ENOUGH
EUROPEAN FOOD CHAIN SUPPLY TO REDUCE GHG EMISSIONS BY 2050

Factsheet 3
December 2022

Refrigeration in Norwegian Vegetable Storages

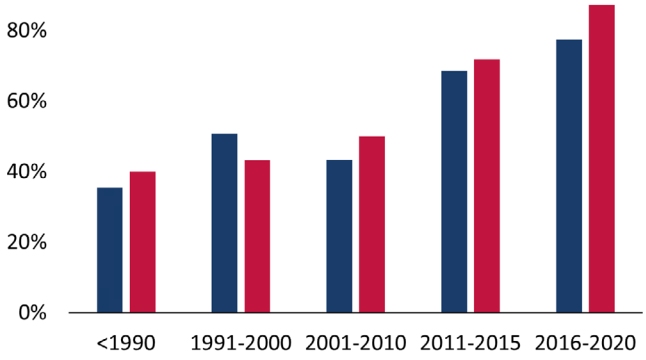
Current Status and Future Outlook

In 2020, 290 vegetable producers responded to a national survey in Norway. The respondents owned a total of 594 storages, representing 37% of the total vegetable storage volume in the country. Almost half of the storages in this survey are older than 30 years, and about half are not refrigerated.

48% of storages are refrigerated

These storages hold 59% of total stored volume

Share of storage with refrigeration and share of refrigerant volume, by age of storage building



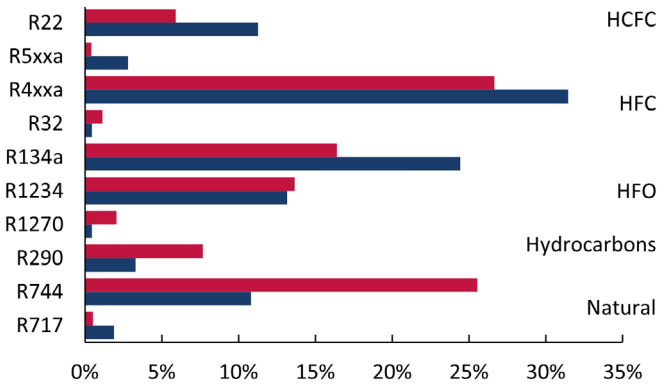
The sector is planning for growth, forecasting an increase in produced and supplied volume of 66% by 2025 compared to 2010.

The survey shows

- Within the non-refrigerated storages, 70 will be retrofitted with refrigeration systems within the next 10 years.
- 48 of current refrigeration systems will be upgraded within the same timeline.
- Annual food waste during storage is estimated at 15-30% (depending on vegetable type).
- About one-third of the refrigeration systems in the survey was installed in the last 5 years (>2016).
- R134a and R-400 refrigerants are the most common (55%), but there is a trend towards natural refrigerants in newer systems (e.g. CO_2, NH_3 and hydrocarbons - mainly propane). For example, 11% of the systems used CO_2, which represents over 25% of the refrigerated storage volume.
- Banned refrigerants (HCFCs) are likely to be replaced by naturals
- To reduce food waste, stakeholders must employ readily available refrigeration technologies using natural refrigerants.

Knowledge on best practices should be established and communicated to producers/stakeholders.

Share of systems and total storage volume by type of refrigerant



Find more about this study from the original publication: http://dx.doi.org/10.18462/iir.iccc2022.1113

ENOUGH webpage: https://enough-emissions.eu/
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