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The food supply chain in Tuscany and the contribution of the short food supply chain. An input-output approach

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Aims of the study and motivations

- This study concerns the organization of the supply chain in **Tuscany**.
- Why?
 - **Food value chain disruption** is one of the consequences of the health crises due to the SARS-COV-2 pandemic. According to FAO (2021), the goal of zero hunger by 2030 will be missed by a margin of nearly 660 million;
 - Many institutions urged for a **transformation of the the global food systems**, even beyond the phase of emergency (IFPRI, 2021; Webb et al., 2021; Global Alliance for the Future of Food, 2021; FAO, 2021; FAO, 2020);
 - **UN World Food Summit** in September;
 - **“Farm to Fork”** and **“biodiversity”** strategy.

Aim of the study and motivations

- As a paradox, the knowledge about :
 - The **structure of the food supply chain** (local and non-local firms involved, inter-linkages among them, distribution of the value added)
 - Its **resilience**;
 - Its **environmental sustainability**; and
 - The relative relevance of the **alternative supply chains** (eg. Networks of consumers directly purchasing from producers (so-called GAS), open markets, e-commerce)

...Is still very limited

Some definitions

- **Food system**: set of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, CONSUMPTION, and disposal (loss or waste) of food products.
- A food system is **sustainable** when it “contributes to food security and nutrition for all in a such a way that the economic, social, cultural, and environmental bases to generate food security and nutrition for **future generations** are safeguarded”.

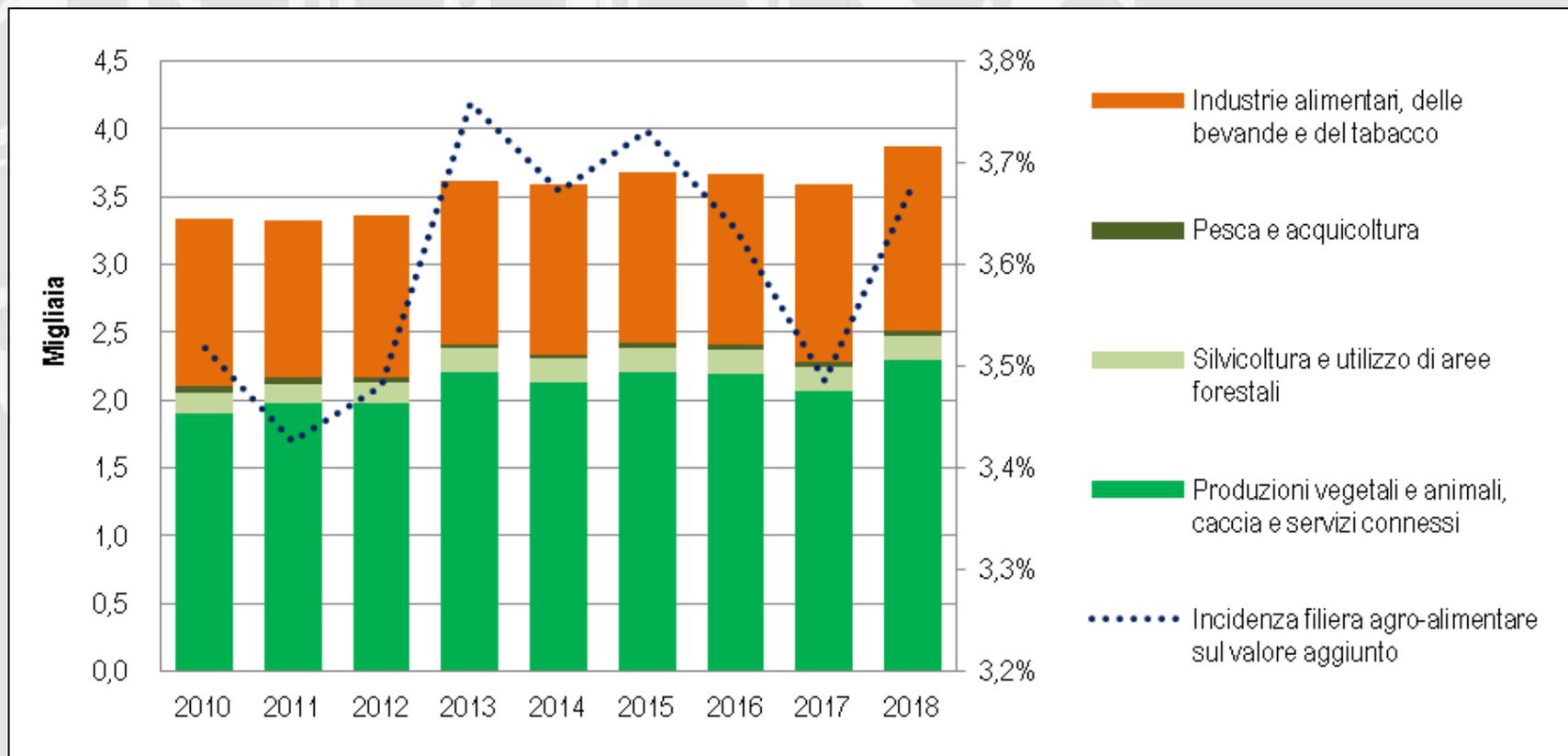
(von Braun et al., 2021)

