

## **RUSSIA'S WAR ON UKRAINE AND ITS IMPACTS ON THE EU'S FOOD TRADE NETWORK AND FOOD SUPPLY CHAINS**

**D. Waldl**, B.Sc.

**R. Haas**, Assoc. Prof., Dr.

University of Natural Resources and Life Sciences, Vienna, Austria

**M. Mykhailova**, Assoc. Prof., PhD

State Biotechnological University, Kharkiv, Ukraine

The ongoing invasion war from Russia on Ukraine has enormous impacts on international food trade networks (IFTN) and therefore on food supply chains (FSC). Up until the beginning of the war, the two involved countries had been mayor agricultural exporters: In 2020, Russia and Ukraine together accounted for 28% of wheat, 16% of corn, and 61% of sunflower seeds traded globally [1]. In the sight of upcoming famines in developing countries, efforts to revive agricultural exports have focused mainly on those regions that are highly dependent on Ukrainian imports. However, the FSC of the EU is not only affected by a supply shock in traded crops, but also by supply shocks for inputs essential for its own agricultural production, i.e. agrochemicals and energy, due to declining imports from Russia. Direct energy consumption in agriculture accounts for 3.3% of the EU's total energy consumption, making it a very input-intensive industry by global standards. However, indirect consumption, which includes production of agrochemicals and transport, is even higher [2, 3]. Europe's supply of fertilizers is affected in two ways: on one hand 60% of the fertilizers imported in the EU come from Russia and Belarus [4], on the other hand, the fertilizer industry in Europe is highly dependent on Russian gas. Fertilizer production has become uncompetitive, which could push the EU into even greater dependence on fertilizer imports [5].

To understand the impacts of the war induced supply shocks on the EU's FSC, it is important be aware of research findings on the propagation of such shocks through the IFTN. Although the concepts of the IFTN and the FSC are closely related, there is only little research using them in combination. Both concepts observe the flow of food from its source downstream. However, while the perspective of the IFTN focuses on trade flows, the FSC looks at the chain of entities that take food from its raw material state to our plates. Research using the IFTN approach usually stops once a good is imported, leaving an observation gap between importing and other entities downstream. The FSC approach compensates this gap, but when used alone does not provide a satisfactory view of trade and the propagation of supply shocks emerging from an exporting country. Supply shocks do not propagate in proportion to past trade flows but are negatively correlated with the income per capita and trading

power of importing countries, [6] leaving the EU in a powerful bargaining position. However, countries that do not have direct trade relations with the countries of origin of the shock may also be affected [7]. Also, since traded goods become scarce in the entire IFTN, farmers may switch to these highly demanded crops, creating gaps in the supply chains of other crops.

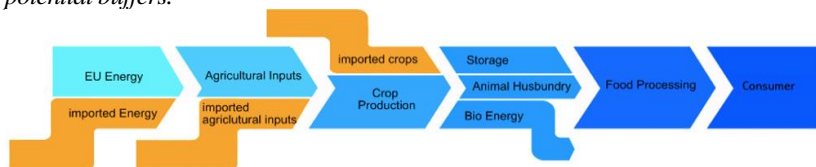
This study aims to identify entry points in which the Russian-Ukrainian war affects the EU's FSC. In a first step we outline the pre-war situation of the EU's FSC and elaborate the former role of trade of agricultural commodities, energy and agrochemicals with Russia and Ukraine. Based on literature and database research, we map the EU's FSC and identify possible entry points for impacts of the war in Ukraine. The resulting RQ is:

**-RQ1:** *In which production steps is the EU's FSC affected by the war in Ukraine?*

By means of expert interviews, we then aim to answer RQ 2 and 3:

**-RQ2:** *To what degree will the different supply shocks in the IFTN be propagated to the EU's FSC?*

**-RQ3:** *How are these supply shocks transmitted along the FSC and where are potential buffers.*



**Fig. Illustration of first literature findings to answer RQ1. The war in Ukraine affects the EU's FSC especially in its first three steps, i.e. in energy supply, agricultural inputs and market available crops. However, high energy costs affect every link of the FSC**

## References

1. FAO. (2022a). FAOSTAT. <https://www.fao.org/faostat/en/#home>.
2. Eurostat. (2021). Agri-environmental indicator - energy use.
3. FAO. (2022b). Information Note - The importance of Ukraine and the Russian Federation for global agricultural markets and the risks associated with the current conflict- June.
4. Fox, B., & Elenora, V. (2022). Europe searches for alternatives in fertiliser supply battle.
5. Fertilizers Europe. (2022). Europe's fertilizer industry victim of EU's energy chaos.
6. Distefano, T., Laio, F., Ridolfi, L., & Schiavo, S. (2018). Shock transmission in the international food trade network.
7. Burkholz, R., & Schweitzer, F. (2019). International crop trade networks: The impact of shocks and cascades.