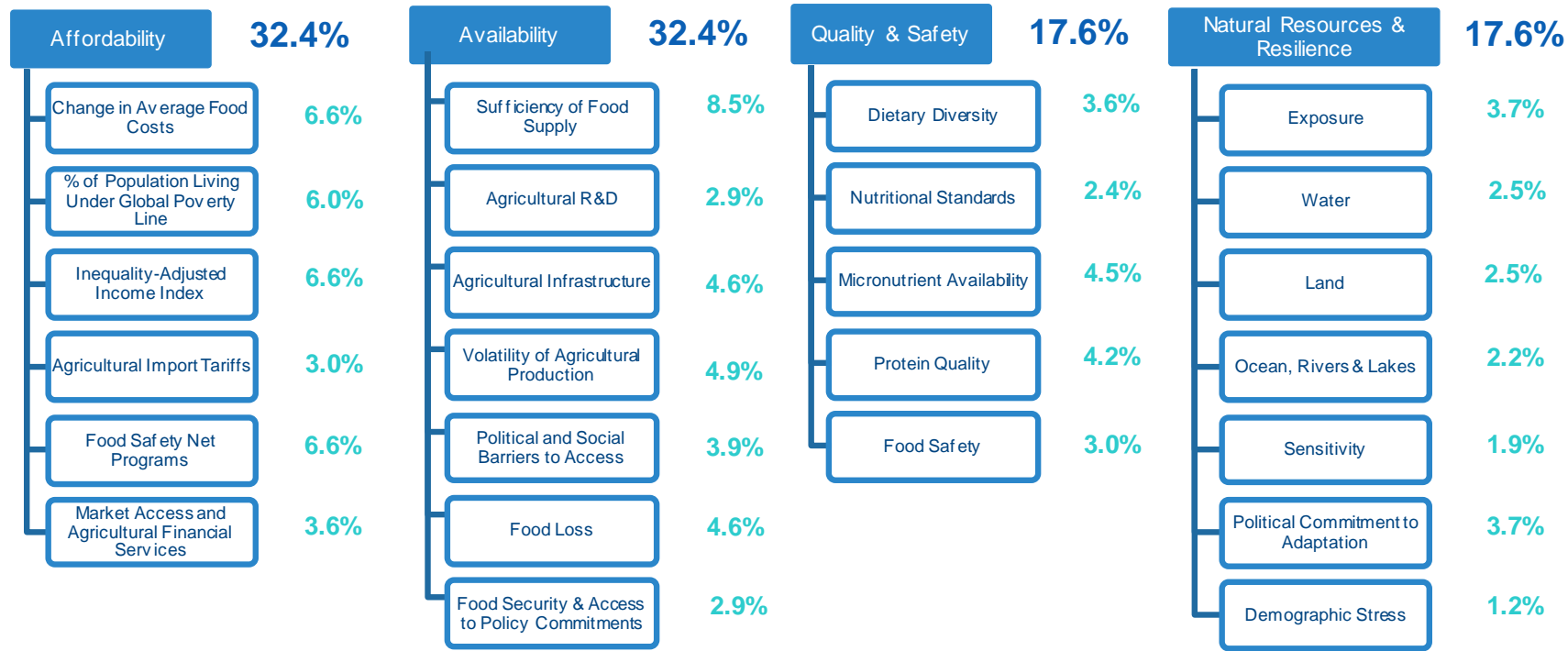


Very Good	Score +80
Good	Score 60-79
Moderate	Score 40-59
Weak	Score 20-39
Very Weak	Score 0-19.9

- The **Food Security Index** released by the Economic Intelligence Unit provides scores for **113 countries**
- Only **5 countries** (Ireland, Austria, UK, Finland and Switzerland) received a «Very Good» mark with scores above 80
- **Türkiye** was classified under the «Good» category with a score of **65**
- However, **Türkiye's rank declined from 36th** (among 105 countries) to **48th** (among 113 countries) in the last decade
- The **Sub-Saharan Africa region** makes up the majority of the countries with a much weaker outlook

How do we measure food security?

FOOD SECURITY INDEX SUB-CATEGORIES AND SUB-INDICATORS WITH THEIR RESPECTIVE WEIGHTS

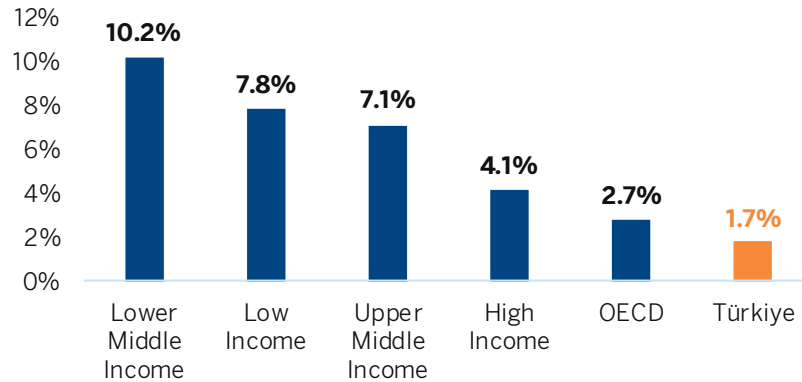


Food security index has 4 main sub-categories: affordability, availability, quality and safety, natural resources, and resilience
Affordability and availability have the highest contribution to the overall index

Among sub-indicators, sufficiency of food supply has the highest contribution followed by cost of food, income and food safety net programs

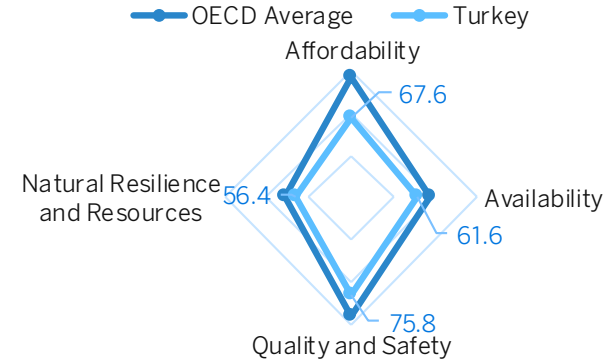
Türkiye's gains in food security have lagged other countries

CHANGE IN FOOD SECURITY INDEX (%, 2012-2021)

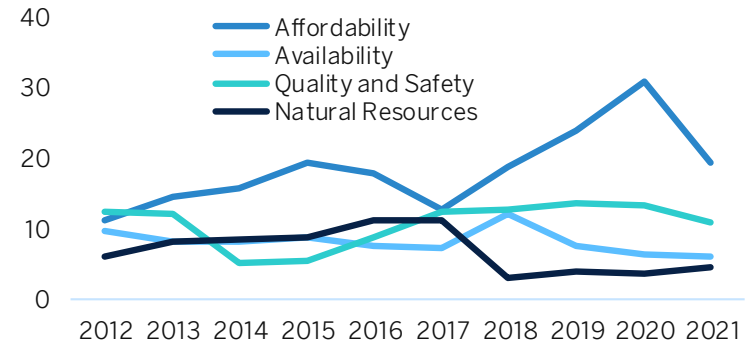


- Türkiye's food security index grew 1.7% in 2012-2021, slower than its counterparts, ie. upper middle income countries
- Türkiye scores below the OECD average in each of the subcategories: affordability, availability, quality & safety and natural resilience and resources, with the highest gap in affordability

