

# Global food systems under risk: Are we facing a permanent crisis?

Sustainability Masterclass 6–9 Nov 2023  
UOA Main Conference Building



Yannis E. Doukas  
Assistant Professor of Agricultural Economics and Policy,  
National and Kapodistrian University of Athens, Greece

# Agri-food system: Driving forces

- shifts in income
- climate crisis
- high energy prices
- Globalization
- urbanization
- unstable geopolitical conditions
- private sector's position

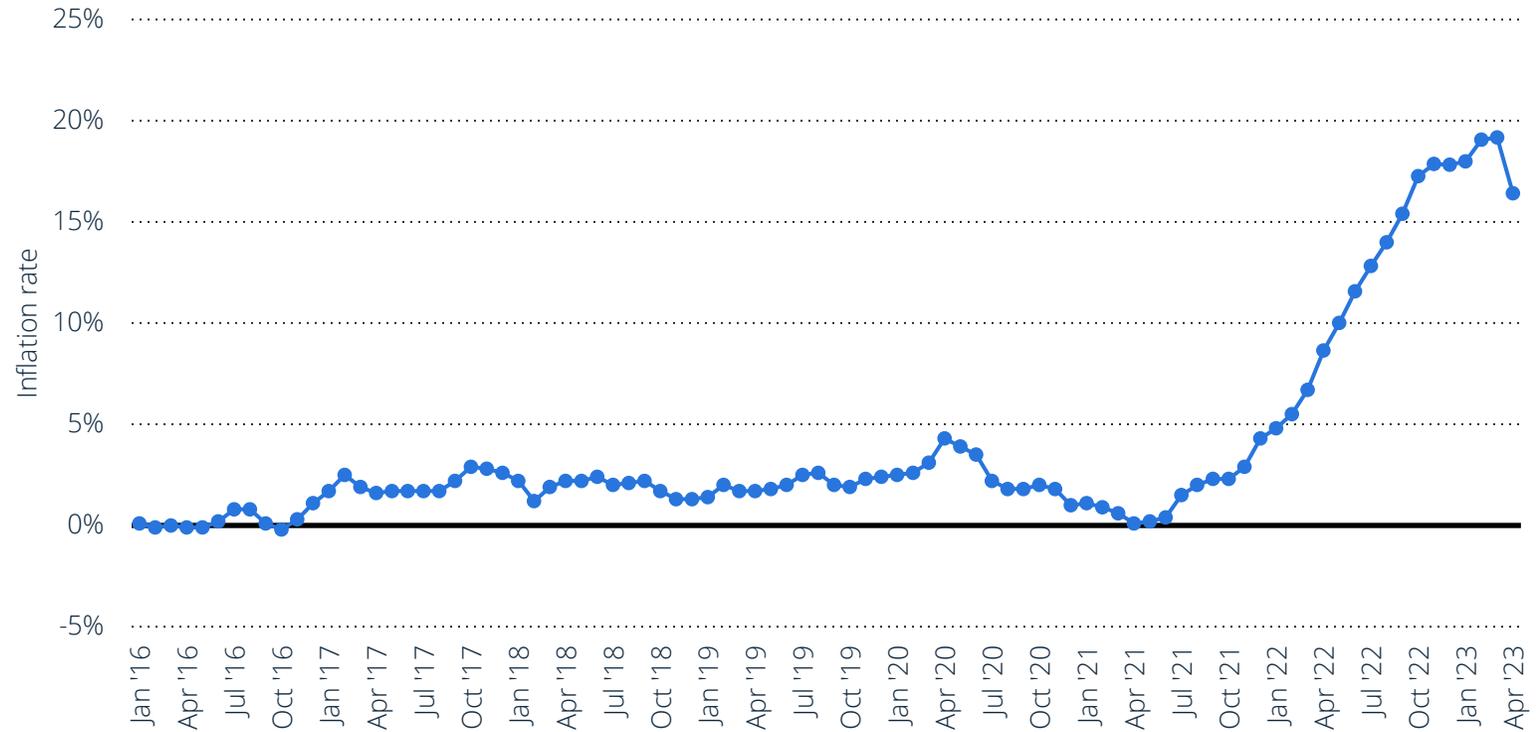
# Agri-food system: Challenges

profound impacts on the lives of the world's poor and food-insecure populations (Doukas and Maravegias, 2021).