Some definitions

- The **value/supply chain** “describes the full range of activities that firms and workers perform to bring a product from its conception to end use and beyond. This includes activities such as research and development (R&D), design, production, marketing, distribution and support to the final consumer” (Gereffi and Fernandez-Stark, 2016).
- No official definition of food supply chain but we can consider all the industries involved in supplying food for **human nutrition**

Tuscany supply chain

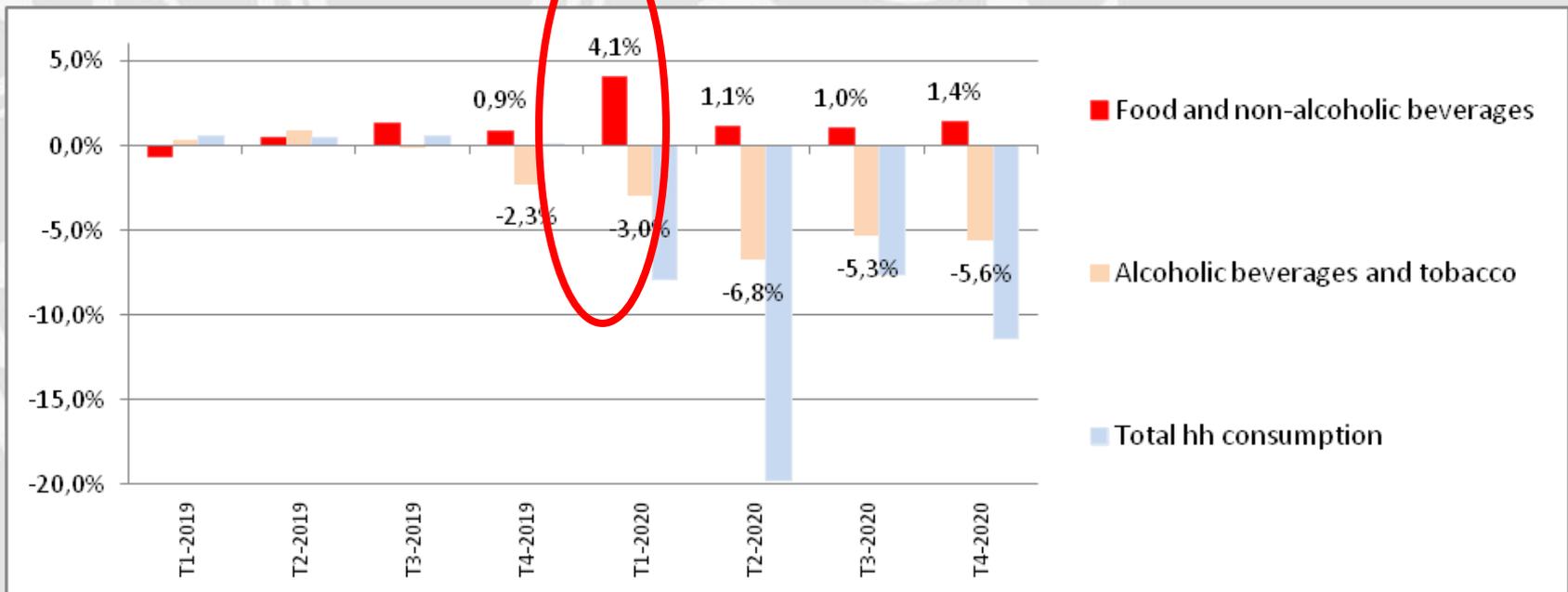
Composition of the Tuscany food supply chain (left) and contribution to the total value added (right)