OECD VS. TÜRKİYE BY SUBCATEGORIES, 2021

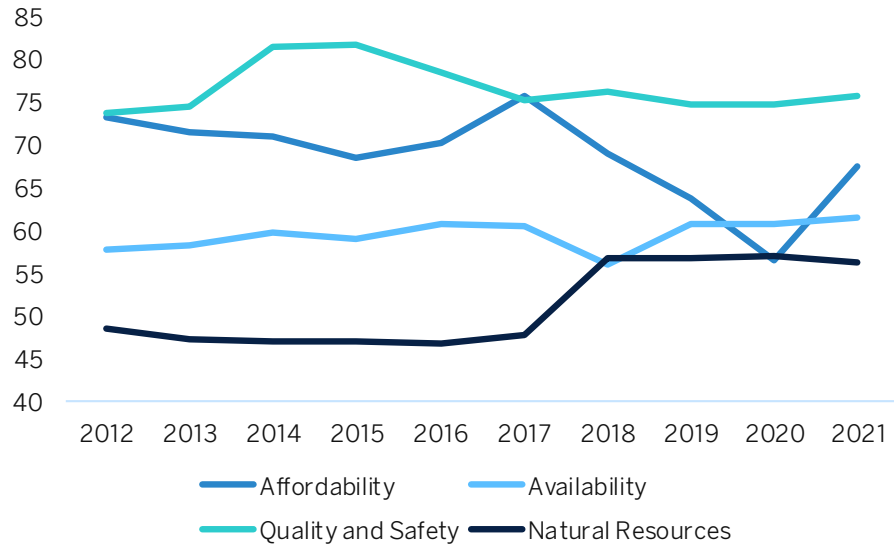


OECD VS. TÜRKİYE BY SUBCATEGORIES, GAP



Declines in affordability have hampered the overall improvement

FOOD SECURITY INDEX OF TÜRKİYE BY SUBCATEGORIES (LEVEL, 2012-2021)



Change in subcategory, %	2012-2021
Natural resources	16.3
Availability	6.4
Quality and safety	2.8
Affordability	-7.8

- Türkiye's score in affordability declined by 7.8% between 2012 and 2021
- Natural resources posted the largest gain with 16.3%, followed by availability with a 6.4% increase
- Quality & safety improved modestly, advancing 2.8%

A detailed look on Türkiye's food security outlook

While Türkiye was the third country with the highest increase in the food security index compared to the previous year, there are seven important risk factors

Affordability

Rank: 67/113



Indicators Below Countries Average

- Change in Average Food Costs
- Agricultural Import Tariffs

Availability

Rank: 42/113



Indicators Below Countries Average

- Political and Social Barriers to Access
- Food Loss

Quality & Safety

Rank: 47/113



Indicators Below Countries Average

- Nutritional Standards

Natural Resources & Resilience

Rank: 27/113



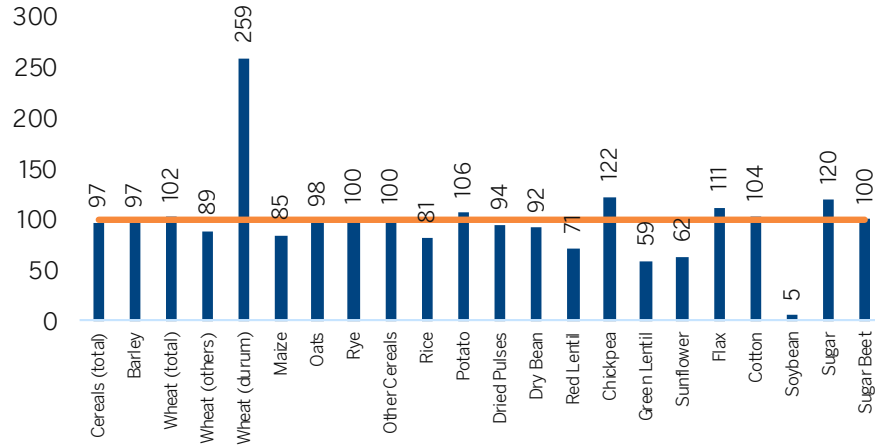
Indicators Below Countries Average

- Water
- Ocean, Rivers & Lakes

Insufficiency in cereals brings dependency on imports

DEGREE OF SELF-SUFFICIENCY

(CEREALS,%, 2020-2021)



PRODUCTION & IMPORTS FOR SELECTED CEREALS

(2020-2021)

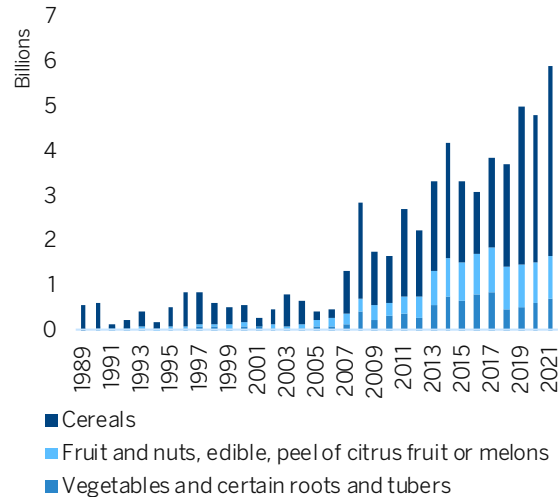
Product Name	Category	Value	Imports/Production
Wheat	Production (tons)	20,500,000	43.3%
	Imports (tons)	8,877,310	
Barley	Production (tons)	8,300,000	28.7%
	Imports (tons)	2,383,928	
Oats	Production (tons)	314,528	2.2%
	Imports (tons)	6,767	
Maize	Production (tons)	6,500,000	35.4%
	Imports (tons)	2,303,899	

- *Self sufficiency* assesses the tendency to import agriculture products. It is the *ratio of usable production to domestic use*
- When the ratio is above 100%, domestic production satisfies domestic demand. A ratio below 100% reflects the necessity to import
- Türkiye is *self sufficient* in the majority of *fruits and vegetables*, but *cereals have 97% self sufficiency*
- The decomposition across *cereal reveals critical import needs* for maize, oats, rice, sunflower, and soybean

