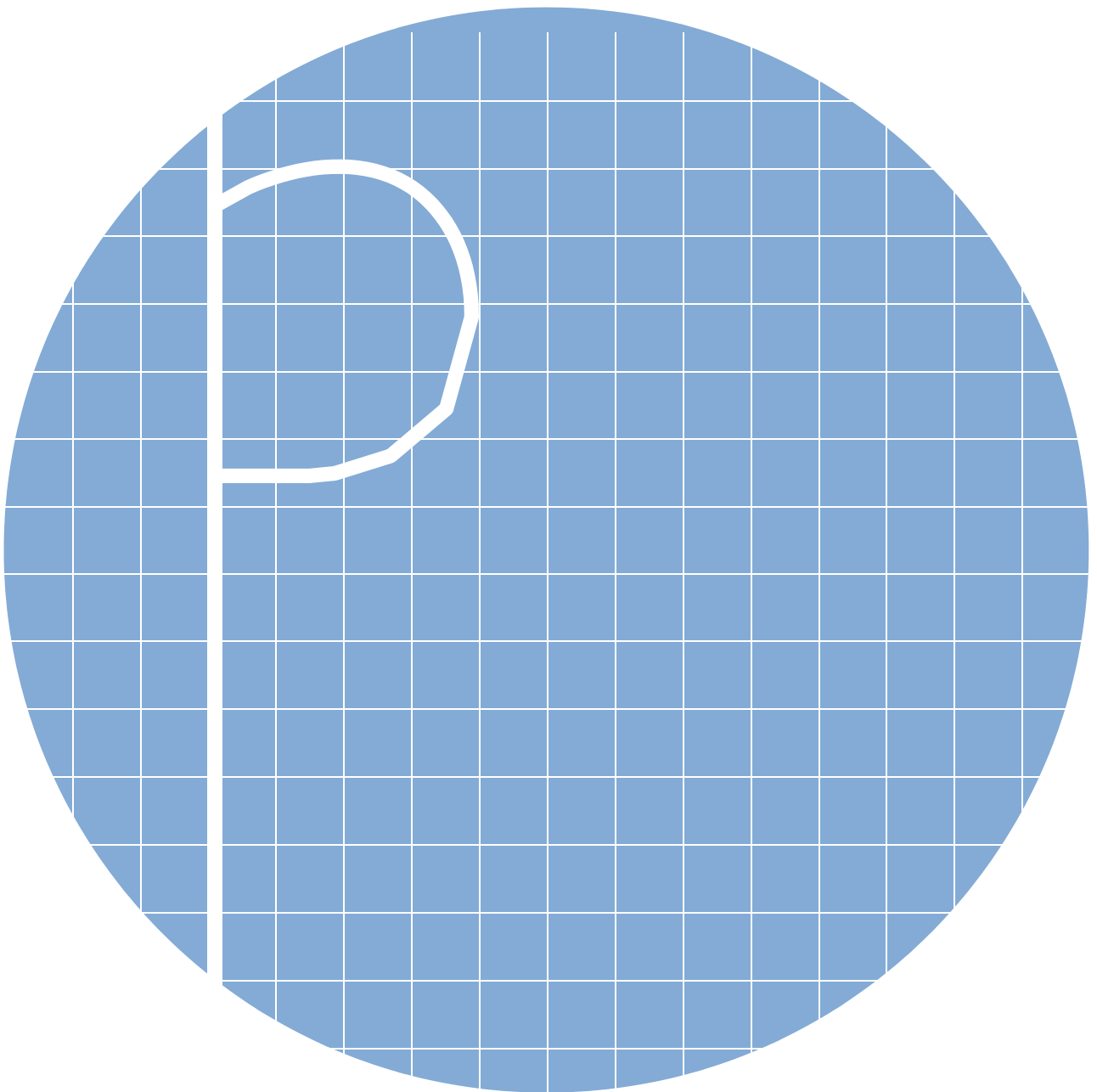


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Paper: A Year of War

Volatile markets and uncertain supplies





Authors

Felice Adinolfi

Riccardo Fargione

Yari Vecchio

Dario Vivani

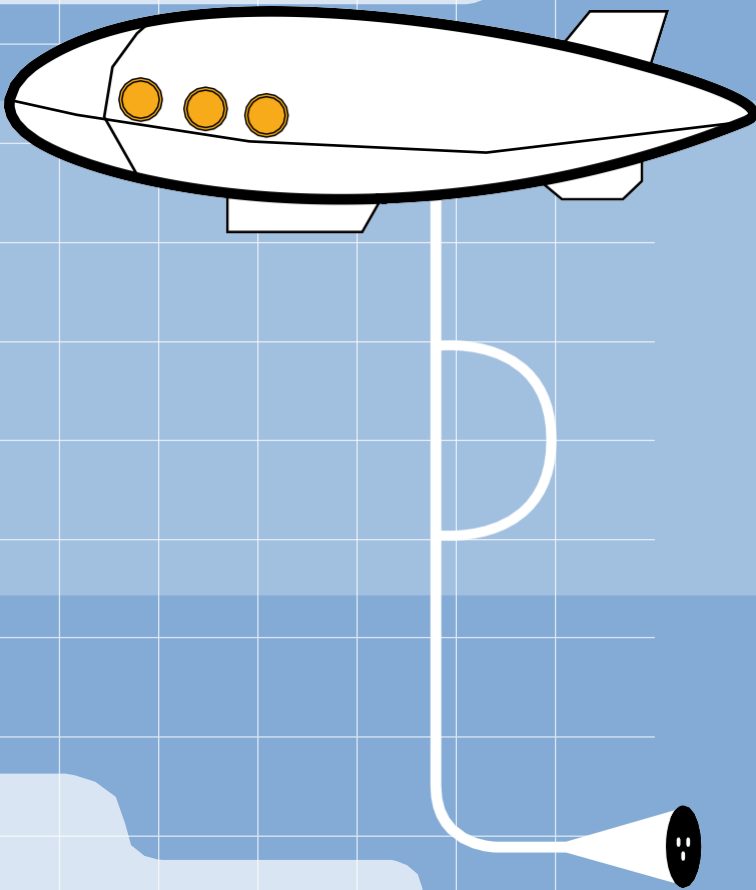
Illustrations

Matilde Masi

Contacts

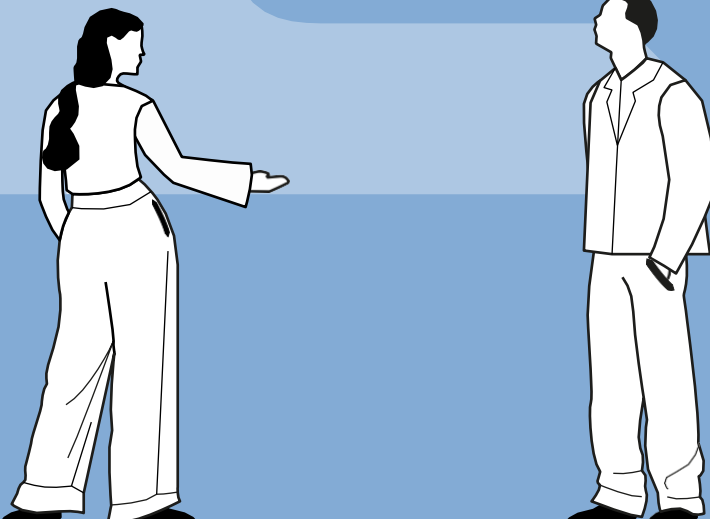
info@divulgastudi.it

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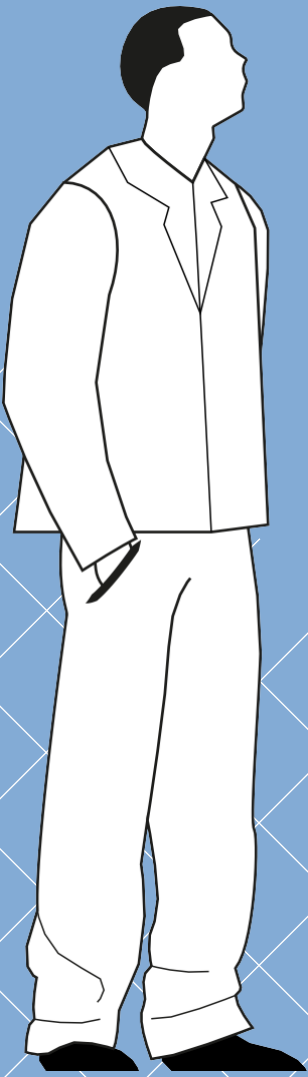
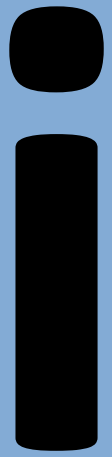
In the past 12 months the conflict has generated a climate of market instability and the most vulnerable areas of the planet, that are particularly dependent on energy supplies and means of production, have suffered. The repercussions were not long in coming, even in Europe, where the upward pressure on prices and the uncertainty in supplies have only recently subsided.

