NORSUS
Norsk institutt for bærekraftsforskning

Nordic Co-operation

Presentation for the EU Expert group on Food Waste monitoring 09 July 2021

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Our concortium and work plan in the project

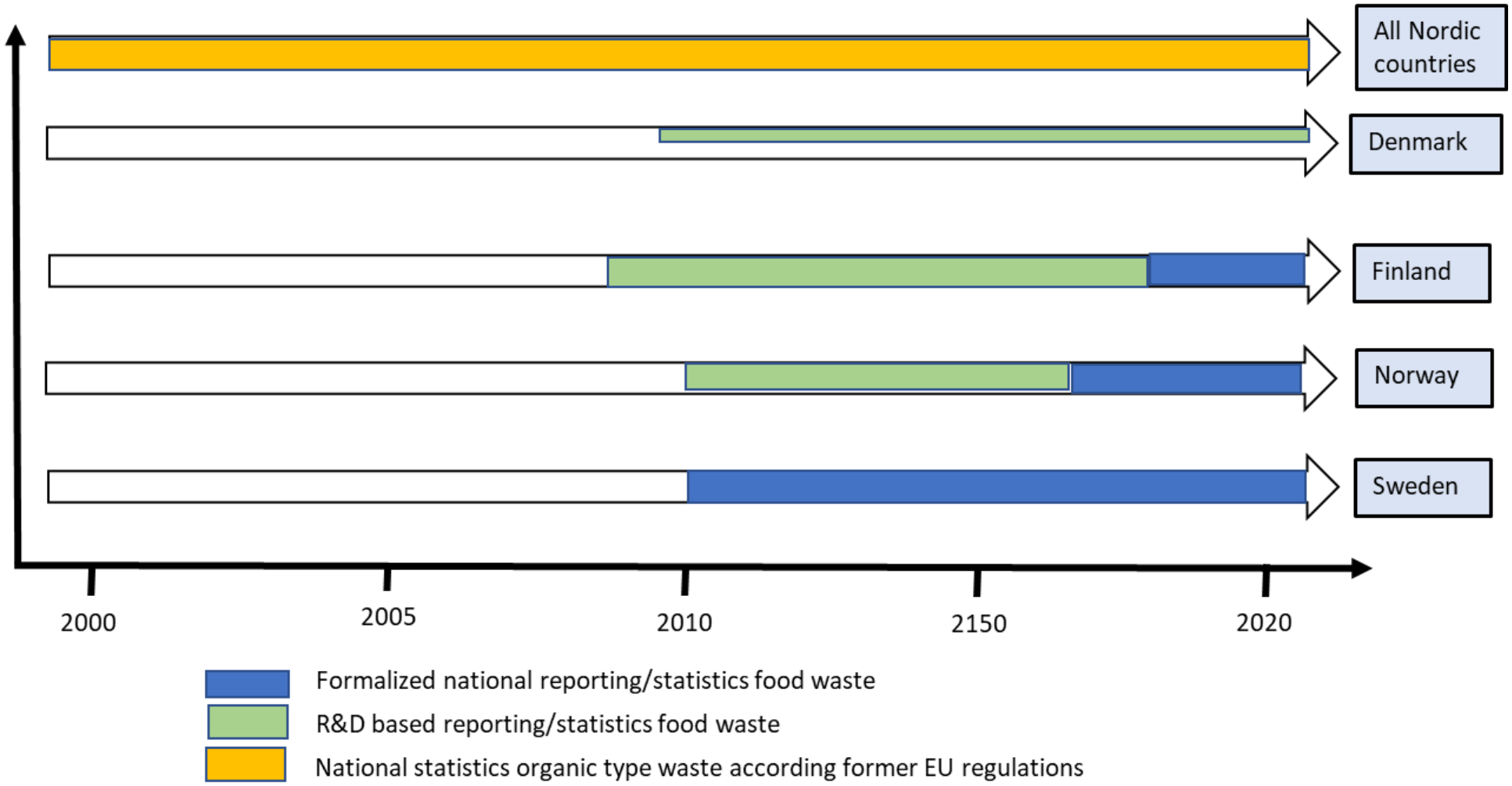
Definitions/system boundaries:

Methodologies and coordination

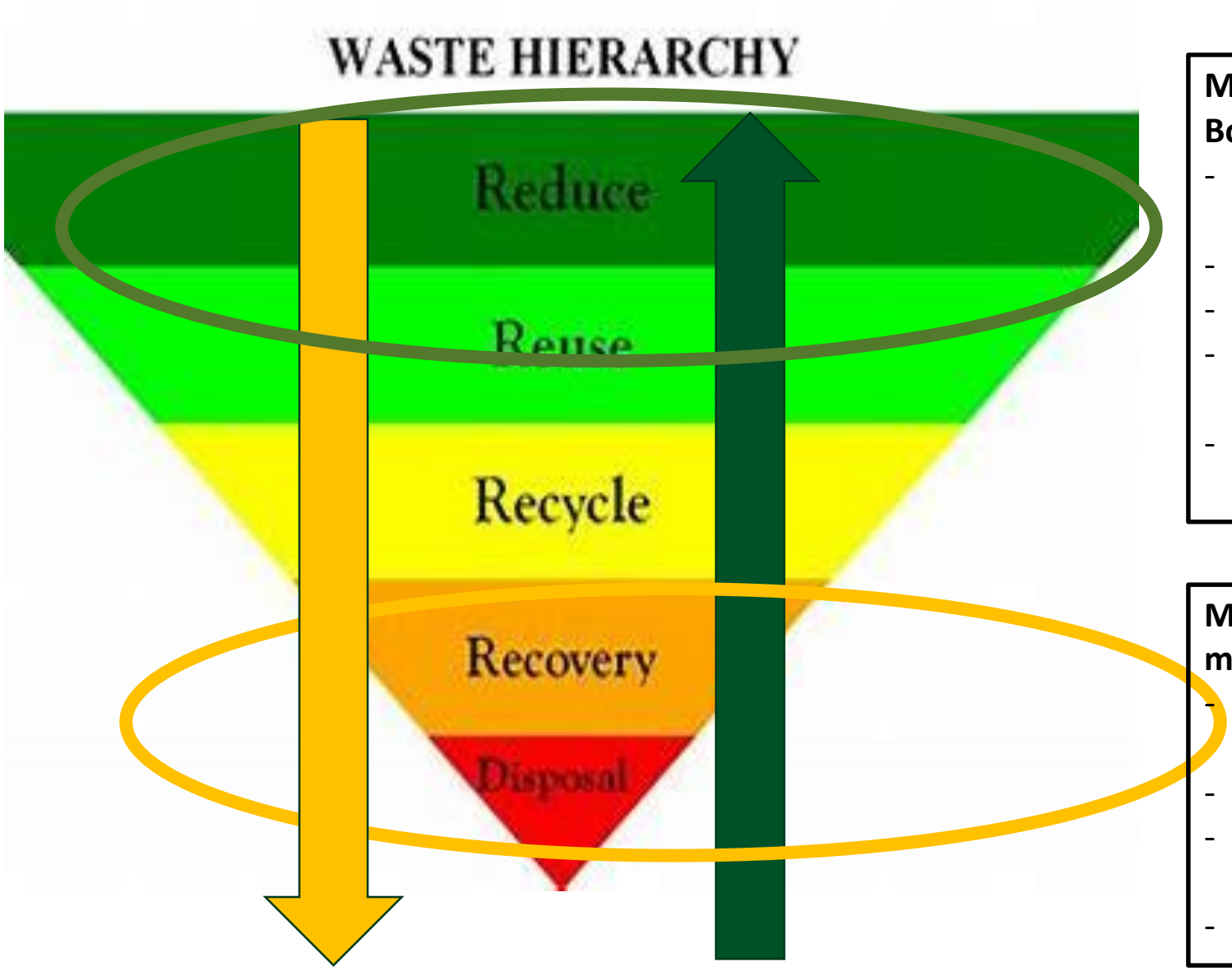
Prevention measures household and retail

Workshop organisation

Monitoring of organic waste/food waste - Development over time in the Nordic countries



Why monitoring food waste – top-down and bottom-up approaches



Monitoring as a measure to prevent food waste - Bottom-up monitoring

- Need data to focus on key areas and options for prevention and reduction
- High involvement of actors necessary
- High detailness of monitoring of data
- Methodologies for registration of data with high resolution – detailed WCA
- Good representativeness is needed

Monitoring primarily to fulfil regulations – Top-down monitoring

- Need data on total food waste to treatment –less detailed data needed.
- Involvement of actors less needed
- Methods for registration of data with lower resolution good enough – less detailed WCA
- Good representativeness is needed

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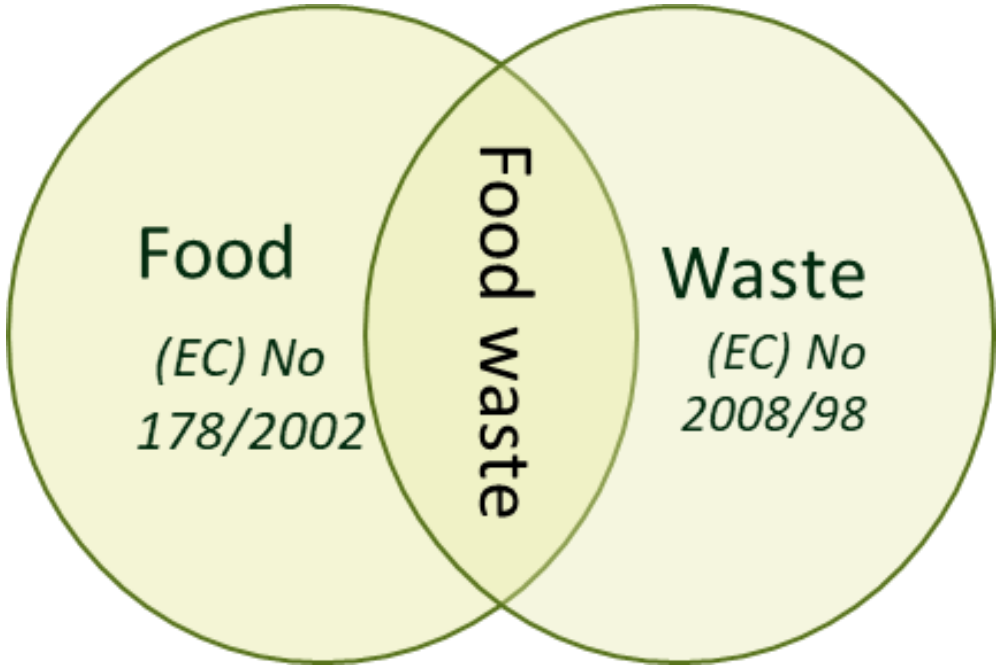
EU reporting from 2020