- around 258 million individuals in 58 countries faced severe acute food insecurity in 2022
- the highest rate since 2016 (Global Report on Food Crises - FSIN, 2023)
- However, even in the more advanced economies, consumers are facing extreme increases in food prices.
- the rate of food inflation in the European Union (EU) in September 2023 was 9,4%. (Inflation Rate 5,3%).

# Food Inflation (1)

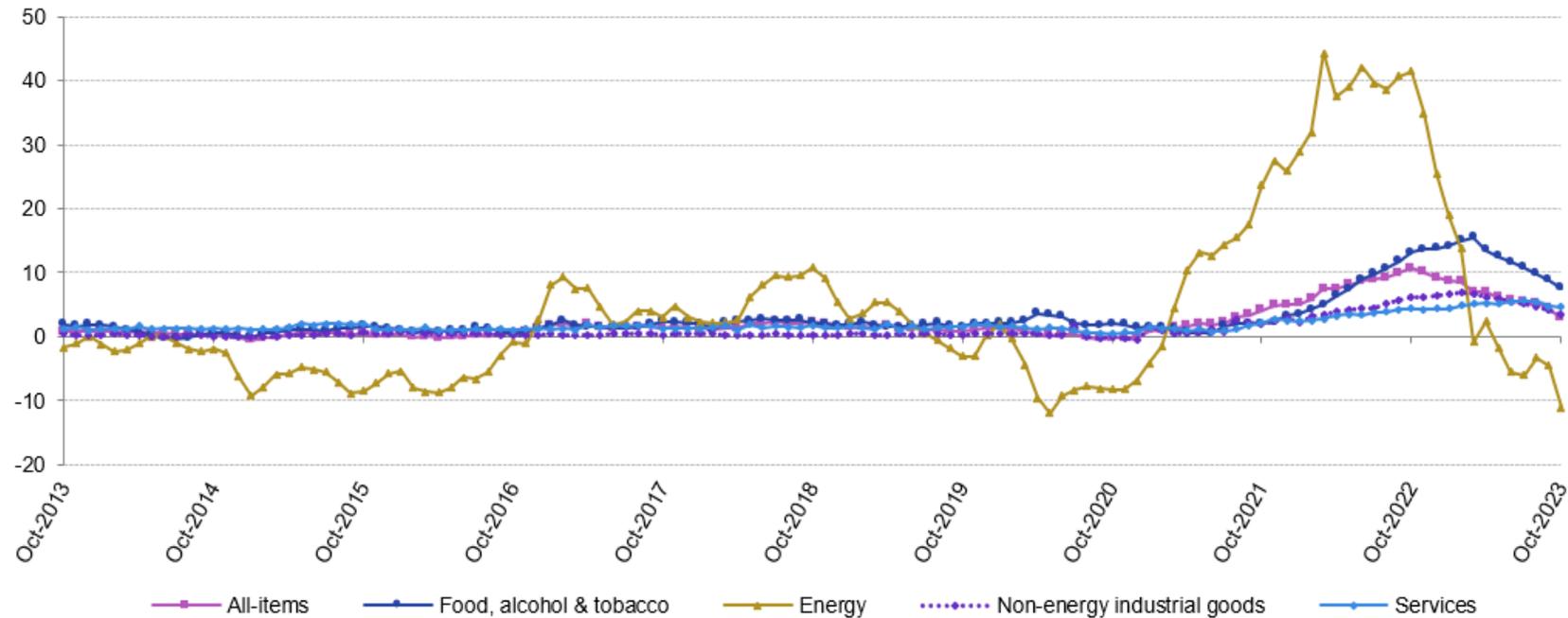
Inflation rate for food in the European Union (EU) from January 2016 to May 2023



# Food Inflation (2)

## Euro area annual inflation and its main components, October 2013 - October 2023 (estimated)

(%)



Source: Eurostat (online data code: prc\_hicp\_manr)