We have now reached a full year of war. What happened? What's next?



Abstract

- This Paper updates and examines in depth the analyses and considerations contained in the two previous works carried out by the Centro Studi Divulga (War and Food and The Escalation of Hunger) with which we started monitoring the impacts associated with the conflict in Ukraine.
- A year after the outbreak of the war, the impacts on the world economy have been extremely significant and have also affected Europe, which more than others has been exposed to the rise in gas prices. The prices of gas, in the months following the invasion, and therefore in March 2022, marked a +313% increase compared to the previous year.
- War operations have made energy supplies from Russia difficult but agri-food systems have also experienced unprecedented pressure, given the significant position held by Russia and Ukraine in world supplies of cereals (34% of world exports), corn (17%) and sunflower oil (over 75% of the world market). Basically, roughly 12% of calories exported worldwide.
- The war has also aggravated the market volatility trend, already supported by the injection of liquidity functional to the post-pandemic recovery, and further accelerated by the blockade of Black Sea ports. It was only starting from the summer of 2022, with the signing of the Agreement for unblocking these ports "*Black Sea Grain Initiative*", that prices began to fall towards pre-war levels.
- The work examines the effects generated by this first year of war which has seen the scenario of raw material supplies remodeled. Moreover, the work also analyses the impacts produced on the most vulnerable areas of the planet and in particular on the countries in the MENA (Middle East and North Africa) area, which have risked reliving the Arab Spring turmoil.



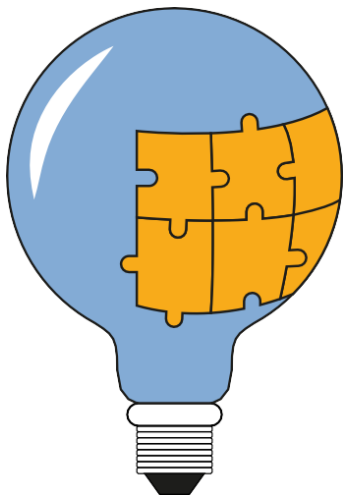
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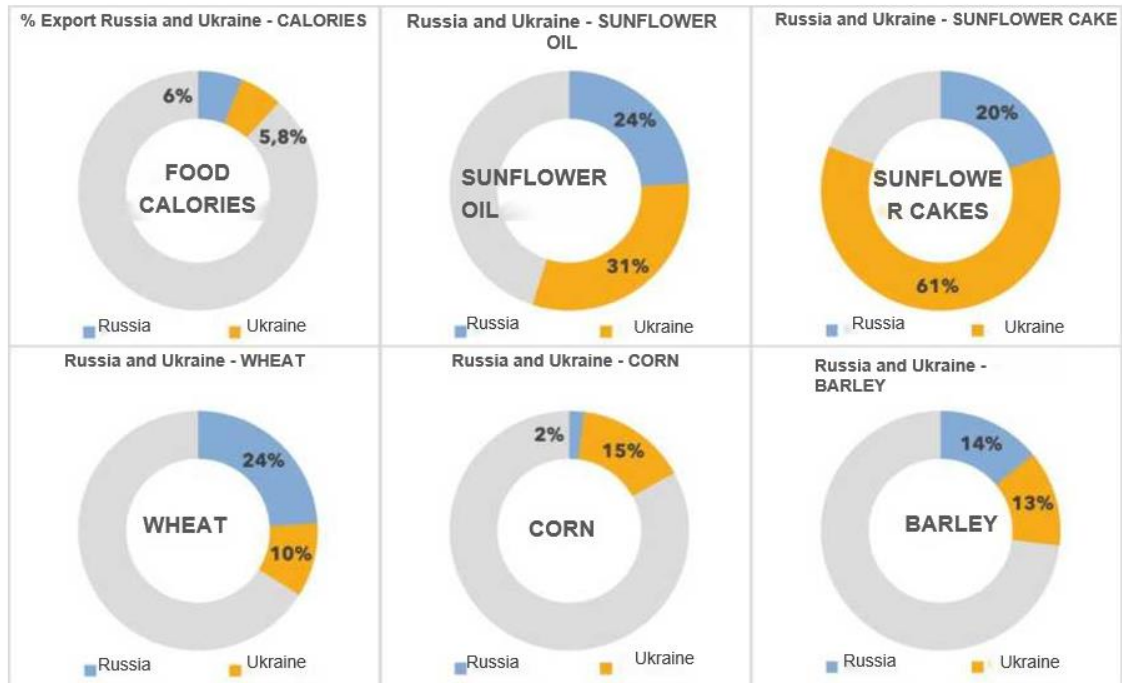


1. A year of conflict

We have now reached one year since the outbreak of the conflict in Ukraine and the first twelve months of this war have had extremely significant impacts on the world economy and in particular on the European economy, which has appeared more exposed than others to rising gas prices. However, the war operations have not only involved energy supplies from Russia and agri-food systems are also experiencing unprecedented pressure,

as a result of the role which the countries affected by the conflict have in the global food supply system. In fact, prior to the outbreak of the conflict, Russia and Ukraine represented important supply basins: roughly 34% of world cereal exports, 17% of corn exports and more than 75% of the world market for sunflower oil. Basically, roughly 12% of calories exported worldwide.

Chart 1.1: The contribution of Russia and Ukraine to global food security.
World Export Share (2021)

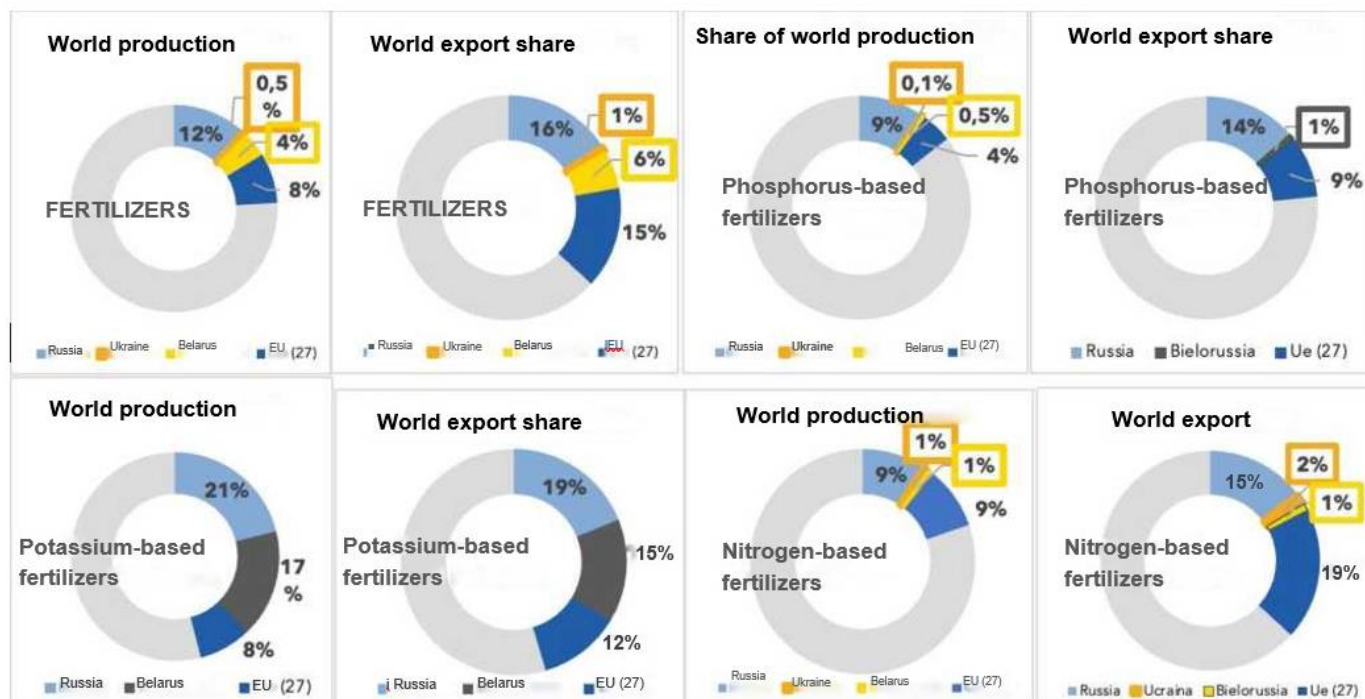


Source: Centro Studi Divulga elaboration based on An FAO (Amis Market monitor) data

The importance of these countries in the production of fertilisers is also worth mentioning. In Russia and Belarus, a country that is also part of the conflict, a considerable share

of nutrients for the earth is produced, i.e. roughly half of the world production of ammonium nitrate, 38% of potassium, 23% of ammonia and 12% of urea.