High reliance on cereal imports from Russia and Ukraine

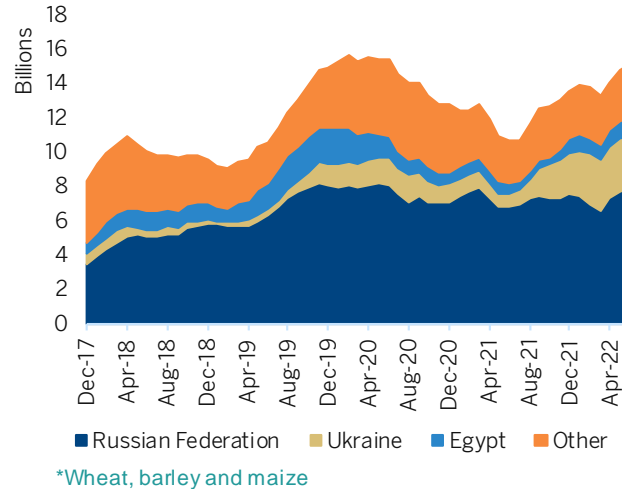
AGRICULTURE IMPORTS OF TÜRKİYE BY CATEGORIES

(USD)



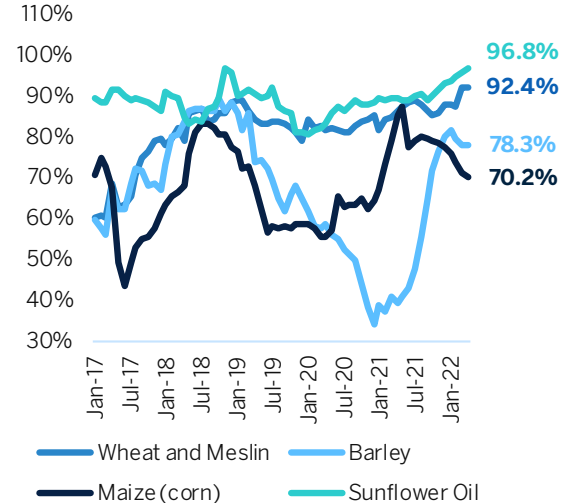
TÜRKİYE'S IMPORTS OF STRATEGIC CEREAL PRODUCTS*

(12m cumulative, net weight, kg)



% OF RUSSIA AND UKRAINE COMBINED IN TOTAL IMPORTS OF TÜRKİYE

(net weight, 12m moving total)



- Total agricultural product imports (fruits, vegetables and cereals) reached US\$5.9bn with cereals constituting 72%
- The top 3 exporters (Russia, Ukraine and Egypt) of strategic cereals (wheat, barley and maize) to Türkiye cover 79.3% (15.1M tons)
- Russia and Ukraine's share in total imports to Türkiye increased considerably for wheat and sunflower oil to more than 90%

High import dependency of exports amid positive balance

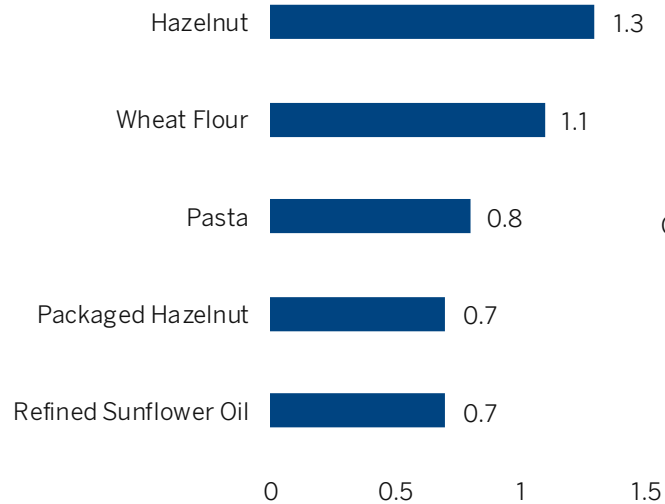
Türkiye's agricultural *imports constitute inputs* to its exports

The future course of *cereal imports from Russia and Ukraine is crucial* as Türkiye uses imported cereals in its food production

Wheat flour and pasta, the second and third highest exports of Türkiye, *are produced from wheat*, the highest imported product

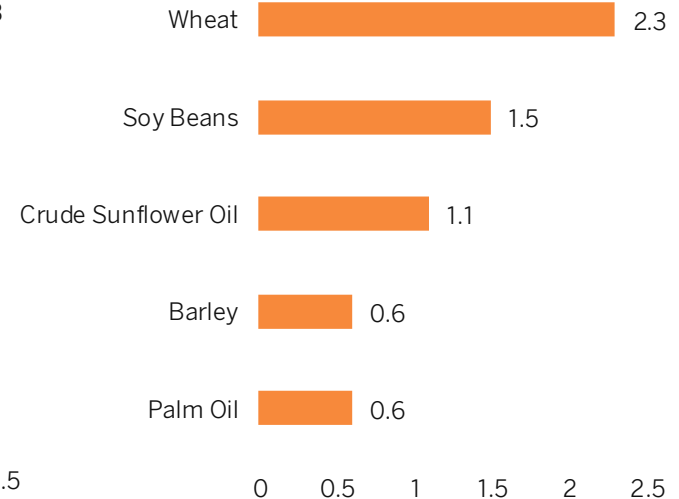
The top 5 *imported products constitute 35% of total imports*, whereas the top 5 exports account for 20% of total exports

TOP 5 EXPORTED PRODUCTS (BN US\$, 2021)



Total exports
US\$22.9bn

TOP 5 IMPORTED PRODUCTS (BN US\$, 2021)



Total imports
US\$17.2bn

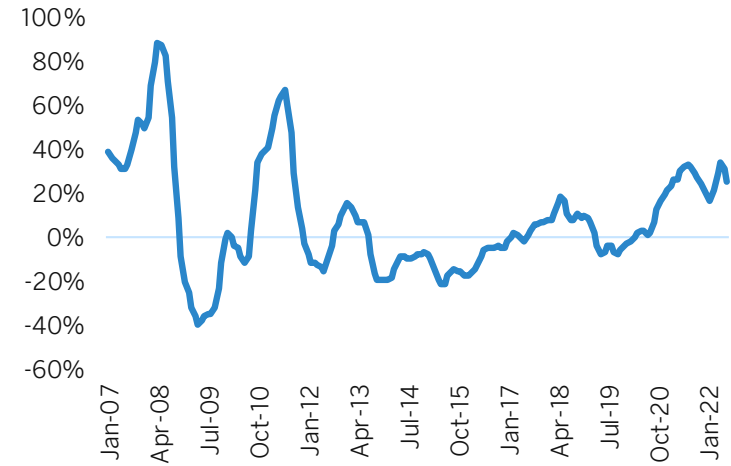
Upward pressure on international cereal prices is concerning

FAO* CEREAL PRICE INDEX (LEVEL)