# “Food systems” challenges

- Food Systems, refer to “all the elements and activities related to producing and consuming food, and their effects, including economic, health, and environmental outcomes” (OECD/FAO ,2022)
- triple challenge: “ensuring food security and nutrition for a growing population, supporting the livelihoods of millions of farmers and others in the food chain, and doing so in an environmentally sustainable way” (OECD,2021)
- UN, Food Systems Summit in September 2020 to create a new approach for more effective management of the "triple challenge" in relation to the declared Sustainable Development Goals for 2030

# Covid-19 and the “food systems” challenges (1)

- Food systems are fragile and often vulnerable to threats such as the COVID-19 pandemic

disruption of crucial sectors like

- education
- health
- Economy
- human rights
- peace and global security.

The most vulnerable populations, who often reside in rural areas, are disproportionately affected by such extreme conditions

# Covid-19 and the “food systems” challenges (2)

- before the outbreak of the pandemic 850 million people worldwide were registered as food insecure
  - an additional 130 million fall into this category by the end of 2020 due to the pandemic.
  - 35% of jobs across the entire agri-food chain, which employs 1 billion people globally, where highly threatened.
- groups with specific characteristics are dramatically affected
- young people living in rural areas engaged in informal forms of work primarily family-based, with low levels of education and skills,
  - small-scale self-employed farmers,
  - the poorest rural populations whose income depends mainly on agricultural activities,
  - and refugees with limited legal rights

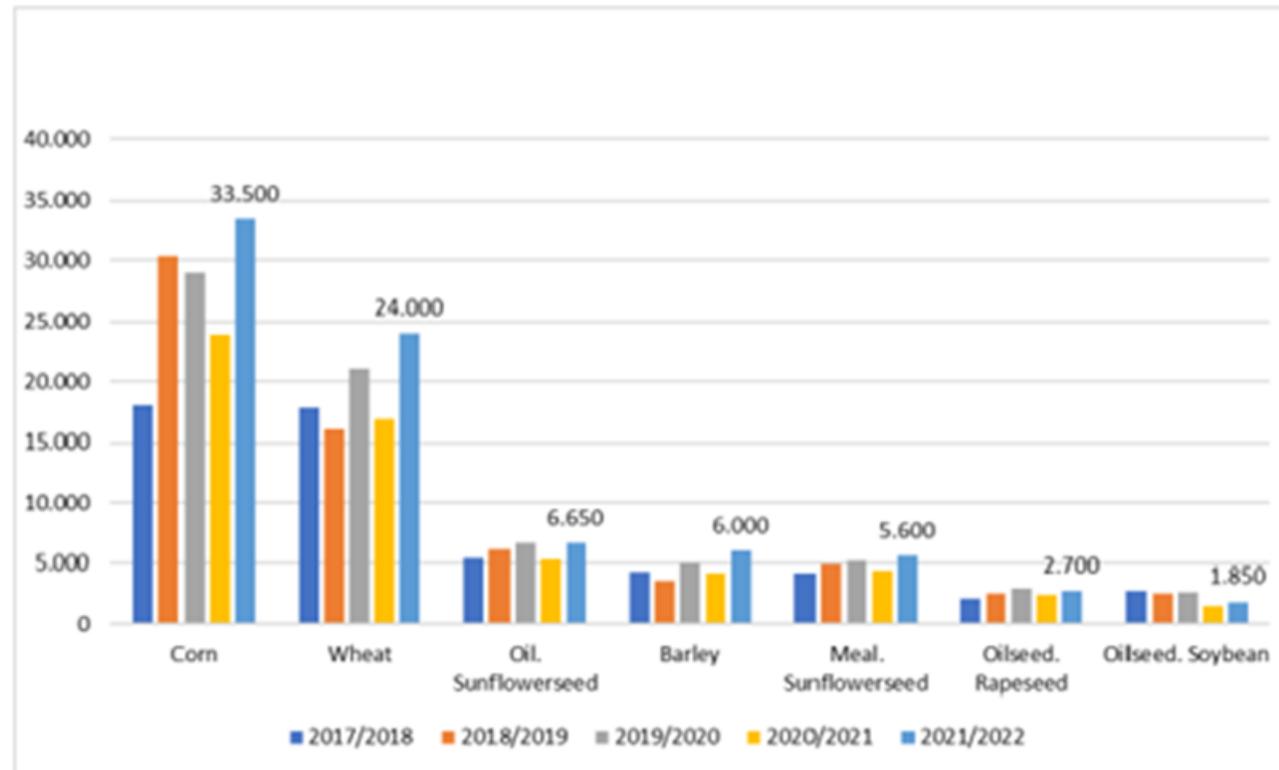
(UN, 2021)