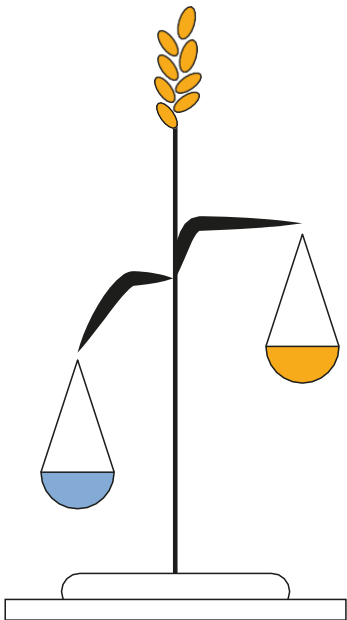
Chart 1.2: Production and export share of fertilisers Russia, Ukraine, Belarus and EU



Source: Centro Studi Divulga elaboration based on FAO data

This work updates the analyses and considerations contained in two previous works carried out by the Centro Studi Divulga, with which we started monitoring the impacts associated with this conflict [1], [2].

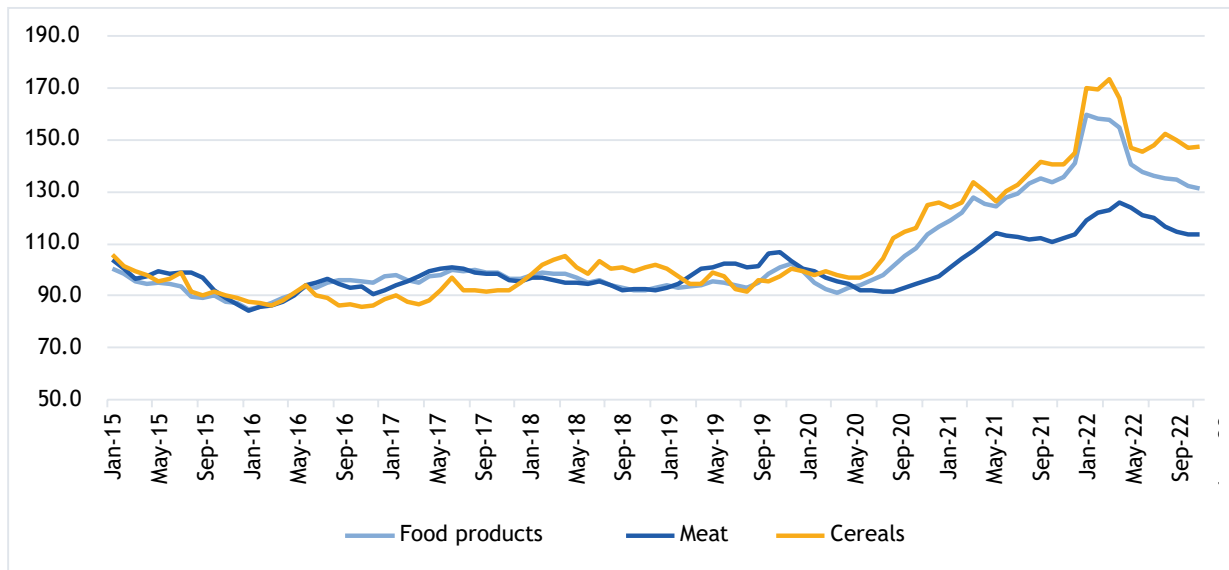
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2. Price fluctuations

The war has aggravated the market volatility trend. The injection of liquidity used to support the post-pandemic recovery had already favoured a certain upswing in prices, which was inevitably accelerated by Russia's invasion of Ukraine. The blockade of the Black Sea ports and the commercial reactions that the sides inevitably put in place as a means of pressure, led to the rapid growth of prices. In the first months of the conflict alone, the food price index grew by 34% compared to the same period of the previous year (159.7 in March 2022 compared to 119.2 of March 2021).

Chart 2.1: Price index for food, meat and cereals



Source: Centro Studi Divulga elaboration based on FAO data

Starting from the summer of 2022, and in particular with the Agreement on the unblocking of the Black Sea ports, prices resumed a slow decline on the FAO price index, which in January 2023 stood at a value of 131.2 compared to 135.6 in January 2022 and, as a result, at pre-war levels.

3.



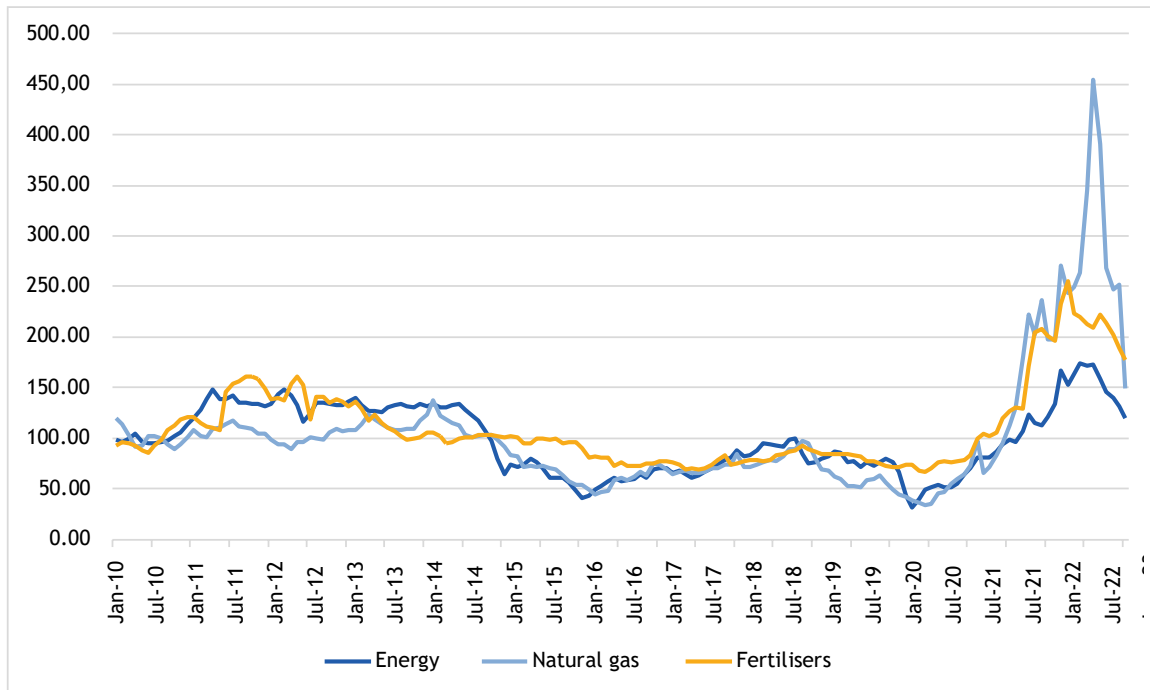
3. Impact on costs

3.1 Gas and energy

It's not just a question of accessibility to the production basins, but also of costs, which have seen agriculture experience a particularly difficult year. As mentioned, the increase concerned gas, which grew by 313% after the first months of the conflict (March 2022 on the same month of the previous year). It then, only in the last period, returned to the pre-conflict levels of January 2022.

In fact, in January 2023 gas and energy prices marked a decrease respectively of -24% and -2% compared to January 2022.

Chart 3.1: Energy, natural gas and fertilisers price index

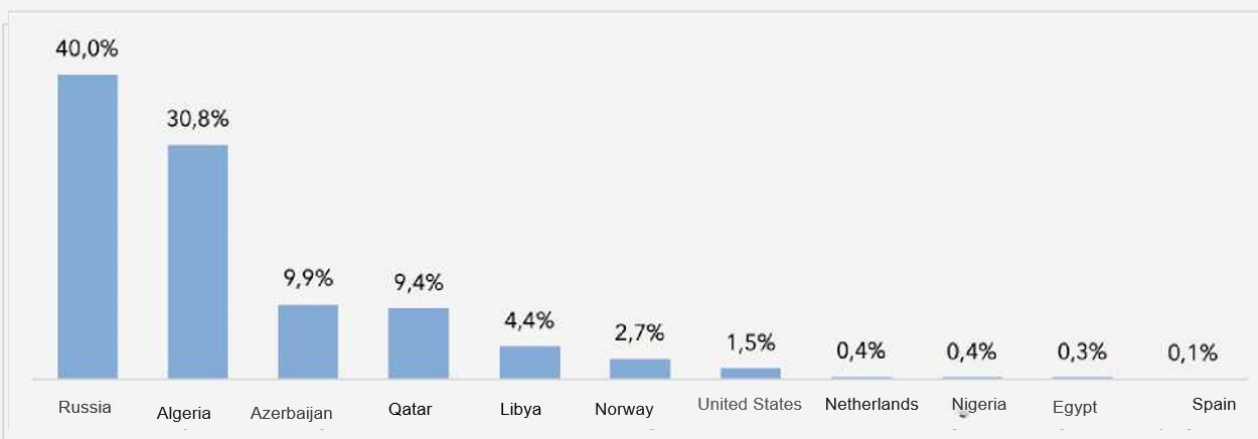


Source: Centro Studi Divulga elaboration based on World Bank data (Base year 2010)