Source: Own elaboration based on ISTAT data

Tuscany food system and the crises

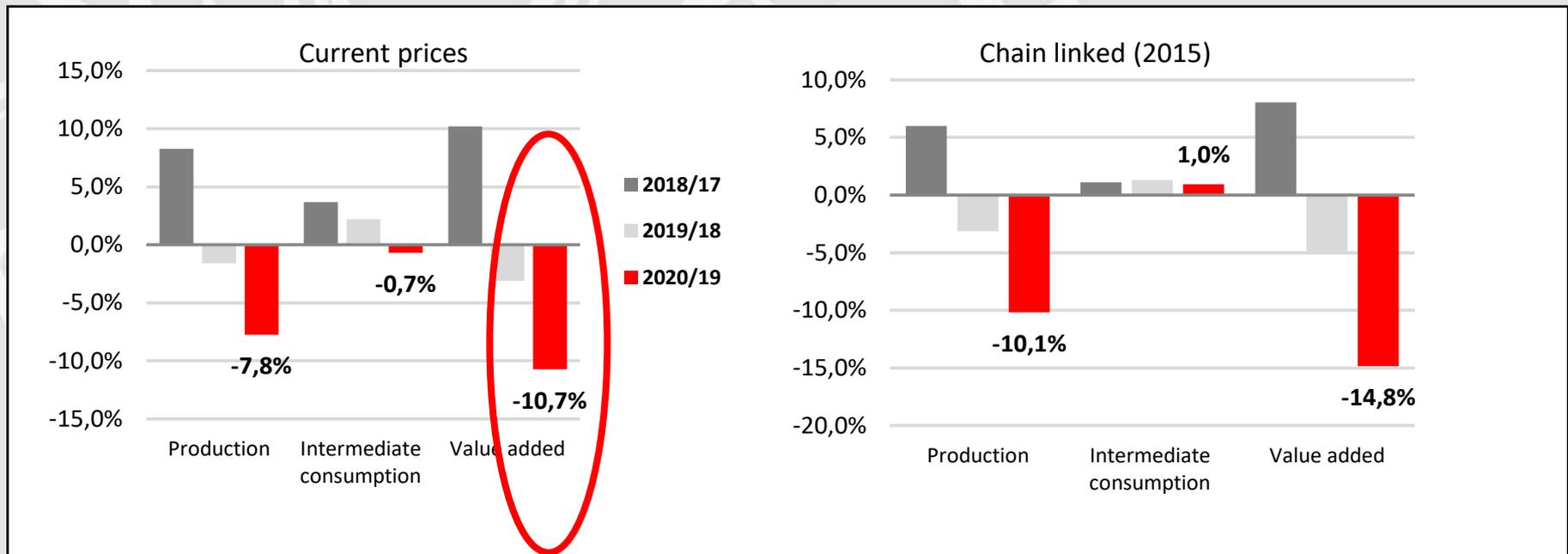
Quarterly variations in household consumption expenditure