# War in Ukraine- the 2022 food crisis (1)

- In 2021, Russia and Ukraine were ranked among the top three world exporters of wheat, corn, oilseed rape, sunflower seeds, and oil (FAOSTAT, 2023)
- the Black Sea region is a significant source of grains and oilseeds for the global market;
- Ukraine and Russia account for more than
  - 30% of the world wheat and barley trade
  - 17% of corn and
  - 50% sunflower oil
- Russia is the world's largest exporter of nitrogen fertilizers, the second-largest supplier of potassium fertilizers, and the third-largest exporter of phosphorus fertilizers, whose prices have soared.

# War in Ukraine- the 2022 food crisis (2)

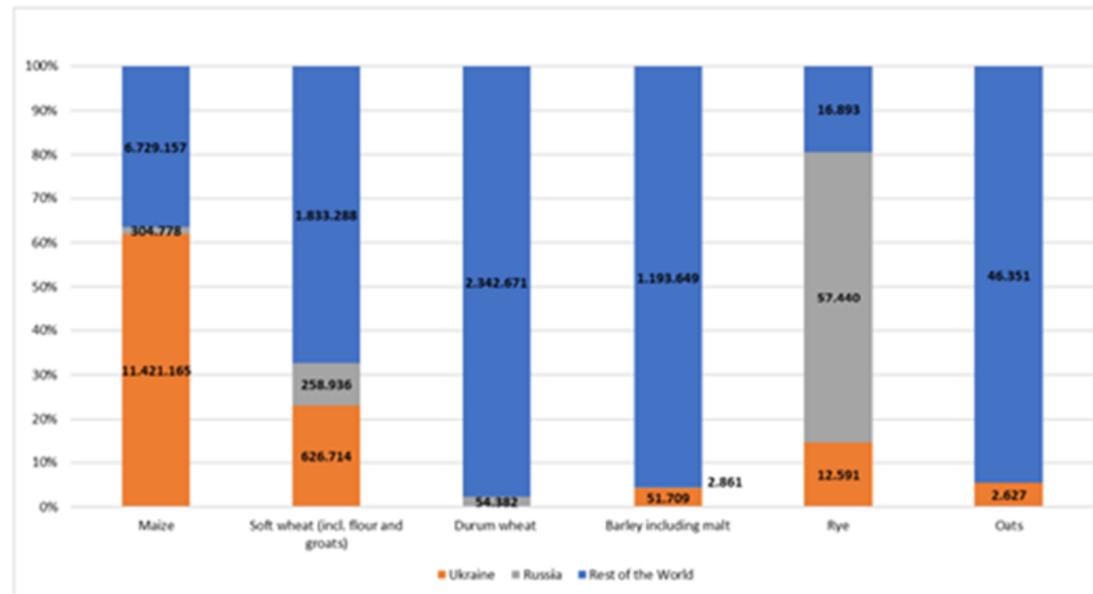
Figure 1. Ukraine Exports to the World, Main Commodities (in '000 tones)



Source: FAO, DG AGRI and USDA on FEAC, 2022

# War in Ukraine- the 2022 food crisis (3)

Figure 2. EU imports of Main Cereals (5 years Average, in tonnes )



Source: FAO, DG AGRI and USDA on FEFAC, 2022

# War in Ukraine- the 2022 food crisis (4)

- The war and the economic sanctions imposed on Russia by Western countries have disrupted the chains of transportation and distribution of products.
- a significant reduction in the supply of these products has occurred.
- wheat and barley prices have increased by 31% compared to the corresponding period in 2020
- many developing countries are entirely dependent on imports of essential agri-food products from both Russia and Ukraine to meet their nutritional needs

Figure 3. FAO Food Price Index in nominal and real terms.



