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World Vegetable Map 2024

Turbulent times for the global vegetable sector

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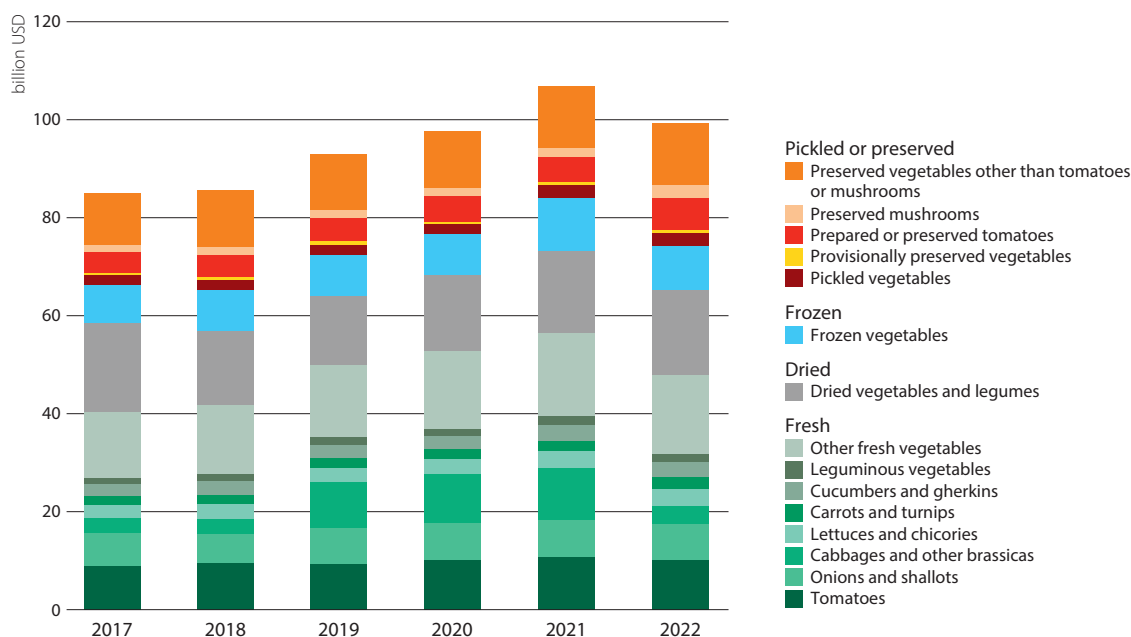
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The past five years have been everything but boring for the vegetable sector. The Covid-19 pandemic, extreme weather events, skyrocketing costs for growers, and challenging logistics are just some of the factors that have impacted the sector. Our recently published [World Vegetable Map](#) reflects some of these disruptions, for example, in the remarkably high global trade in 2021 and the roller-coaster ride of consumer vegetable prices. Most of the pictured trends, however, are rather long-term developments. Mexico, Spain, and the Netherlands have remained relevant exporters in the world of fresh vegetables, and countries such as Turkey and Poland are becoming bigger producers and exporters of both fresh and processed vegetables.

EU and US vegetable production decreasing

An estimated 7% of vegetables produced globally are traded, either fresh or processed, mainly within continents and often between neighboring countries. From 2017 to 2022, global trade in both processed and fresh vegetables increased by an average of 3% per year, though not in a linear pattern due to the Covid pandemic and the subsequent global wave of inflation (see figure 1). Global vegetable production grew at a slower pace of 1.2% per year. Notably, the EU and the US both experienced declines in production, by 3.6% and 3.3% a year, respectively, in the period from 2017 to 2022.