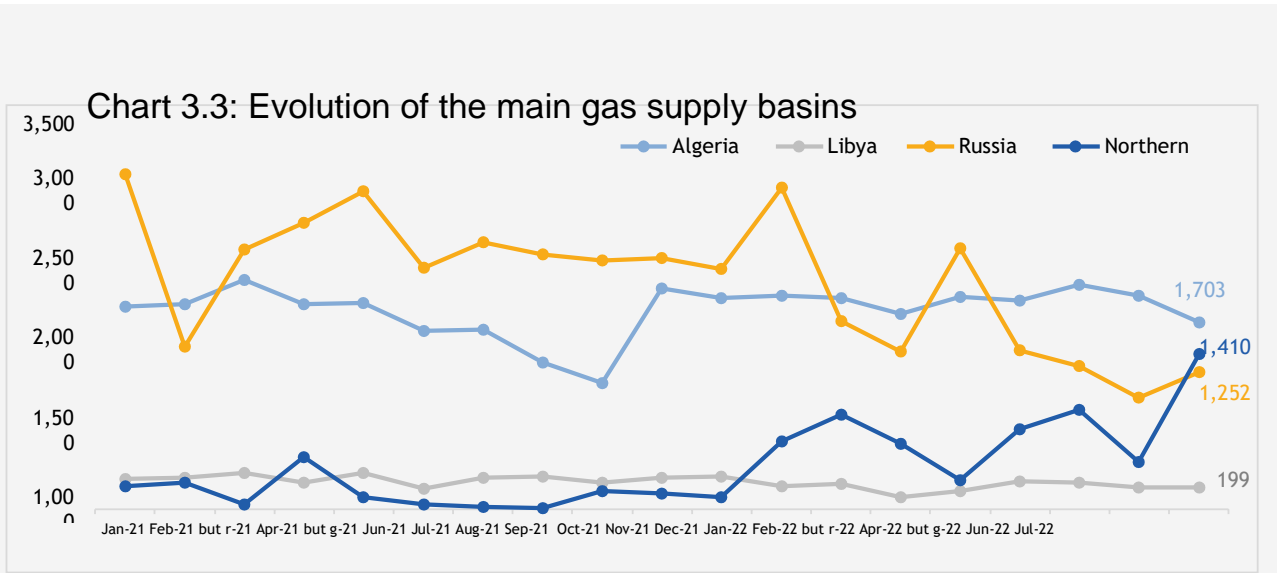
Box 1: Energy supplies, what changes

The outbreak of the conflict in Ukraine has revealed Italy's vulnerability to energy supplies, highlighting its heavy dependence on Russian gas. Before the outbreak of the conflict, in fact, supplies from the Moscow government accounted for roughly 40% of the total, followed by Algeria (31% of imports in 2021), Azerbaijan (10%), Qatar (9%), Libya (4%) and Norway (4%). [3].

Chart 3.2: The main gas supply basins for Italy (2021)



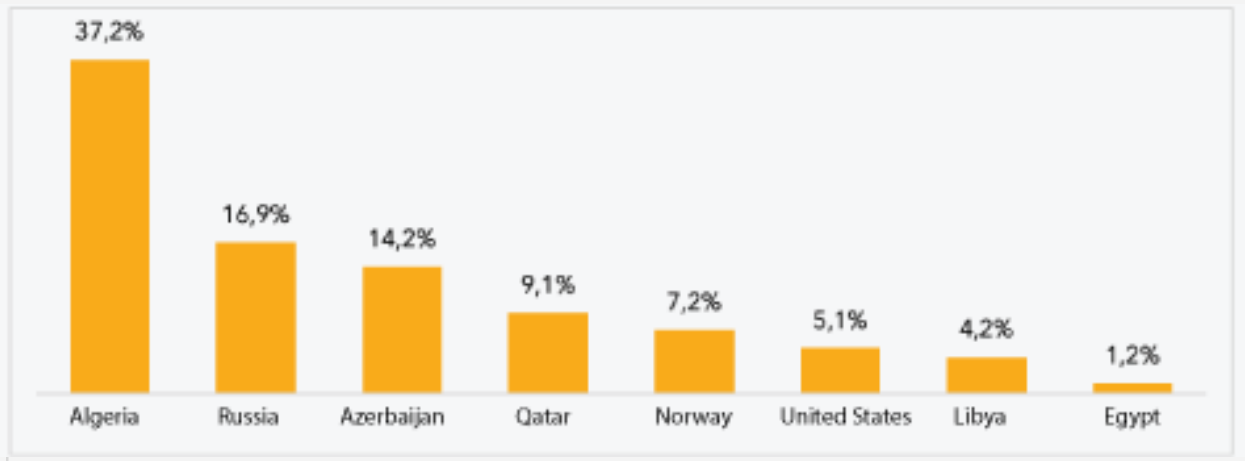
Source: Centro Studi Divulga elaboration based on Mise data



Source: Centro Studi Divulga elaboration based on Mise data

In recent months, thanks also to a series of agreements signed by the Italian government with other supplier countries, in particular with Algeria, dependence on the Moscow government has more than halved, while the share of imported gas worldwide has remained stable. The sharp decline in volumes from Russia was accompanied by a steep increase in prices that clearly emerges from the value of imports, which grew by 76% while volumes fell by more than half.

Chart 3.4: The main gas supply basins for Italy (2022, provisional)



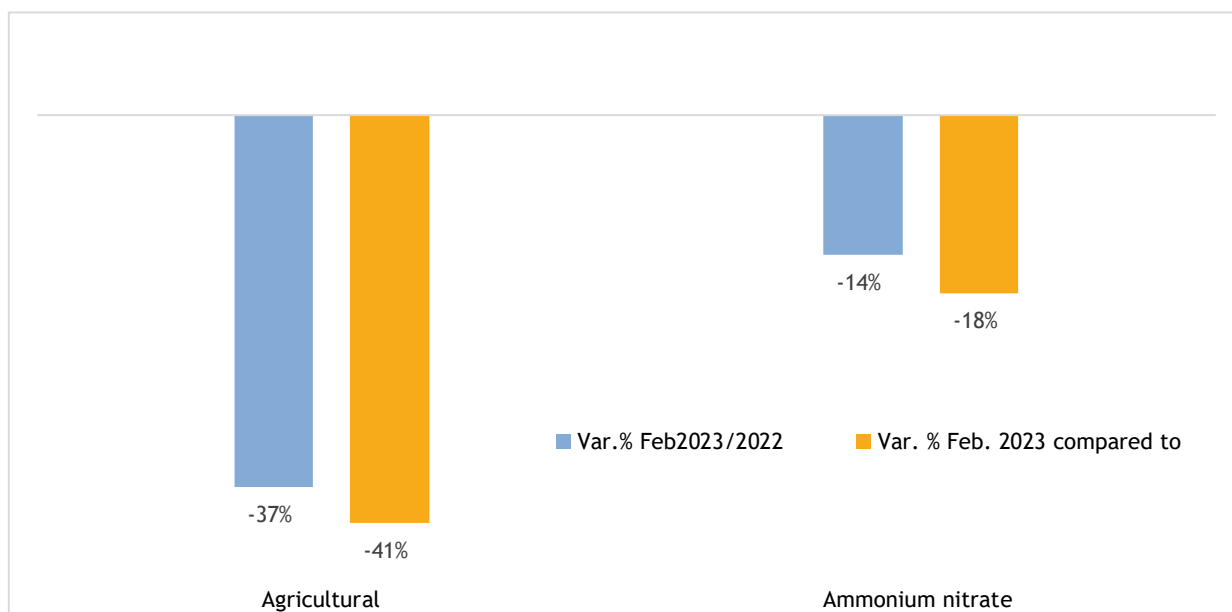
Source: Centro Studi Divulga elaboration based on Eurostat data

3.2 Fertilisers

With regard to another of the main cost items for agriculture, it should be noted that fertilisers as well underwent considerable increases in 2022. Their prices are partly linked to those of energy and, like the latter, only the last few weeks have seen the beginning of a descent. In fact, the price of agricultural urea during the

month of February 2023 recorded a reduction of 37% compared to February 2022 and 41% compared to January 2022, before the outbreak of the conflict. The same applies to ammonium nitrate with prices that fell by 14% in February 2023, compared to February 2022.