*FAO: Food and Agriculture Organization

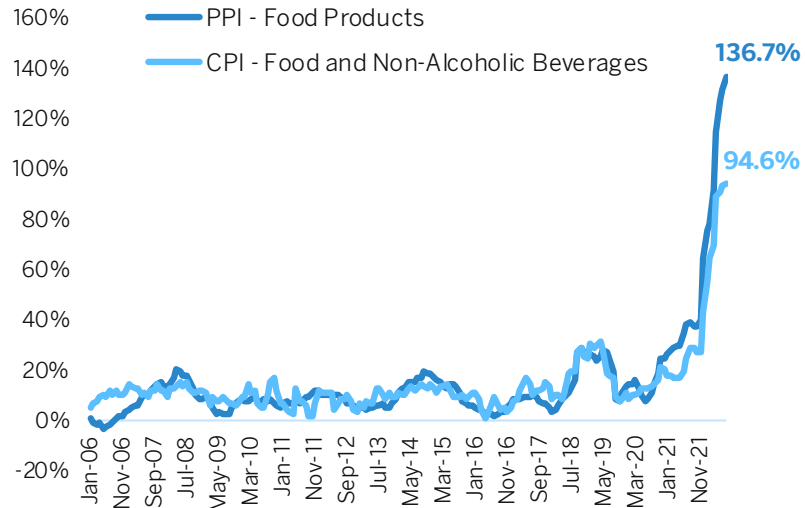
FAO CEREAL PRICE INDEX (YOY, 3MA)



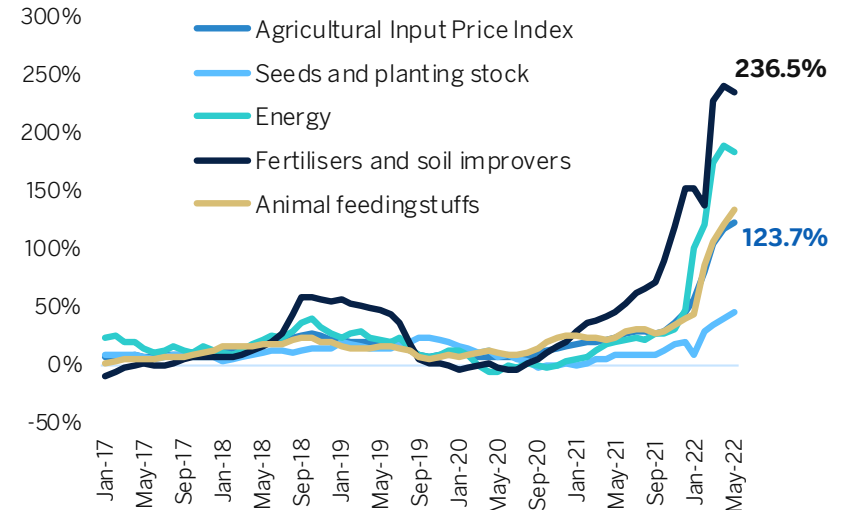
- Given the *dependency on cereal imports*, large price increases in these products *add pressures on agricultural production*
- Cereal prices have gone up to unprecedented levels, *recording the highest level in history on May 2022*
- Despite price declines in the past 2 months (limited relief from Ukrainian grain deal), the cereal price index increased 16.6% YoY in July and 4.7% YTD

Input price inflation adds upward pressures on PPI

PRODUCER PRICE & CONSUMER PRICE INDICES
(ANNUAL CHANGE)

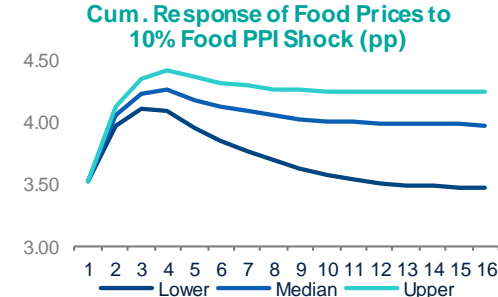
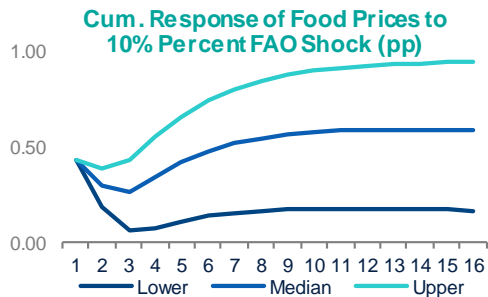
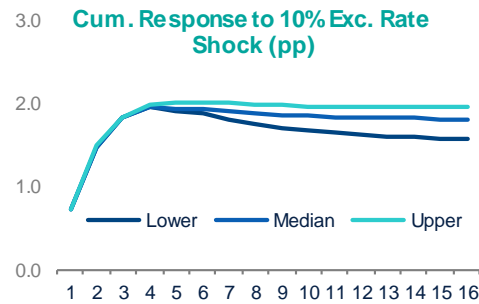
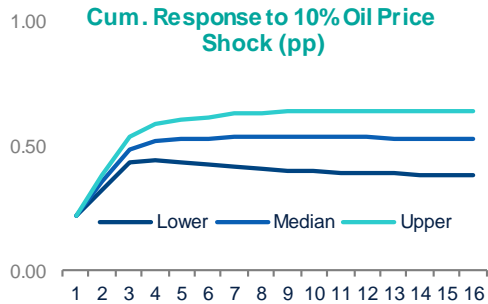


AGRICULTURAL INPUT PRICE INDEX
(ANNUAL CHANGE)

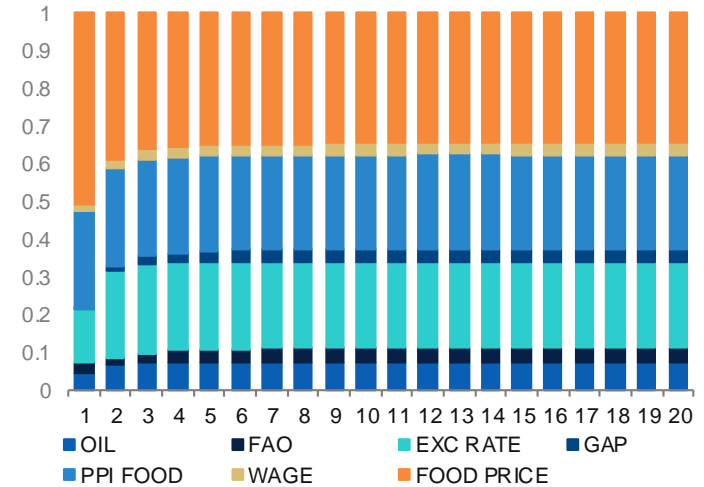


- Consumer inflation of food and non alcoholic beverages reached *an all-time high* of 94.6% YoY in July 2022
- Producer prices of food products increased 136.7% YoY in the same period
- While *fertilizer costs* have gone up 236.5% YoY, *energy prices and animal feedstuff* exert the *highest upward pressure* on PPI