Source: FAO, 2023b

# Global Responses

- **Black Sea Grain Initiative** - UN deal between Russia and Ukraine launched on 22 July 2022- to facilitate the export of grain and other foodstuffs from the ports of the Black Sea around the world and mainly to the developing countries.
- According to the Black Sea Grain Initiative Joint Coordination Centre, as of May 2023, **over 30 million tonnes of grain and other foodstuffs** have been exported.
- The Initiative **was not renewed** after its third term, which expired on 17 July 2023.

# EU Responses

- the European Union (EU), under pressure from both European farmers' organizations and the input industries, postponed the implementation of some measures under the Strategy "Farm to Fork" and Biodiversity
- So, the European Commission (EC) enabled farmers to grow crops on fallow land that has been classified as "Ecological Focal Areas" and reviewed the targets for levels of reduction in pesticide use to ensure adequacy in the production of essential agri-food products

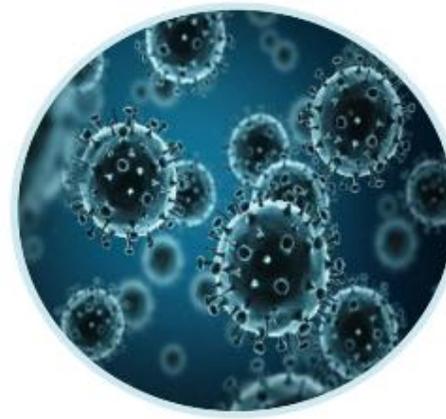
# 2030 Targets for sustainable food production



Reduce by 50% the overall use and risk of **chemical pesticides** and reduce use by 50% of more hazardous **pesticides**



Reduce **nutrient losses** by at least 50% while ensuring no deterioration in soil fertility; this will reduce use of **fertilisers** by at least 20 %