Chart 3.5: Var. % price month of February 2023 compared to February 2022 and January 2022



Source: Centro Studi Divulga elaboration based on Cciaa Torino data

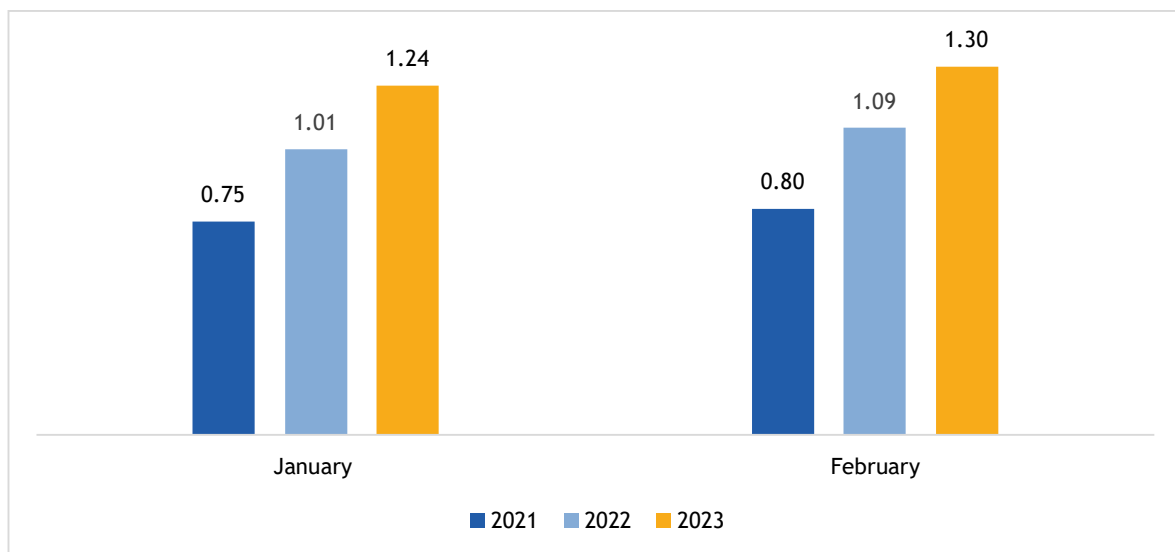
Worth mentioning are a few numbers in absolute value; the price of urea went from 871 euros/tonne in February 2022 to 550 euros/tonne in February 2023. The same applies to

ammonium nitrate which decreased from 650 euro/tonne in February 2022 to 560 euro/tonne in February 2023.

3.3 Agricultural diesel

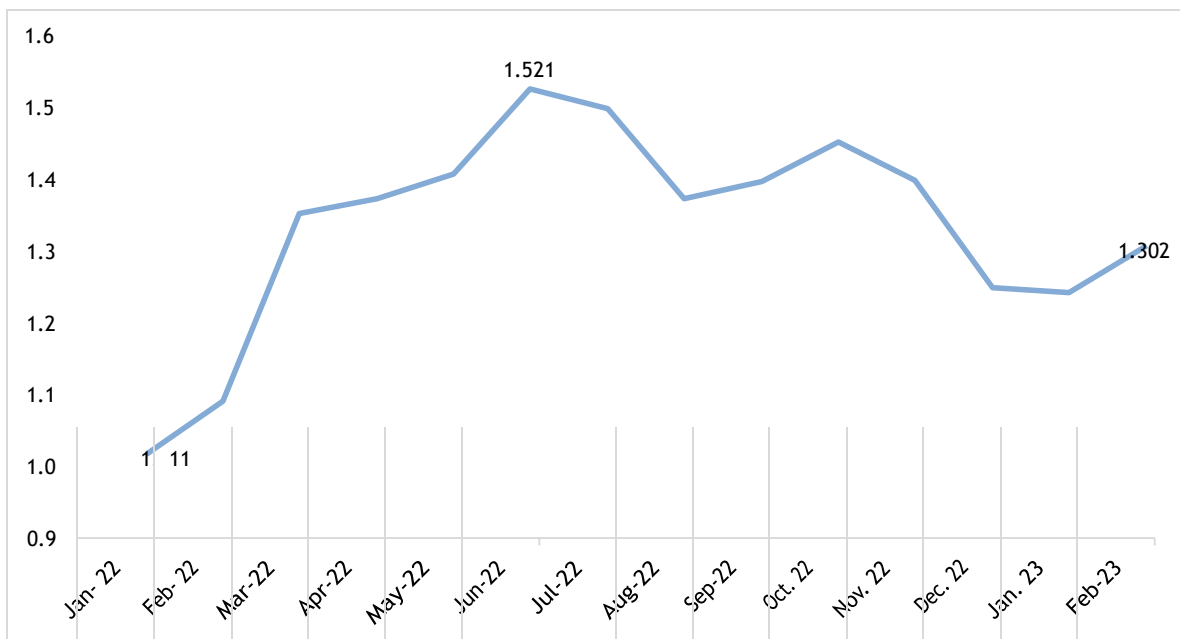
The price of agricultural diesel confirms its trend growth which began in recent years, marking +20% in February 2023 compared to the same period in 2022, while +63% compared to February 2021, the year before the outbreak of the conflict. A considerable increase, with prices exceeding 1.3 euros/litre compared to 1.09 euros/litre in 2022 and 0.80 euros/litre in 2021.

Chart 3.6: Wholesale price of diesel for agriculture (€/litre)



Source: Centro Studi Divulga elaboration based on Cciaa data from Milan Monza Brianza Lodi

Chart 3.7: Wholesale price trend of diesel for agriculture (€/litre)



Source: Centro Studi Divulga elaboration based on Cciaa data from Milan Monza Brianza Lodi

4.



4. New geographies for the purchase of fertilisers

Before the outbreak of the conflict, the Russian Federation was the world's largest exporter of nitrogen fertilisers, the second largest supplier of potassium fertilisers (after Canada) and the third largest supplier of phosphorus fertilisers (after China and Morocco).

The recent trade tensions have pushed for a repositioning of European fertiliser supplies. In the first 10 months of 2022, imports from Belarus plummeted by 80%, while Russia and Ukraine marked a drop of 15% and 55% respectively. The reduction in purchases in these countries was accompanied by an increase in

imports from Algeria (+60%), with the North African country gaining third place for fertiliser supplies to the EU, preceded by Egypt, which marks a +22% in second position. Also worth noting is the growth of Canada (+41%), which gains fourth place in the ranking of EU fertiliser supplies.

Russia continues, however, to represent the main supply basin, with over 3.5 million tons arriving in the EU in the first 10 months of 2022 (-575 thousand tonnes compared to the same period of the previous year).

Chart 4.1: EU imports 2022 (first 10 months) and Var. % 2022/2021

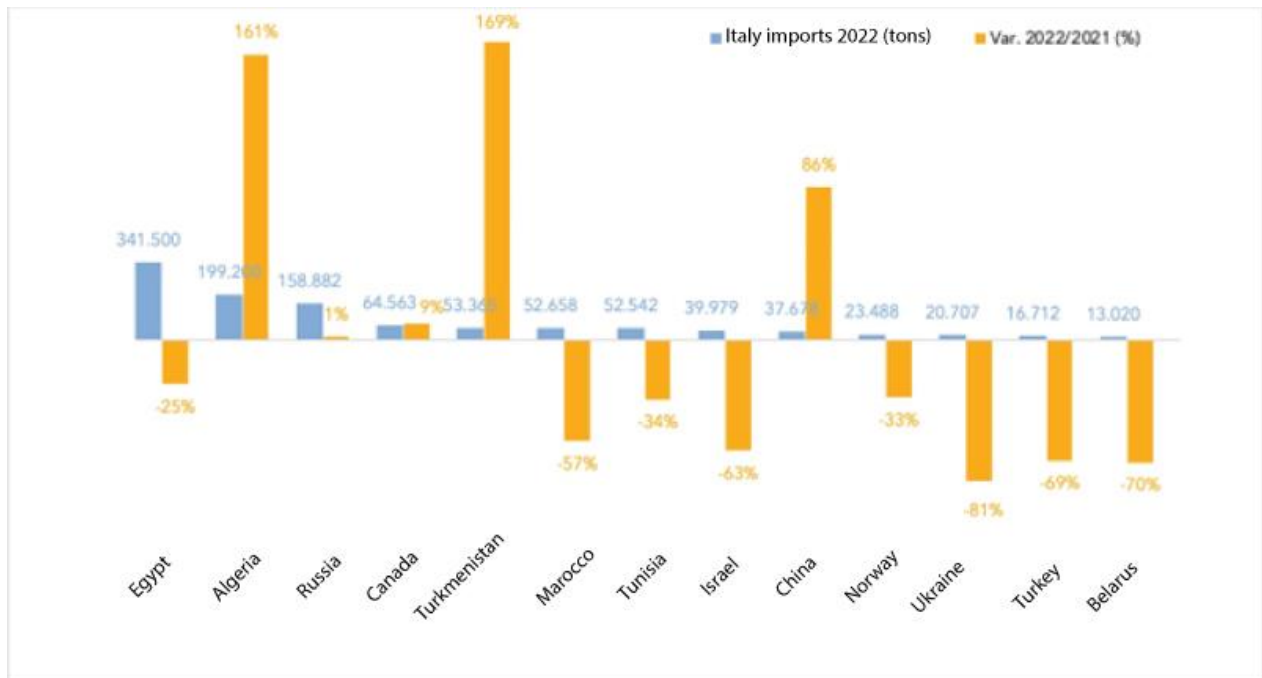


Source: Centro Studi Divulga elaboration based on Eurostat data

The same can be said for Italy, with fertiliser imports from Ukraine and Belarus decreasing by 81% and 70% respectively, while purchases from Russia remain stable with 159 thousand tonnes of fertilisers imported in the first 10 months of 2022.