Food inflation is sensitive to the exchange rate and global prices



DECOMPOSITION OF RESPONSE OF FOOD PRICES TO SHOCK FACTORS



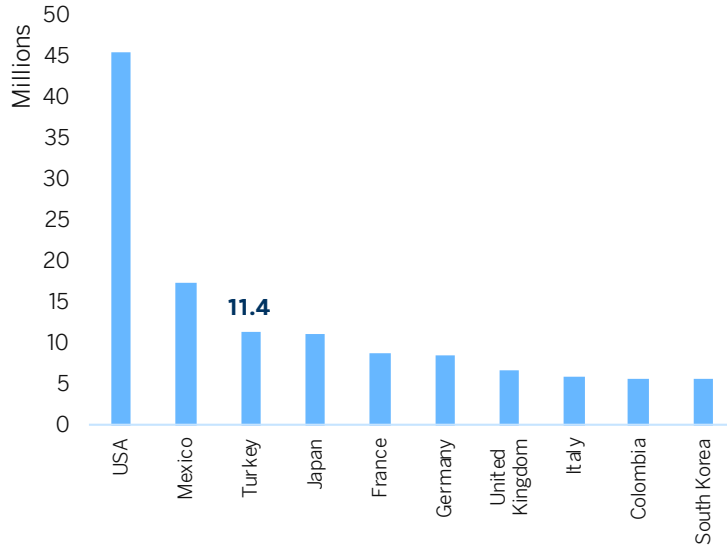
* BVAR analysis regressing food prices excluding fresh food on oil prices, FAO external food prices, exchange rate, food products producer prices excluding external price and exchange rate effects and real wages

Shocks to the exchange rate and producer prices are the two main factors explaining Türkiye's variation in food prices
A 10% increase in the exchange rate and international food prices have a 2pp and 0.6pp impact on food inflation, respectively

Significant potential opportunities if food waste is reduced

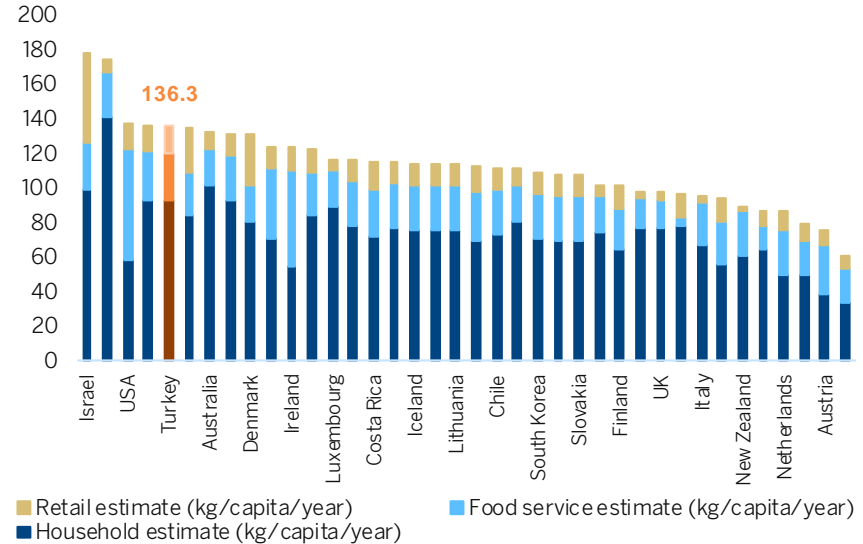
TOP 10 OECD COUNTRIES IN FOOD WASTE

(tons/YEAR)



FOOD WASTE PER CAPITA ACROSS OECD COUNTRIES, BY CATEGORIES

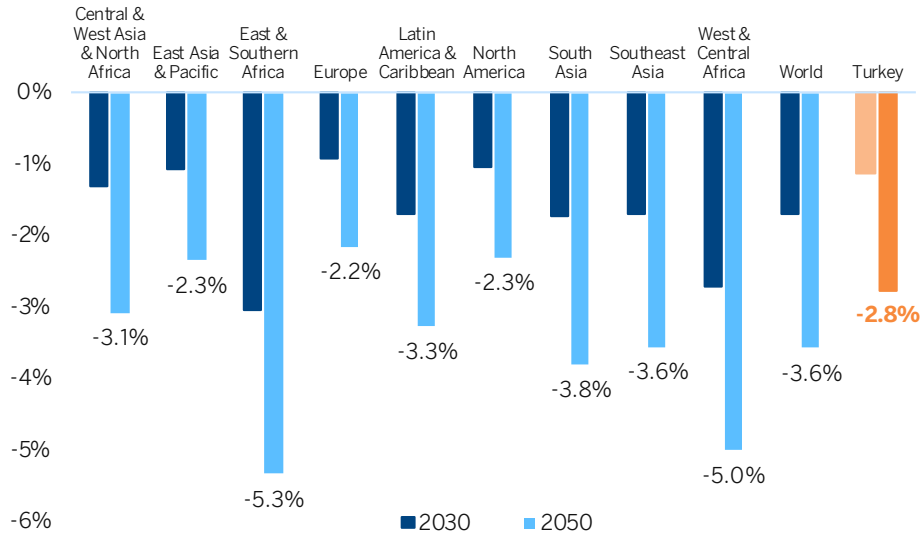
(KG/CAPITA/YEAR)



- Türkiye ranks **3rd among OECD countries** in terms of **food waste** with 11.4 million tons per year right after USA and Mexico. In terms of food waste per capita, **Türkiye ranks 5th across OECD** countries with **household waste** accounting for **68%**
- Although, food waste is a potential environmental threat, it could be turned into a “green” opportunity by producing and exporting biomethane, a direct substitute to natural gas. For example, as part of its Repower Strategy, the EU aims to increase its biomethane production target to 35bcm by 2030, which is almost 10 times current global biomethane output

Climate crisis: A major threat to food consumption

THE IMPACT OF CLIMATE CRISIS ON PER CAPITA FOOD CONSUMPTION*



*Compared to no climate crisis impact scenario
International Food Policy Research Institute (IFPRI), 2022 Global food policy report: Climate change and food systems. [doi: 10.2499/9780896294257](https://doi.org/10.2499/9780896294257)

Climate crisis poses a substantial threat

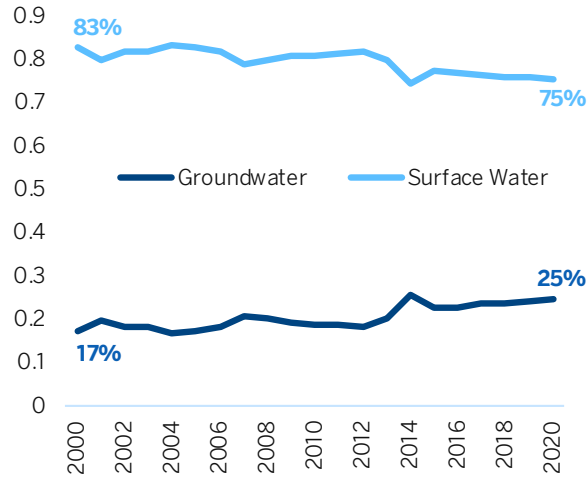
According to the International Food Policy Institute, the world's total food consumption per capita might decline by 1.7% in 2030 and 3.6% in 2050 due to climate crisis