Reduce sales of **antimicrobials** for farmed animals and in aquaculture by 50%

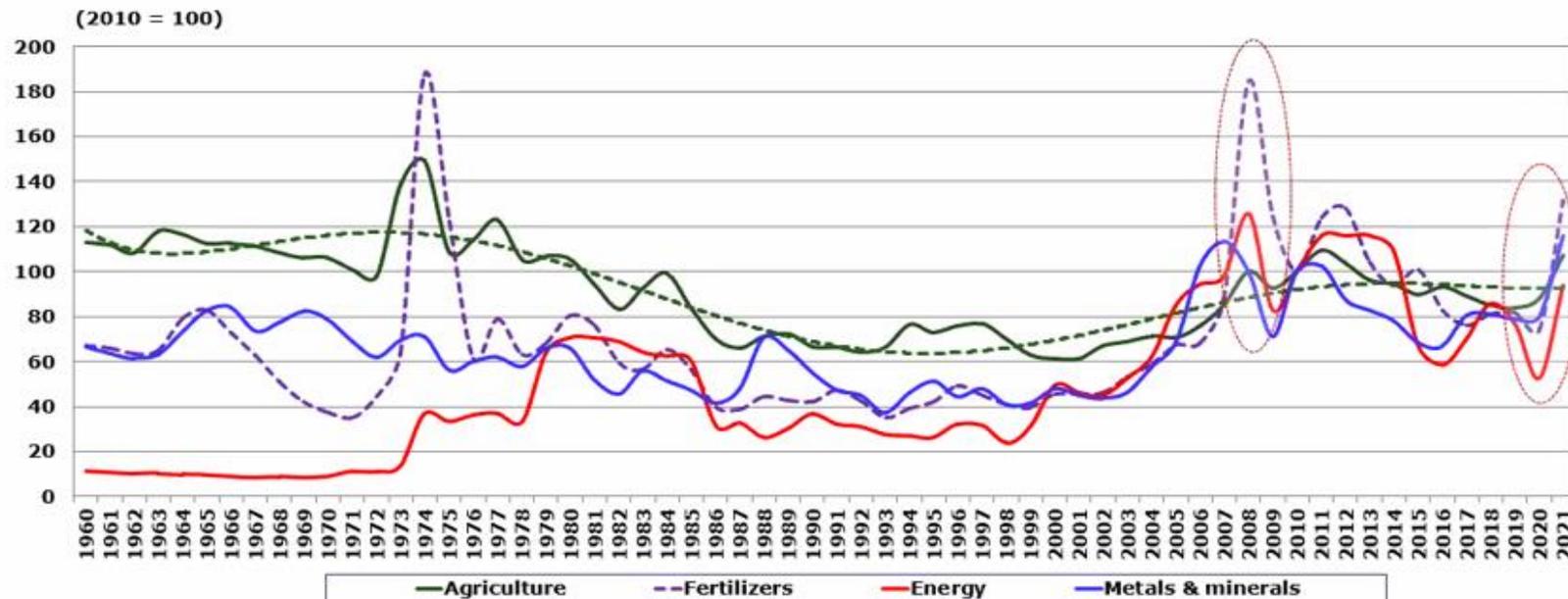


Achieve at least 25% of the EU's agricultural land under **organic farming** and a significant increase in **organic aquaculture**



# Structural pressures to global food systems

Figure 4 ***Commodity price cycles (annual real price indices)***



Source: World Bank.

Note: Dotted green line is best-fit agricultural price trend.

Source: Haniotis , 2022

# Structural pressures to global food systems (1)

## **Factors affecting global food systems**

- High input costs
- trading of primary agricultural products on parallel commodity exchanges

*The European Economic and Social Committee (EESC) argues that the way the commodities market currently operates does not support the "sustainable economy we need" or the goals for just transition, ambitious climate change, and sustainable development outlined in the European Green Deal and the UN Agenda 2030.*

- speculative behavior

*Extremely concentrated nature of the world's physical grain trade, where four highly financialized companies control around 70 and 90 percent of the world's grain trade and establish a dominant position based on information about market fundamentals, leading to high and fast-rising food prices (EESC, 2022)*

# Structural pressures to global food systems (2)

## **Factors affecting global food systems**

- tendency for private and public storage
- the return of protectionism within national borders

*Rice prices in key exporting countries including Thailand and Vietnam have climbed around 20% since India, the world's biggest shipper of the grain, banned shipments of a key variety in July 2023, tightening global supplies.*

- The shift to Western dietary patterns of large sections of the population in developing countries increases the amount of animal feed and drives up the price of primary agricultural products like wheat and maize

*In 2021, China imported 28m tonnes of maize, a bigger quantity than Ukraine's maize exports over a year (The Economist, 2022).*

- Food Disposal (about 18-20% of world production)

# Structural pressures to global food systems (3)

## Factors affecting global food systems

- conflict and insecurity : led 117.1 million people in crisis or worse acute food insecurity across 19 nations and territories in 2022
- economic shocks : affecting 83.9 million people in 27 countries in 2022– up from 30.2 million people in 21 nations in 2021
- weather extremes : caused acute food insecurity for 56.8 million people in 12 countries in 2022, more than twice as many (23.5 million) living in eight different nations in 2021