Conversely, imports from Algeria, the second largest supply basin, grew by 160%, with almost 200 thousand tonnes of fertilisers imported in the first 10 months of the year. Arrivals from Canada (+10%), Turkmenistan (+170%) and from China (+86%).

Chart 4.2: Imports Italy 2022 (first 10 months) and Var. % 2022/2021



Source: Centro Studi Divulga elaboration based on Eurostat data

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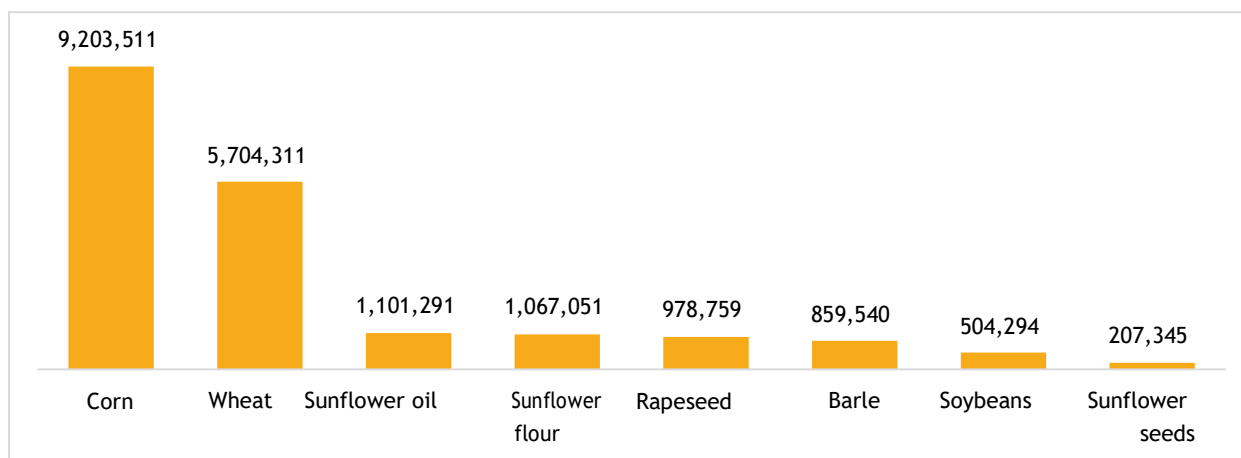


5. The Black Sea Grain Initiative, a breath of fresh air worth 20 million tonnes of food

As is well known, the outbreak of the conflict led to the blockade of Ukrainian ports. After a period of stalemate and strong concerns about possible impacts on the world's poorest areas, Russia and Ukraine signed the *Black Sea Grain Initiative* in Istanbul on 22 July 2022 under the aegis of the UN and Turkey. The agreement established a safe corridor in the Black Sea for the export of food products, sanctioning the unblocking of the 3 Ukrainian ports of Yuzhny, Chornomorsk and Odessa, which had been stopped by the

outbreak of the conflict. The Agreement was subsequently renewed in November 2022 for a further 120 days. Since its entry into force, this truce has secured some 20 million tonnes of agricultural and food products on world markets. Of these, more than 9 million (46%) are corn, followed by 5.7 million tonnes of wheat (29%) and more than 1 million tonnes of sunflower oil (6%).

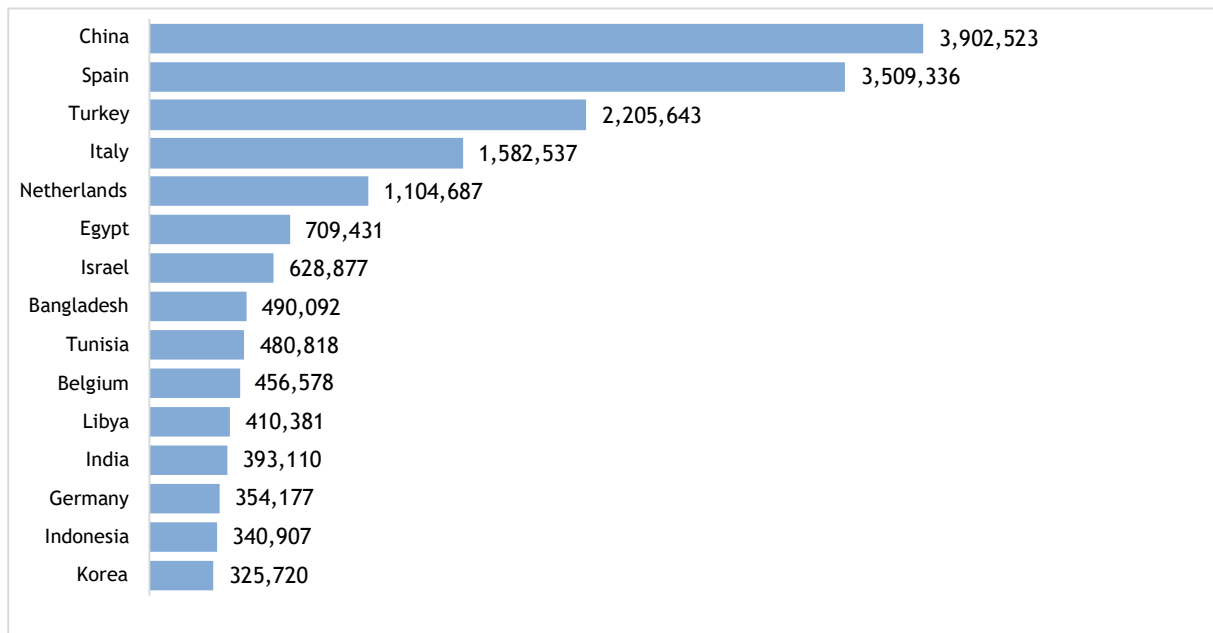
Chart 5.1: Main products exported worldwide in the last 6 months from Black Sea ports



Source: Centro Studi Divulga elaboration based on HDE (Humanitarian Data Exchange) data

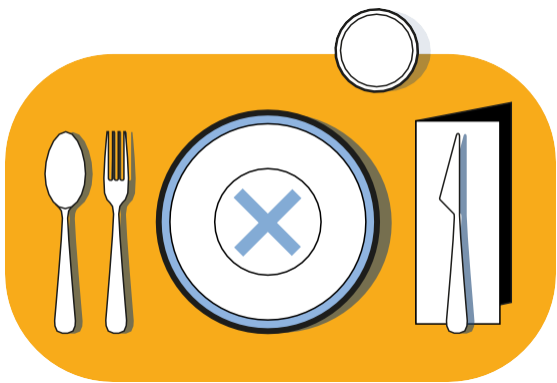
Among the main beneficiaries of this agreement, China, which alone imported roughly a fifth of the total, almost 4 million tonnes of products, 70% of which was corn (2.73 million tonnes). In second place Spain with 3.51 million tonnes, mainly corn (1.55 million tonnes) and wheat (1.41 million tonnes). Immediately behind is Turkey with 2.20 million tonnes of food of which mainly wheat (960 thousand tonnes), corn (662 thousand tonnes) and sunflower oil (185 thousand tonnes). Italy ranks fourth with 1.58 million tonnes of products, of which 62% is corn (987 thousand tonnes) crucial for national livestock farms, 23% wheat (365 thousand tonnes) and 7% soybeans (112 thousand tonnes).

Chart 5.2: Main outlets for products exported from Black Sea ports



Source: Centro Studi Divulga elaboration based on HDE (Humanitarian Data Exchange) data

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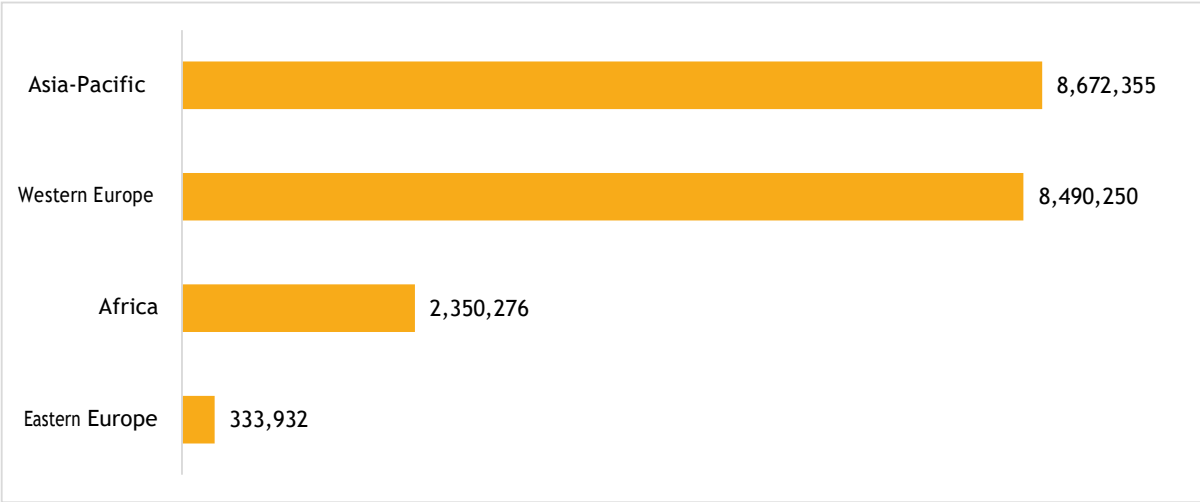