Figure 1: Global vegetable trade, 2017-2022

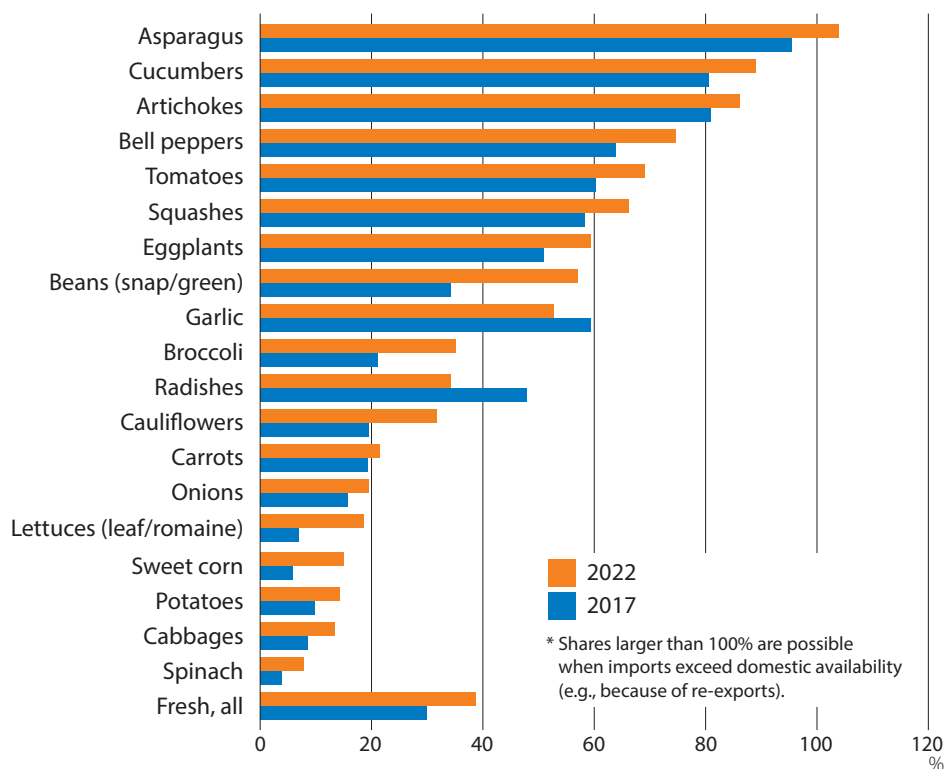


Source: UN Comtrade, Rabobank 2024

US increasingly dependent on imported vegetables

During the last five years, the US reinforced its position as the world's largest import market for fresh vegetables. The country's share of imports for greenhouse vegetables such as cucumbers, tomatoes, and bell peppers is particularly high (see figure 2). Due to ongoing strong demand from the US, Mexico's total fresh vegetable exports increased by almost 40% between 2017 and 2022.

Figure 2: Share of imported vegetables in total fresh vegetables available in the US, 2017 vs. 2022



Source: USDA, Rabobank 2024

A mixed bag of European vegetable imports

In the EU market, Spain, the Netherlands, and Italy have remained important exporters to other EU countries and the UK, not only for fresh vegetables but also for processed ones. However, Morocco, Poland, and Turkey have increased their presence in the European fresh vegetable market. Poland has not only increased its exports but also its imports. In five years, Poland has moved from the fourteenth to the ninth position on the list of world's largest vegetable importers. This reflects both its increasingly important position as a trading hub in central Europe and its position as a fast-growing market where consumer preferences have quickly changed.

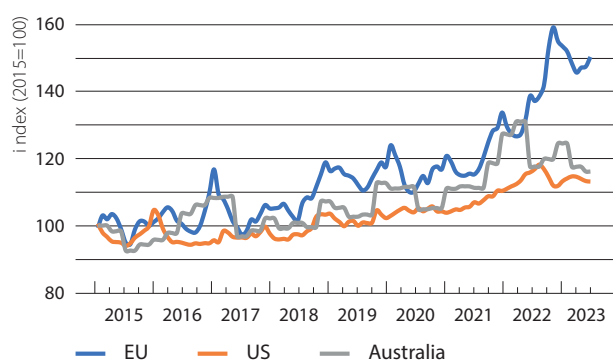
New players in vegetable processing, but all impacted by inflation

In the production and trade of processed vegetables, we observe several major shifts and changes. In terms of export value of frozen processed vegetables, China has overtaken Belgium as the number one exporter. Another notable development is the emergence of Turkey in the processed vegetable market. In 2021, there was a sharp increase in the global trade value of frozen vegetables, driven by strong demand during the pandemic and inflation. In 2021 and 2022, the global vegetable processing industry was impacted by sharp increases in the costs of vegetables, packaging materials (such as glass and cans), logistics, and energy (for freezing, heating, etc.).

Varying impact of inflation on consumer prices and consumption

Inflation affected not only the vegetable processing industry but also, to a lesser extent, the fresh vegetable sector. Companies had to manage higher costs in producing, storing, packing, and transporting vegetables. In many cases, prices also increased for consumers. It is difficult to determine whether inflated vegetable prices have impacted consumer purchasing behavior. We see varying developments around the world. In Australia, per capita vegetable consumption decreased between 2017 and 2022, despite relatively limited inflation. It seems that Australian

Figure 3: Consumer price evolution for vegetables, in selected regions,* 2015-2023