While East & Southern Africa may experience the highest decline in food consumption per capita (5.3% in 2050), Türkiye's could decline 2.8%

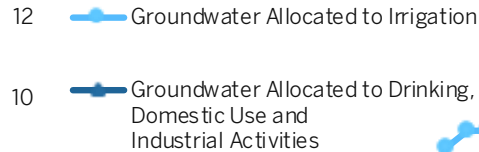
Heavy reliance on groundwater risks reserve sufficiency

GROUNDWATER AND SURFACEWATER RESOURCES USED FOR IRRIGATION (%)

(%)

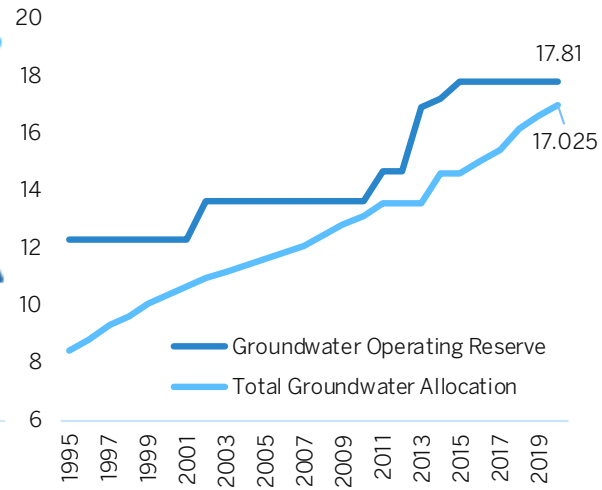


AMOUNT OF GROUNDWATER ALLOCATED (TÜRKİYE, KM³/YEAR)



GROUNDWATER RESERVE AND ALLOCATION (KM³/YEAR)

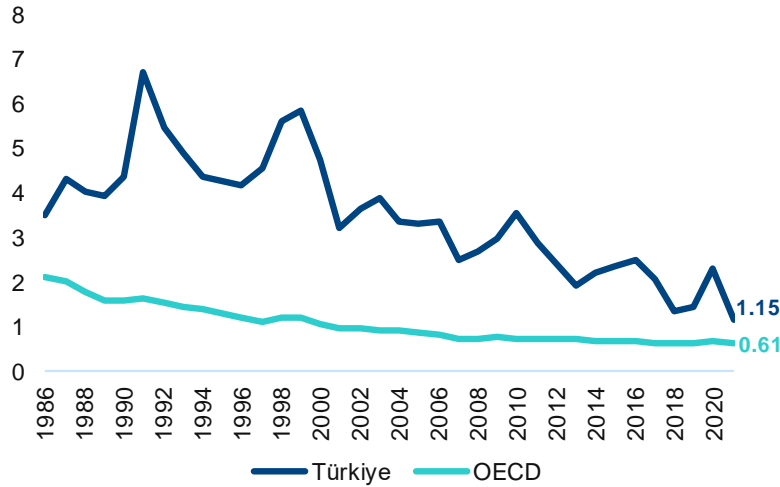
(KM³/YEAR)



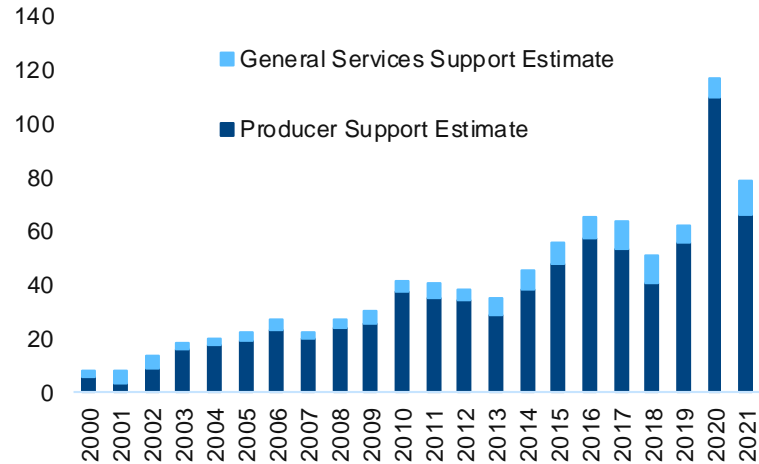
- Türkiye's scores relating to water resources are below other countries' average, meaning positive comparative advantage
- *Surface water resources take up 75% of total irrigation water*, whereas the share of groundwater resources increased from 17% to 25% since 2000s, with *irrigation composed of 67% of total groundwater reserves*
- Since *95.5% of groundwater operating reserves are allocated*, agricultural production *might place reserves under pressure* if new additions to groundwater reserves do not occur

Support for agriculture as % of GDP continues edging down

SHARE OF AGRICULTURAL SUPPORT IN GDP (%)



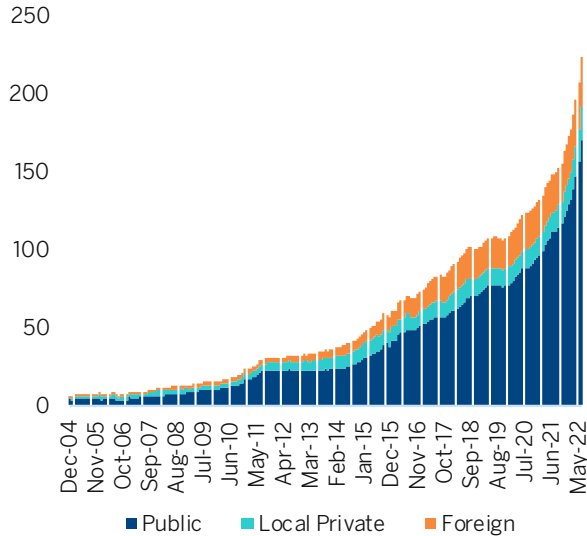
BREAKDOWN OF TOTAL AGRICULTURAL SUPPORT (BN TL)