6. The food crisis in the Middle East and North Africa (MENA)

The effects of this 'perfect storm' are particularly affecting those countries that are heavily dependent on food and fertiliser imports. In particular, analysts are looking to the Middle East and North Africa (MENA) area. Before the outbreak of the conflict, their dependence on Russian and Ukrainian imports amounted to 44% for cereals, 50% for sunflower oil, 21% for corn and 45% for barley. The food crisis triggered by the blockade of cereal exports from

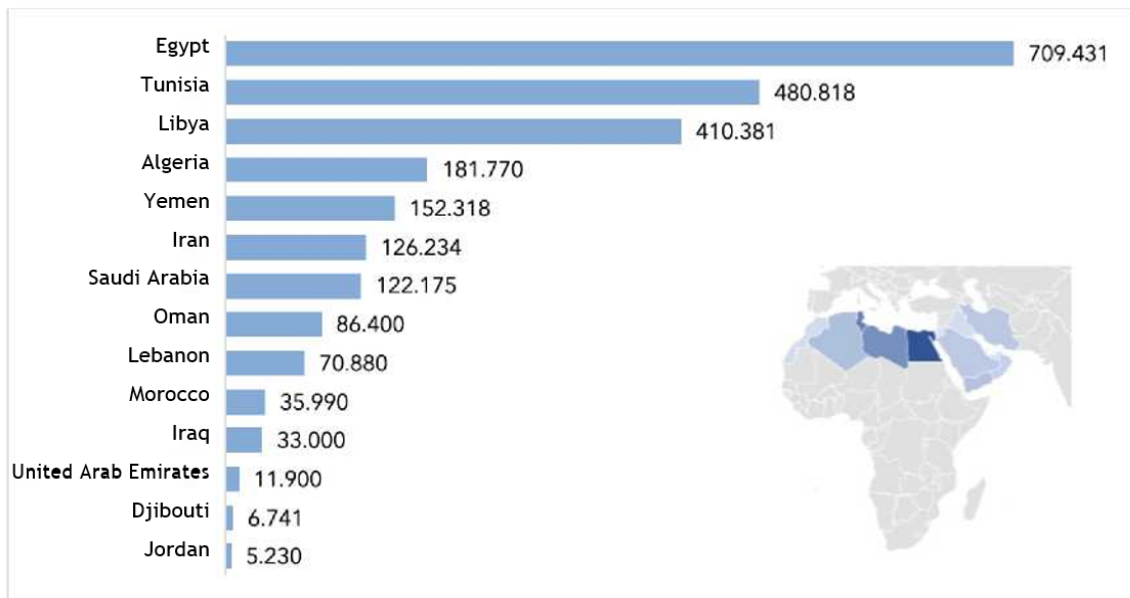
Ukrainian ports and the relative increase in prices, have made the events that had characterized the so-called 'Arab Springs' season relevant once again. The ingredients were the same: skyrocketing inflation and the risk of riots. The unblocking of the Black Sea ports has allowed these countries to breathe and, thanks to the Agreement signed in Istanbul, more than 9 million tonnes of products were guaranteed to developing countries, including almost all the countries in the MENA area.

Chart 6.1: Main outlets of the products of the Agreement by area



Source: Centro Studi Divulga elaboration based on HDE (Humanitarian Data Exchange) data

Chart 6.2: Main MENA countries to benefit from the Agreement



Source: Centro Studi Divulga elaboration based on HDE (Humanitarian Data Exchange) data

In particular, 2.5 million tonnes of agricultural and food products arrived in the MENA countries with Egypt representing the main beneficiary (710 thousand tonnes), followed by Tunisia (481 thousand tonnes) and Libya (410 thousand tonnes).

A breath of fresh air, as mentioned, for Egypt which imports 70% of its cereals from the Black Sea ports, Lebanon 75%, and Yemen with just under 50%. The situation is not particularly different in Libya, Tunisia and Jordan (6).

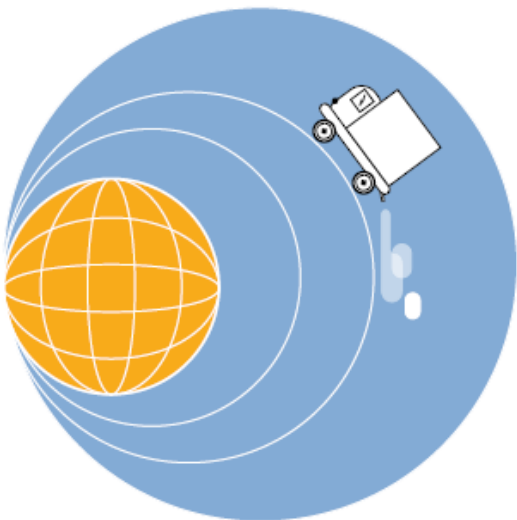
Box 2: The effects of the conflict on Italian imports

In the first 11 months of 2022, 1.5 million tonnes of cereals were imported into Italy from Ukraine and Russia. Almost all (94%) come from Ukraine with 1.4 million imported products (+83% compared to 2021). The remaining 6% (90 thousand tonnes) came from Russia with a 60% drop compared to 2021.

In particular, more than 1 million tonnes of corn arrived from Ukraine, crucial for livestock farming (+80%), 250 thousand tonnes of wheat (+103%) and 4 thousand tonnes of barley (-31%). Cereal imports from Russia mainly concerned wheat (71,000 tonnes, down 42%) and 15,000 tonnes of sorghum.

The import of sunflower oil from Ukraine also increased with 237 thousand tonnes in the first 11 months of 2022 (+11% compared to the same period in 2021), including 85 thousand tonnes of sunflower cakes and flours (-33%). Whereas 12 thousand tonnes of sunflower oil came from Russia in the first 11 months of 2022, in addition to 133 thousand tonnes of sunflower cakes and flours (-23%).

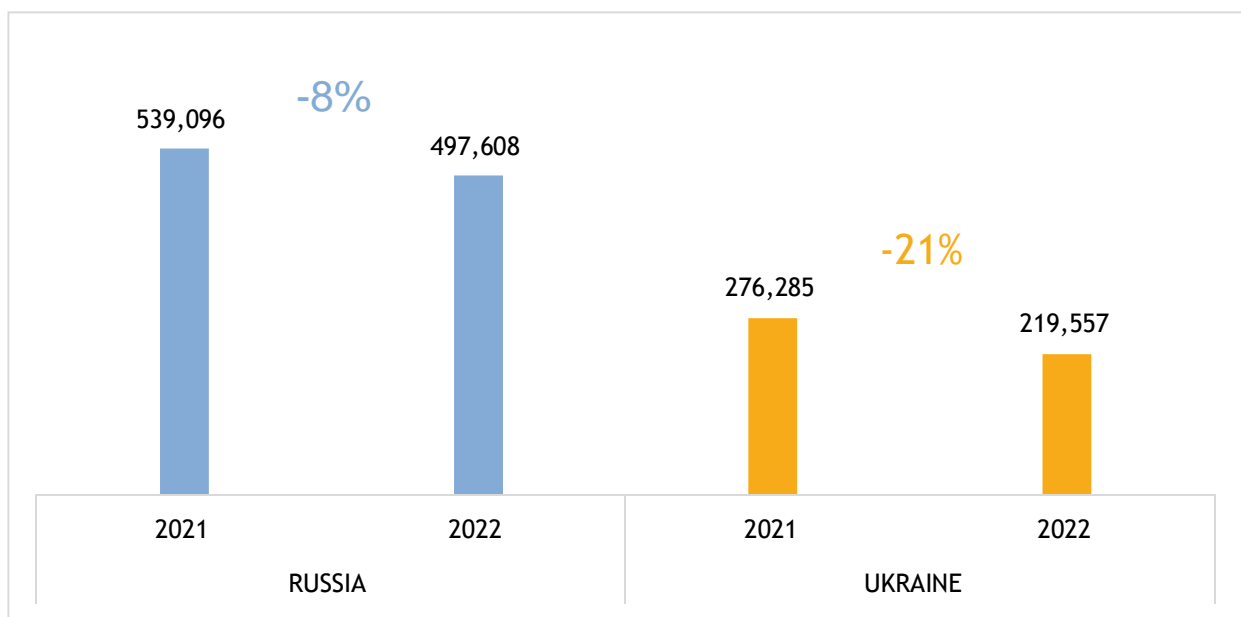
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7. 'Made in Italy' agri-food exports, the repercussions

There were also repercussions on exports of 'Made in Italy' agri-food products with Russia, which for years, despite the restrictive measures due to the embargo initiated in 2014, had confirmed an important commercial outlet for several Italian products such as wine, pasta and oil. In the first 10 months of 2022, exports of Italian agri-food products to Russia and Ukraine inevitably fell, with sales decreasing by roughly 100 million euros. In relative terms, the loss with Ukraine is 21%, while the loss with Russia is around 8%. The absolute weight of the two basins is different, with exports to Russia reaching 500 million euros in the first 10 months of 2022, while Ukraine stands at 220 million euros.