Source: Own elaboration based on ISTAT data

Tuscany food system and the crises

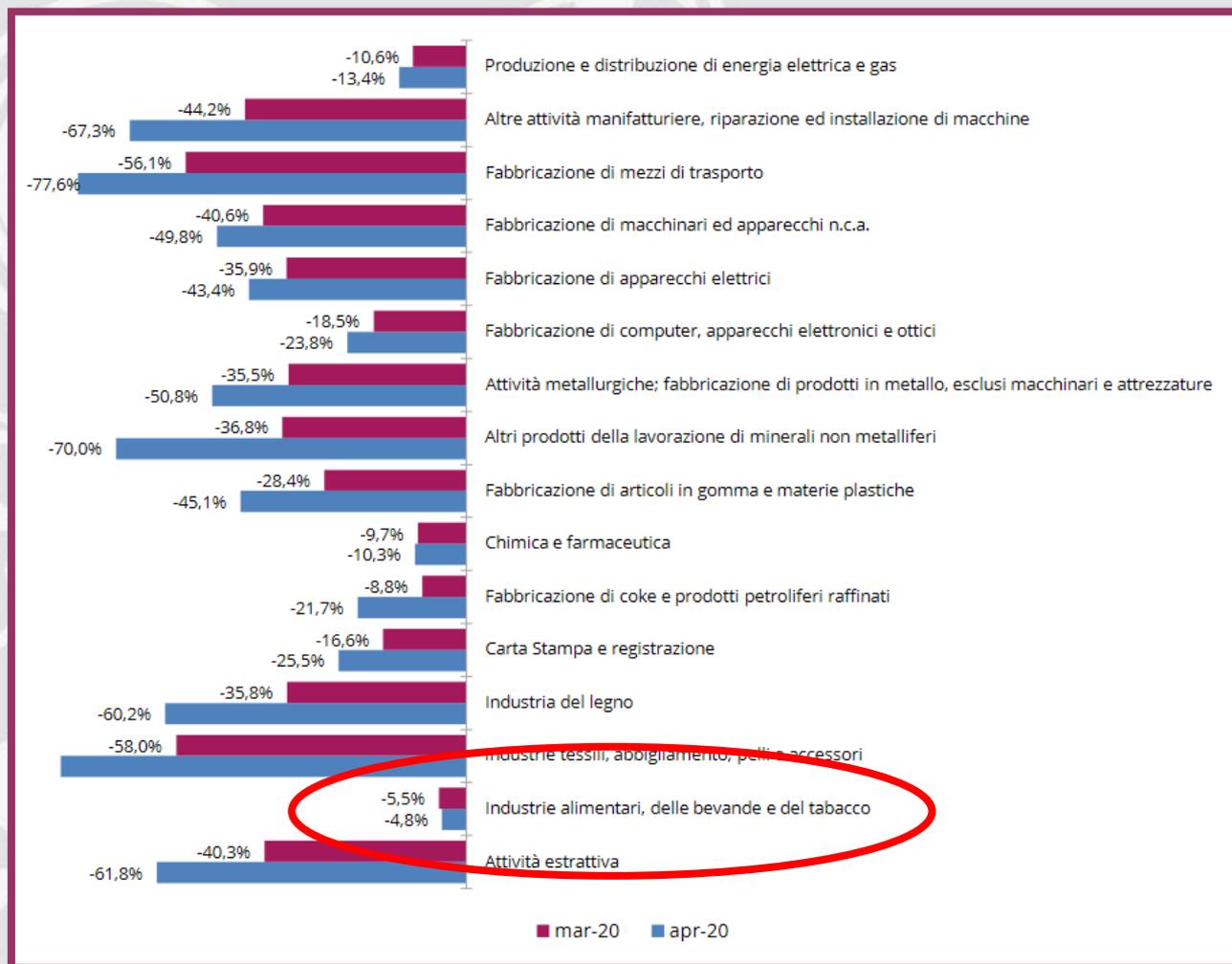
Annual variations in agricultural production, intermediate consumption and value added



Source: Own elaboration based on ISTAT data

Tuscany food system and the crises

Industrial production index



Source: IRPET (2020). "L'industria toscana secondo l'IPIR". Barometro del Covid-19. Numero 9/2020.

Farmers' associations driven responses



- According to **CIA (*Confederazione Italiana Agricoltori*)**, during the lockdown the number of farms directly trade their products to consumers increase by 5%;
- In Tuscany, in the Northern area of Firenze, Prato and Pistoia there are 10 open markets involving 100 farms. During the lockdown they have been closed but CIA created a **website for the e-commerce and home delivery**:

<http://www.laspesaincampagna.it/>

Methodology: the input output approach



- The main aim of the input-output approach (IOA) is to study the **interdependency of industries** in the economy so as to report the **flows of products from one sector to another**;
- Sectors can be either other industries (economic sectors) or consumers, like households and public administration (institutional sectors).
- We use the IOA in order to : i) explore the main characteristics of the Tuscany food system; ii) decompose the food production by industry; iii) decompose the final demand according to the origin of food; iv) distribution of value added between industries;
- This study uses a **inter-regional IO table (IRPET-ICIO)**, which shows in input (by column), the sector/region contributions of intermediate goods to the generation of production and, in output (by row), the sector/region destination of the obtained production (Ferraresi et al., 2021).