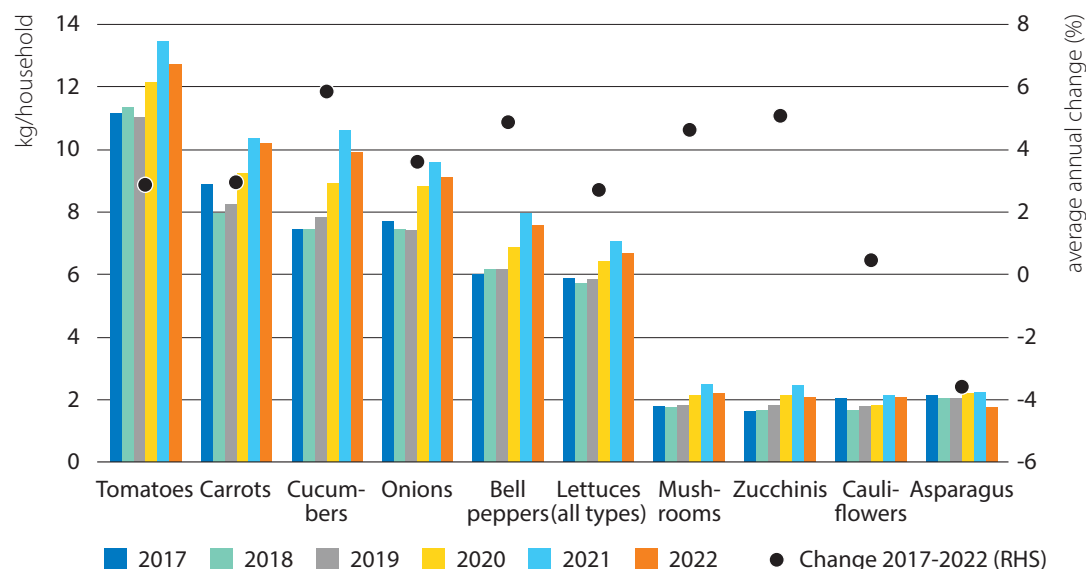


* Index is monthly for the US and the EU, quarterly for Australia.

Source: Eurostat, Rabobank 2024

consumers are shifting from purchasing greater volumes to focusing on higher-value vegetables. While consumption of carrots, pumpkins, and onions decreased, consumer interest in leafy greens increased. In the US, the overall volume of vegetables consumed did not change that much from 2017 to 2022. German households, in contrast, strongly increased their fresh vegetable purchases (see figures 3 and 4). In 2022, there was a decline in German vegetable purchases, but they remained considerably higher than in 2019, despite the relatively high increase in vegetable prices.

Figure 4: Household purchases* of fresh vegetables in Germany, 2017-2022



* In retail channels only.

Source: AMI, GfK, Rabobank 2024

Increasing control in vegetable production

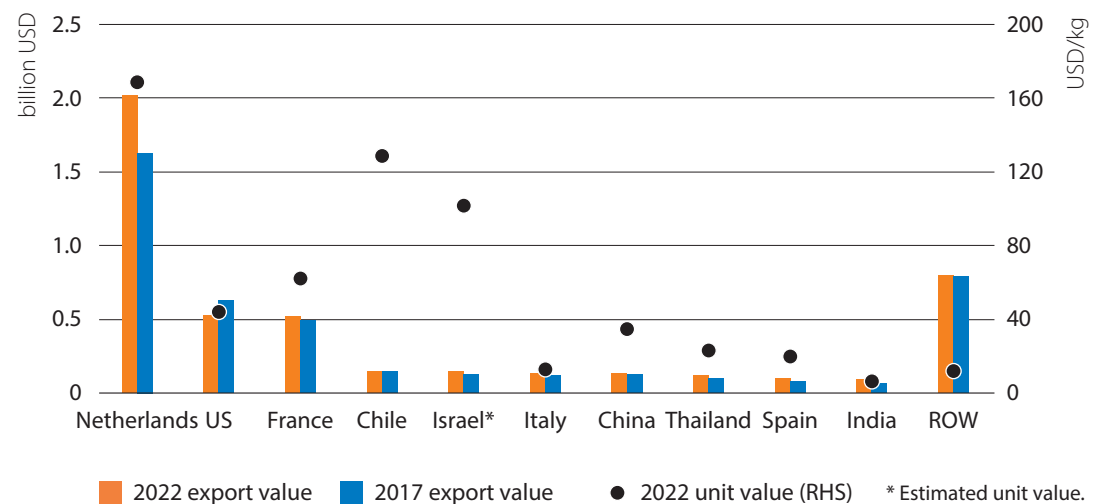
Some of the vegetables traded and consumed are grown in (semi-)controlled environments, including plastic covers, plastic greenhouses, and glasshouses. Driven by growing demand for quality and consistency, controlled production has grown at a faster rate than total vegetable production. Excluding China, the global area of greenhouses for vegetable production has steadily

increased in recent years and is currently estimated at 800,000 hectares. Zooming in on glass structures, we estimate an annual growth rate of almost 10% since the previous edition of our world vegetable map in 2018. In the 2018 edition, we also illustrated the locations of vertical farms around the globe. In our latest map, we have excluded vertical farms because the industry is currently undergoing major restructuring.

Seeds: A small input of high importance

Starting with high-quality materials is key for producers of quality vegetables. The fact that Russia has increased imports of vegetable seeds year after year since 2015, while the import of fresh vegetables from the EU was banned, illustrates the strategic importance of this tiny but expensive input. The breeding, production, and export of vegetable seeds is concentrated in a few countries. Over the last five years, the Netherlands has strengthened its position in the breeding and trading of high-value vegetable seeds (see figure 5). Chile also holds a unique position in seed production and exports due to its natural conditions and Southern Hemisphere location. The US is both a large exporter and importer of vegetable seeds. Many of the seeds exported from the US to Mexico return to the US as vegetables, further illustrating the close ties between these two countries.

Figure 5: Top 10 vegetable seed exporters, 2017 vs. 2022



Source: UN Comtrade, Rabobank 2024

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