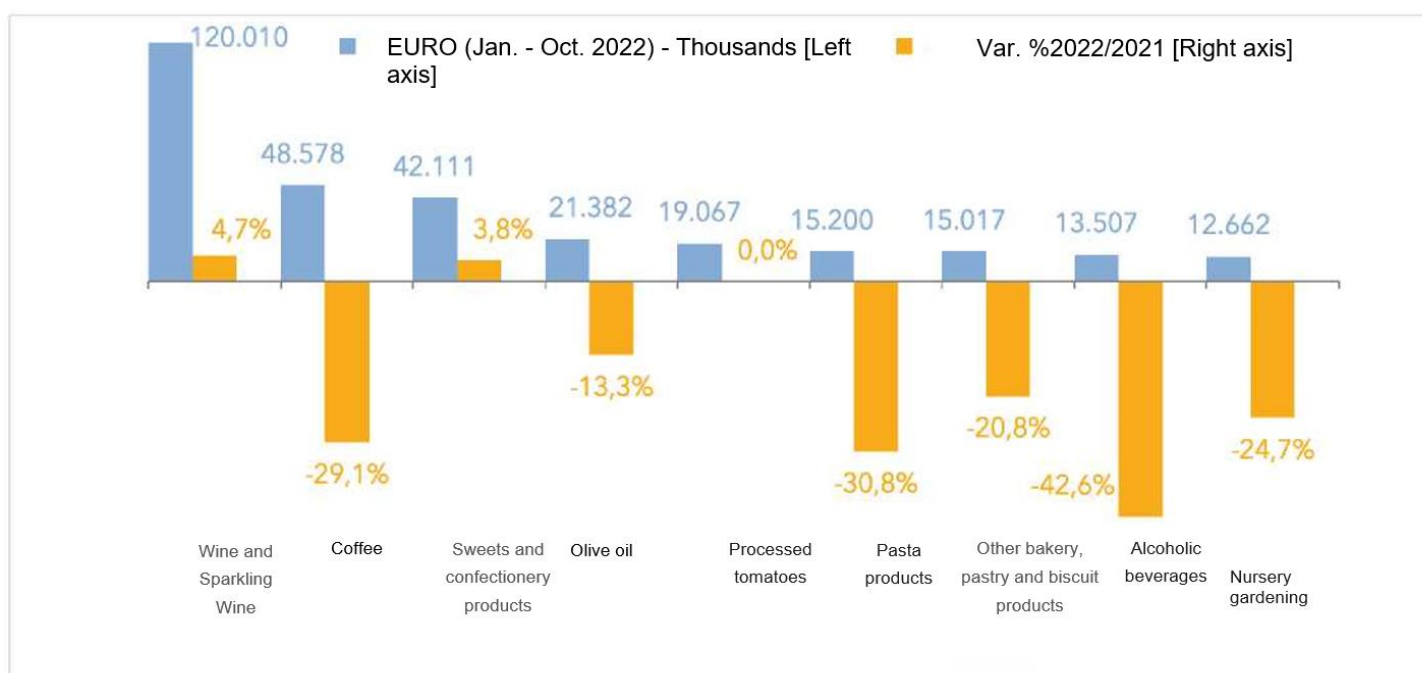
Chart 7.1: 'Made in Italy' agri-food exports to Russia and Ukraine (first 10 months 22/21, '000 euros)



Source: Centro Studi Divulga elaboration based on Istat data

In Russia, pasta (-31%), coffee (-29%), alcoholic beverages (-43%), plant nursery (-25%) and olive oil (-13%) have fallen in particular. Only the export of wines, with 120 million euros exported in the first 10 months of 2022 (+ 5%), and confectionery products with 42 million euros (+ 4%) hold.

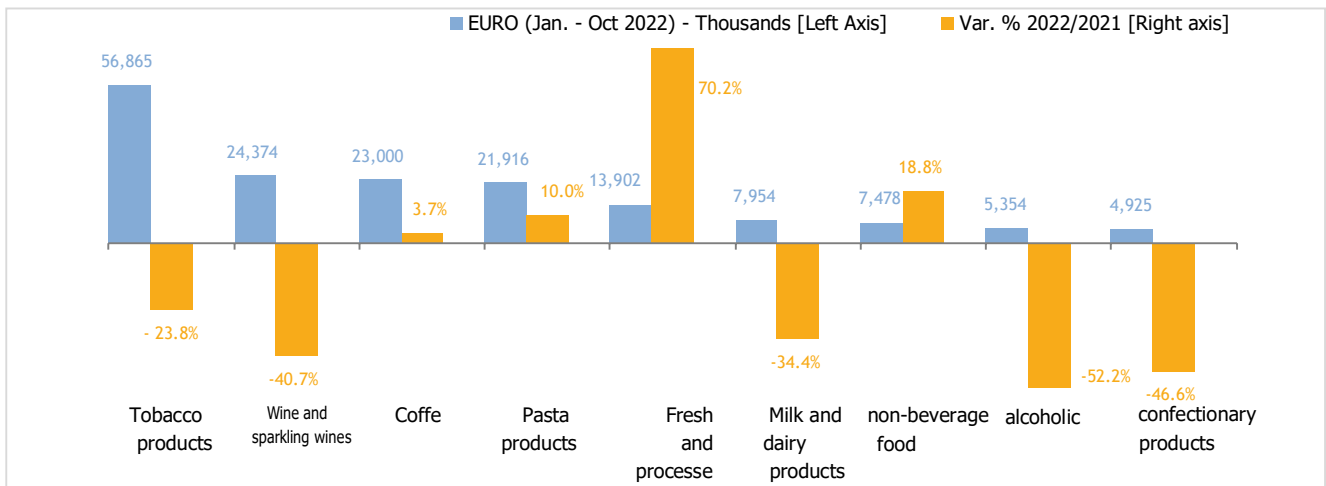
Chart 7.2: 'Made in Italy' agri-food export to Russia (first 10 months 2022) and Var. 2022/2021



Source: Centro Studi Divulga elaboration based on Ismea data

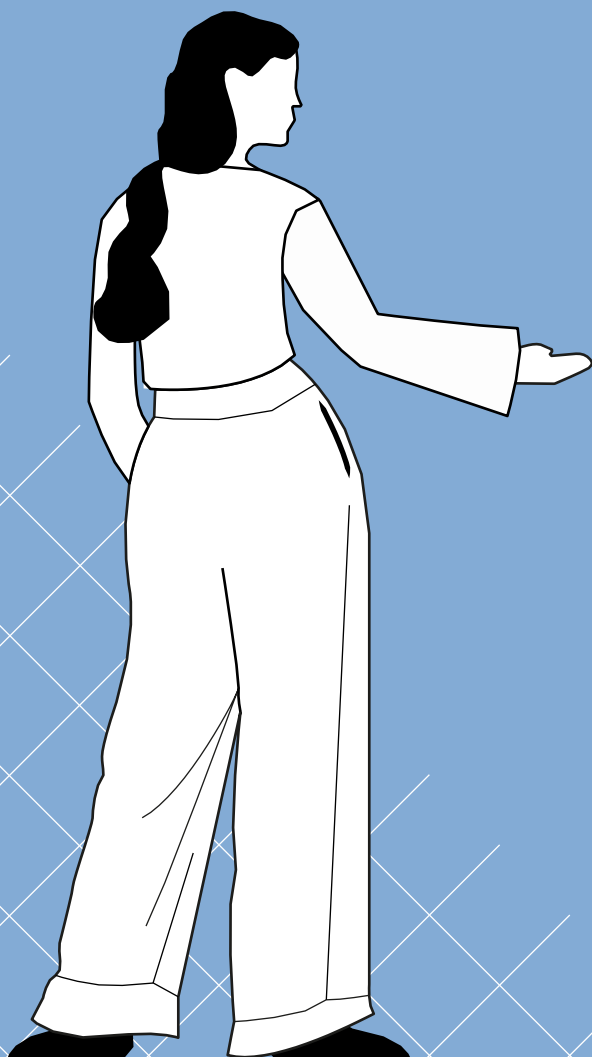
Exports to Ukraine are also down. In particular, tobacco (-24%), wines and sparkling wines (-41%), milk and dairy products (-35%), alcoholic beverages (-52%) and confectionery products (-47%). However, coffee (+4%), pasta (+10%) and vegetables (+70%) are growing.

Chart 7.3: 'Made in Italy' agri-food export to Ukraine (first 10 months 2022) and Var. 2022/2021



Source: Centro Studi Divulga elaboration based on Ismea data

b.



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