Methodology: the input output approach

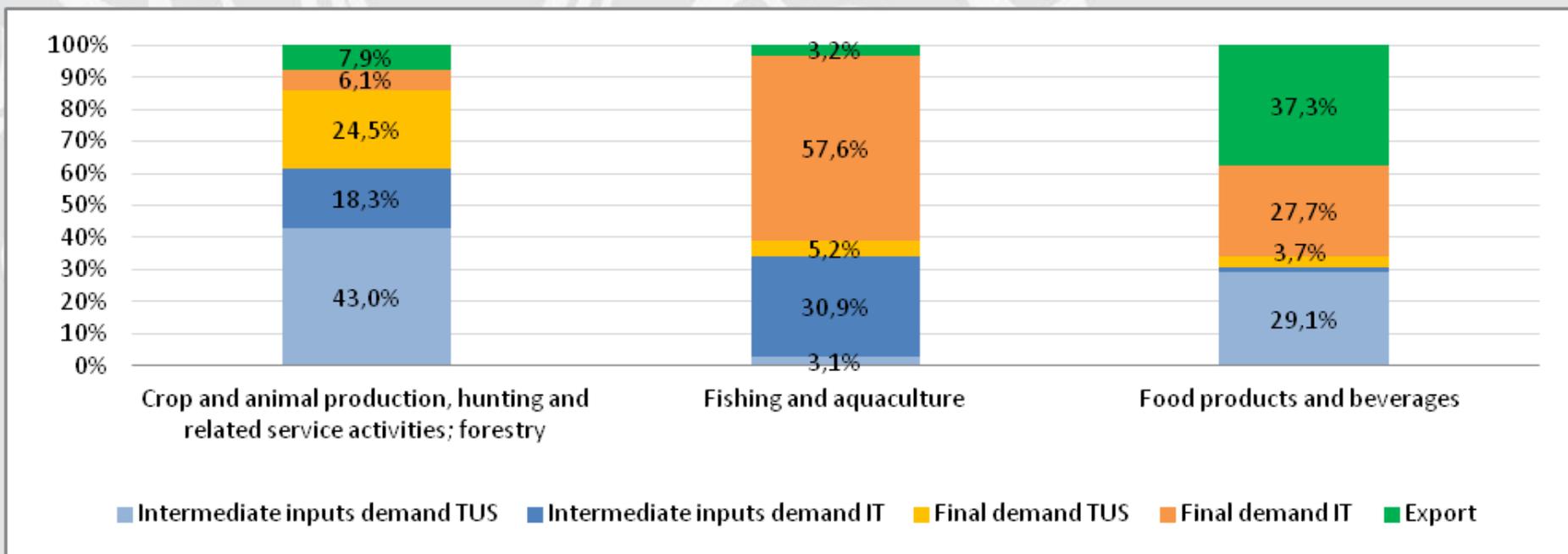


IRPET-ICIO table

| Region | Intermediates | | | ROW | Final demand | | |
|-------------------|---------------|-------|-------|-------|--------------|------|------|
| | Pie | Vda | r | | Pie | Vda | ROW |
| Industry | 1..32 | 1..32 | 1..32 | 1..32 | 1..5 | 1..5 | 1..5 |
| Pie | 32..1 | | | | | | |
| Vda | 32..1 | | | | | | |
| s | 32..1 | | | | | | |
| ROW | 32..1 | | | | | | |
| Value added | | | | | | | |
| Taxes | | | | | | | |
| Transport margins | | | | | | | |

Primary results from the analysis

Composition of food production according to the type of industry



Primary results from the analysis

Composition of final demand according to the origin of the products

| | Share of the final demand satisfied by firms of Tuscany (local food system) | Share of the final demand satisfied by firms of other Italian regions | Share of the final demand satisfied by imports | Total |
|--|---|---|--|---------------|
| Crop and animal production, hunting and related service activities; forestry | 15,1% | 7,3% | 2,6% | 24,9% |
| Fishing and aquaculture | 0,1% | 1,0% | 1,0% | 2,1% |
| Food and beverage | 3,6% | 55,1% | 14,3% | 73,0% |
| Total | 18,7% | 63,4% | 17,8% | 100,0% |

Conclusive remarks

- During the 2020 health crises due to the SARS-COV-2 pandemic the Tuscany food system has been sufficiently resilient and households' consumptions expenditure have been steadily increasing;
- However, Tuscany is much dependent on inflows and imports and its food self-sufficiency is still very limited;
- This is not so weird in a globalised world where no one can be completely food self-sufficient!

Conclusive remarks

- But....
 - Local agriculture is shrinking.....
 - Impact on the environment can be relevant in terms of i) biodiversity (and cultural diversity) loss; ii) emissions released;
 - The longer the supply chain:
 - The more the food system is exposed to the risk of disruption and prices increases;
 - The poorer the capacity for local food policy to intervene;
 - eg. According to Rhiney et al. (2020), the pandemic is accentuating decades-old problems in coffee industries and creating new ones, thus putting at risks exports



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Thank you!