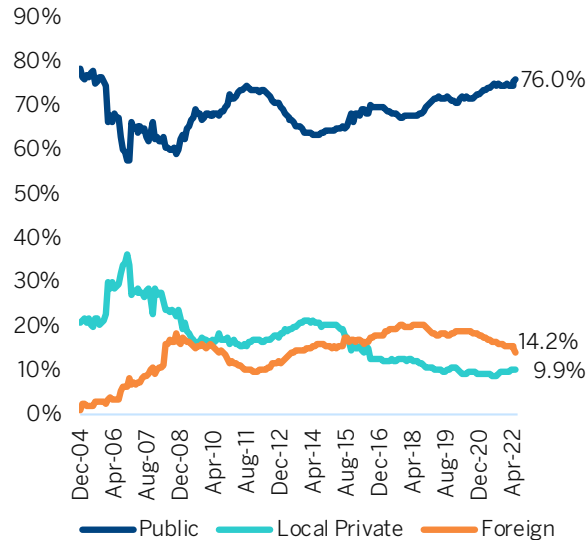
- Government support for the agricultural sector in Türkiye reached **78.3bn TL in 2021**, roughly 1.5% of total GDP
- The vast majority was *market price support to producers*, in the form of tariffs on imported products
- *General services support*, which funds agricultural research, development of infrastructure, safety inspection, marketing, and promotion of agricultural products, have *relatively a lower share of total support*

Public banks undertake most of the lending activity

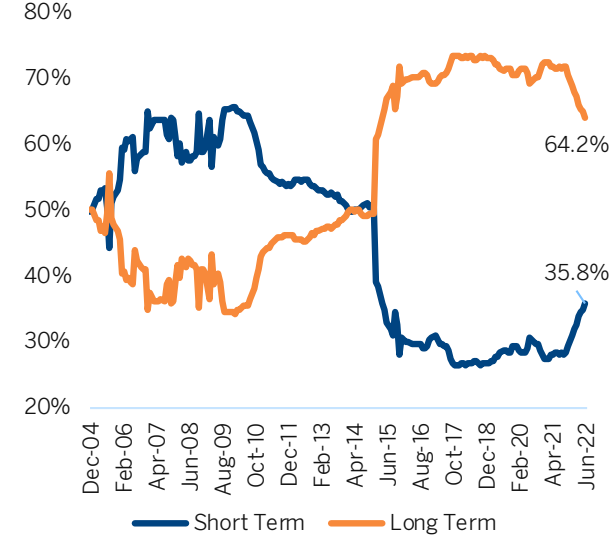
COMPOSITION OF CREDITS TO AGRICULTURE SECTOR (bn TL)



% OF CREDITS TO AGRICULTURE



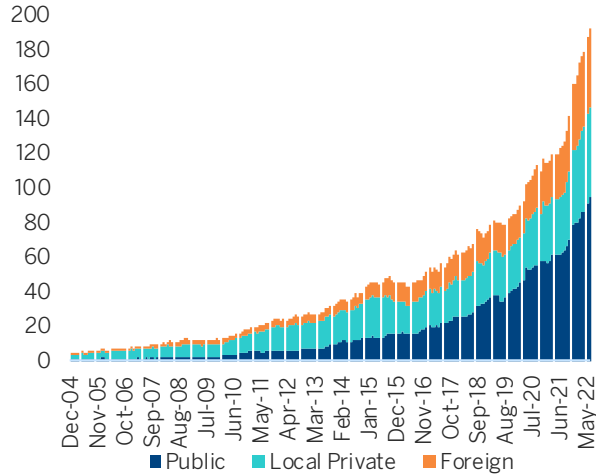
% OF SHORT TERM AND LONG TERM CREDITS TO AGRICULTURE



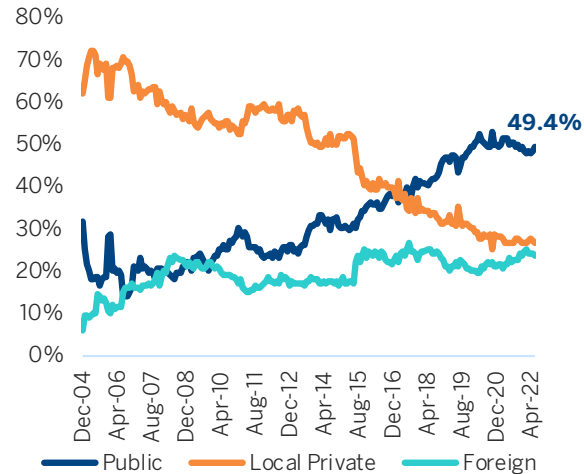
- 225bn TL of cash credits went to the agriculture sector, constituting *3.5% of total cash credits* in the banking sector as of June 2022
- *The NPL ratio of agricultural credits is 1.6%*, 90 basis points lower than the banking sector's average
- *The share of local private banks* in agriculture credits *dropped* from 36% in October 2006 to *9.9% in June 2022*
- While the majority of loans to the sector are *long term*, a recent surge in the share of short term loans is noteworthy

In food manufacturing, private bank lending is below 30% of total

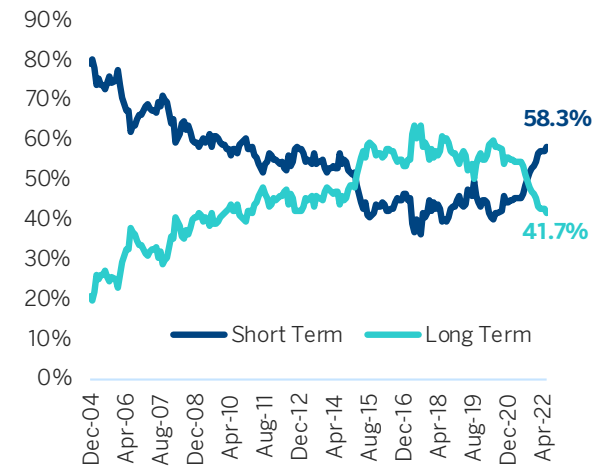
COMPOSITION OF CREDITS TO FOOD MANUFACTURING SECTOR (bn TL)



% IN CREDITS TO FOOD MANUFACTURING



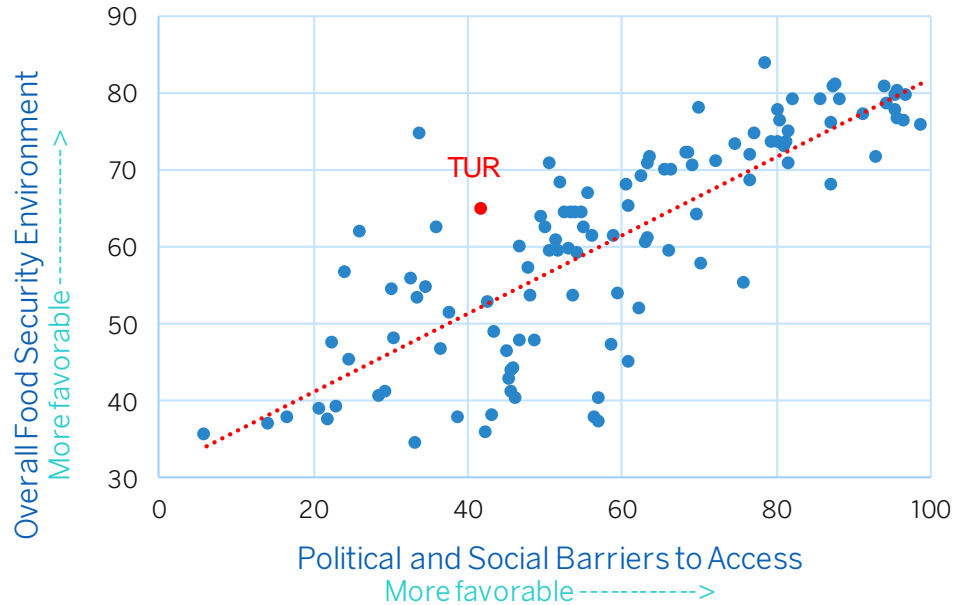
% OF SHORT TERM AND LONG TERM CREDITS TO AGRICULTURE