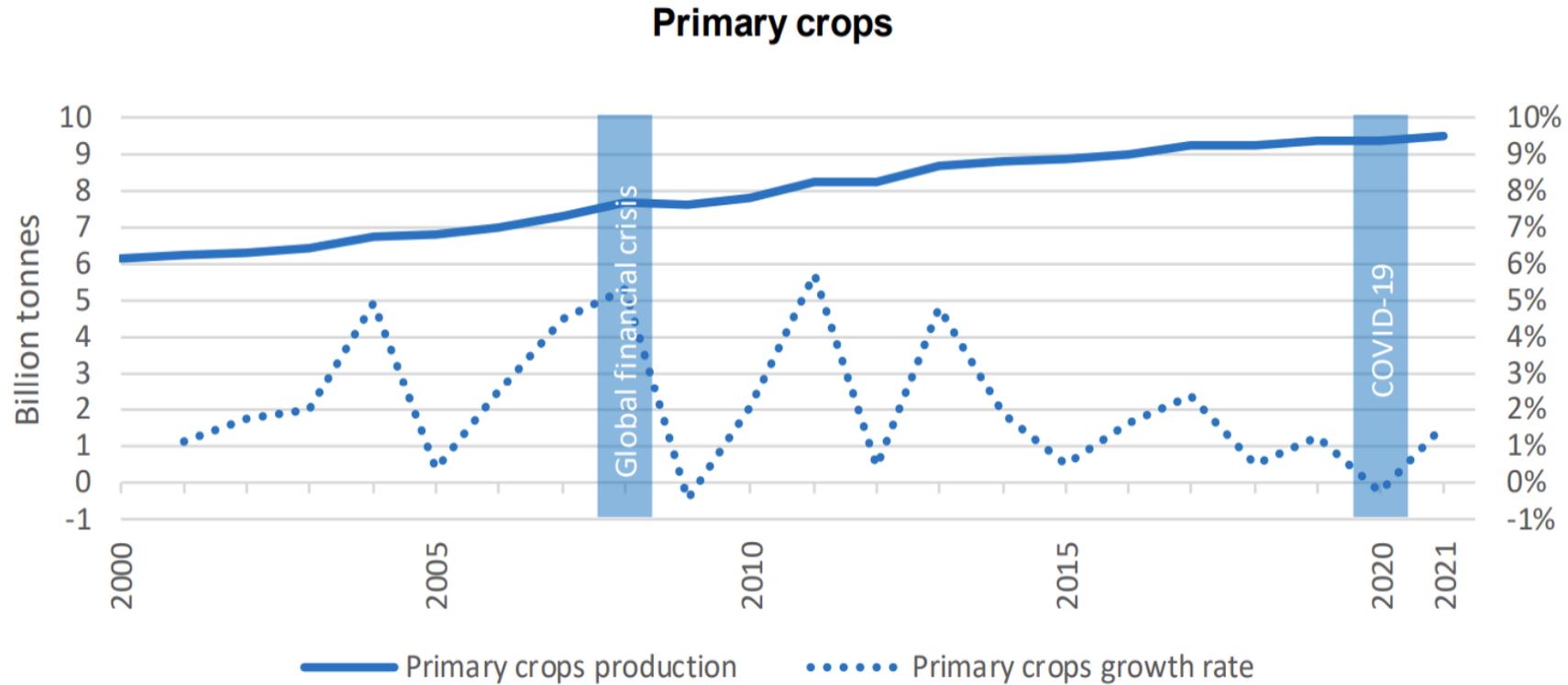
**Poor countries** today experience longer recovery times and have less ability to cope with shocks in the future since their economic resilience has dropped dramatically (FSIN, 2023).

Even in the **more advanced economies**, consumers are facing extreme increases in food prices.

# Final Thoughts (1)

- As several of the above factors are not expected to change significantly in the near future, while at the same time, we see them coming back to the fore over time, **many analysts are wondering whether global food systems are under a constant threat of crisis** if a drastic transformation is not carried out in the global agri-food chain
- it is important **not to abandon the goal of sustainability and protection of the natural environment.**
- As the demand to "**produce more with less**" becomes even more urgent, the effective management of available resources through **precision agriculture** and **renewable energy sources**, and the **modernization of the agricultural sector** through farmers' education and digital applications, have become top priority policies.

Figure 5. World agricultural production volumes and growth rate , 2000-2021



The global production of primary crop commodities reached 9.5 billion tonnes in 2021, increasing by 54 percent since 2000, but in a decreasing rate (FAO, 2022)

## Final Thoughts (2)

Over 30% of food is lost or wasted each year

- more than 13 percent of food produced globally is lost in the supply chain from after harvest and prior to retail ,(inadequate systems for storing, preserving, and transporting perishable foods in many developing and poorer countries) and a further 17 percent is wasted in households, in food services and in retail (FAO, 2023).
- food - now discarded- through a series of interventions (e.g. shift to more circular agrifood systems, consumers awarness) can adequately meet global food needs.
- Promotion of dietary patters that include foods of high nutritional value in more affordable prices.

Thank you