- 193 bnTL of cash credits went to food manufacturing sector, constituting *3.0% of cash credits* in the banking sector as of June 2022
- *The NPL ratio of food manufacturing* sector credits is *1.8%*, 70 basis points lower than banking sector's average
- While domestic private banks were the main lenders to the sector until 2017, their share dropped below that of *public banks* after February 2017, which *reached 49.4%* as of June 2022
- *The share of short term loans* surpassed long term loans after September 2021 and *reached 58.3%* as of June 2022

Food security should be a top priority for policymakers

POLITICAL STABILITY RISK & FOOD SECURITY



Türkiye scores lower in political and social barrier to access* compared to other countries with the same score of food security

These scores point to the necessity of higher involvement of policy makers to achieve better food security outlook

Political and Social Barriers to Access: A composite indicator scored between 0-100, calculated as a weighted average of sub-indicators of armed conflict, political stability risk and gender inequality

Türkiye's policy agenda for food security: *Strategic Plan*

Strategic Plan for 2019-2023 released by Ministry of Agriculture and Forestry *outlines the goals for agriculture production under 7 pillars:*

1. Raising welfare in rural areas, providing stable food supply by increasing yield and quality in production
2. Providing food and feed safety, while taking the necessary measures for plant and animal health and welfare
3. Protecting fisheries and aquaculture resources, ensuring their sustainable operation
4. Ensuring the sustainable management of soil and water resources
5. Effectively combatting climate change, desertification and erosion
6. Biodiversity conservation and sustainable management of biodiversity
7. Enhancing institutional capacity, increasing R&D capacity while initiating the research outputs into action

Success depends on the KPIs of the strategic plan.

Progress details and an economic impact analysis should be communicated to the public in a transparent way.

A more ambitious and committed approach, beyond political objectives, is needed.

Türkiye's policy agenda for food security: *National Pathway*

- The National Pathway of Türkiye was released by the Ministry of Agriculture and Forestry after the UN 2021 Food Systems Summit, and it is one of the most recent policy documents on the transformation of food systems
- The pathway *includes 5 action areas* covering various measures to tackle problems along the food value chain including: fair access, digitalization, R&D support, inclusive rural employment and climate resilience

Action Tracks	Targets
Action Track 1 (AT1): Ensure Fair Access to Safe and Nutritious Food for All	Developing fair access to safe and nutritious food, particularly for vulnerable groups
	Improving public health, food safety and strengthening inspections and controls with innovative methods
Action Track 2 (AT2): Shift to Sustainable Consumption Pattern	Encouraging the sustainability of supply and value chain in the agri-food sector and reducing food loss and waste
	Raising consumer awareness and promoting sustainable consumption

Türkiye's policy agenda for food security: *National Pathway*

Action Tracks	Targets
Action Track 3 (AT3): Boost Nature Positive Production At Sufficient Scale	Improving Climate Change Compatible Production Models
	Efficient Use of Water Resources
	Sustainable Use of Natural Resources
Action Track 4 (AT4): Equitable Livelihoods	Development of More Inclusive Policy and Measures for Disadvantaged Groups in Agri-food Sector
	Increasing Rural Vitality
Action Track 5 (AT5): Build Resilience To Vulnerabilities, Shocks & Stresses	Building Resilience of Food Systems against Climate Change, Natural Disasters and Unexpected Crisis

Although these actions are matched with the existing policy measures and goals, progress is not clearly communicated to the public and the timeline is unclear

Further clarification on the policy progress along with a more ambitious stance would help bring success

Türkiye's Policy Agenda for Food Security: *Economic Reforms*

Ministry of Finance and Treasury also aims to make an impact on food security, as part of its *Economic Reforms Action Plan* which was released in 2021. The aim is to *decrease food loss and waste in order to ensure price stability in food systems*

Target	Progress
Sale of food products left in the field and the wholesale market on the <i>Digital Agricultural Market</i>	DiTAP had been initiated for public use in 2020
Guidance for production, logistics and retail sector to prevent food losses	Guidance Document for Mitigating Food Loss in Logistics Sector (2021)
Support for cold chain systems for combatting food waste	KOSGEB Support Programme for SMEs in Cold Chain Leasing
Food Banking System will be encouraged and media outlets will be used to prevent food waste	«Save Your Food» Campaign
Contracted farming mechanisms will be devised to decrease volatilities in food prices and supply	Agriculture Union Markets opened in 2017
Regulation on Food Market Places	Legislation draft is under negotiation

Key measures which would reduce the cost of food, such as Regulation on Food Market Places, have not initiated
The guidance provided to the private sector to tackle food waste does not have any legally binding requirements

Challenges and opportunities

Short Term

- Reduce inflation and restore price stability with a *strong commitment* to contain pressures on food prices and production costs
- Commitment to *targeted policy actions* with legally binding deadlines, and a publicly-available dashboard with detailed information to improve *progress, enforcement, transparency and accountability*

Long Term

- Land consolidation to allow *more corporate players* in the agriculture sector, as well as *inclusion of younger population* into agriculture sector may help achieve higher value added along with higher efficiency in agriculture production
- More corporate players, less market distortions and inclusion of young farmers, will *rekindle private banks lending*. This will *help boost capital spending and new technologies* while improving efficiency and logistics
- To attract people to new opportunities, policies aiming at *higher purchasing power for farmers*, like *planned production and contract farming*, could be given priority
- Support for extending the *usage of heirloom seeds* and *domestic production of feedstuffs and organic fertilizers* could reduce dependency on imports
- While food waste could become a source for organic fertilizers, investments in bioenergy could be supported with food waste. Türkiye may become an important stakeholder *exporting biowaste* to the European Union
- Higher concentration on climate mitigation policies with particular focus on *water resources* would make a big difference in terms of efficient use of resources
- *Modern irrigation techniques* with investments in *better water infrastructure*, as well as optimization of product varieties according to basin's water resources, would bring significant benefits

Türkiye's Food Security Outlook

Gül Yücel

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