1. Food waste has to be separated from other waste
2. Food waste has to be split into different steps in the food chain
   - Primary Production
   - Processing and manufacturing
   - Retail and other distribution of food
   - Restaurants and food services
   - Households
3. Requires primary data based on recommended methods
4. Voluntary reporting on food waste drained, edible parts (in %), re-distribution and feed/former food stuff



tonnes of fresh food waste

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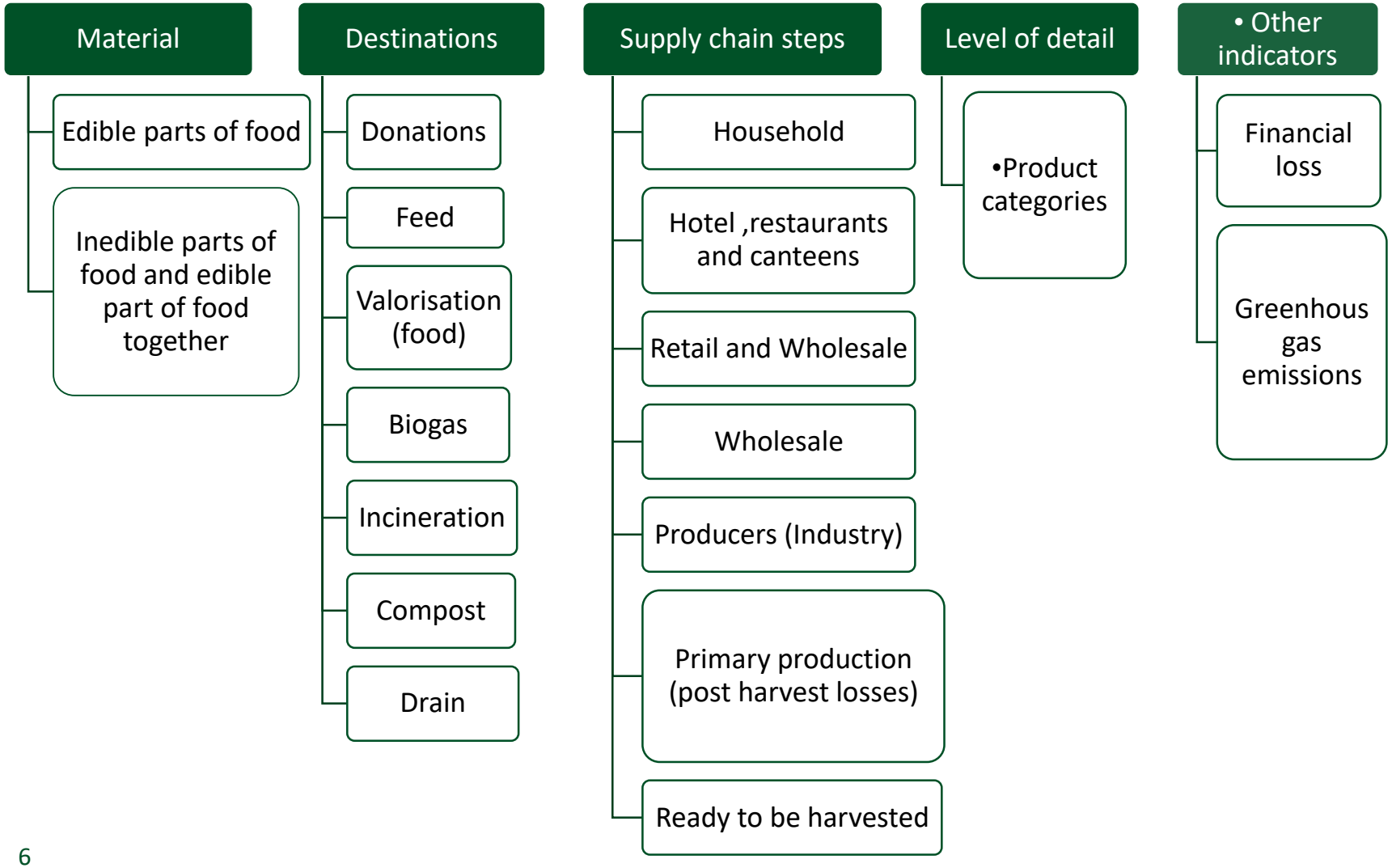
We compared the following parameters



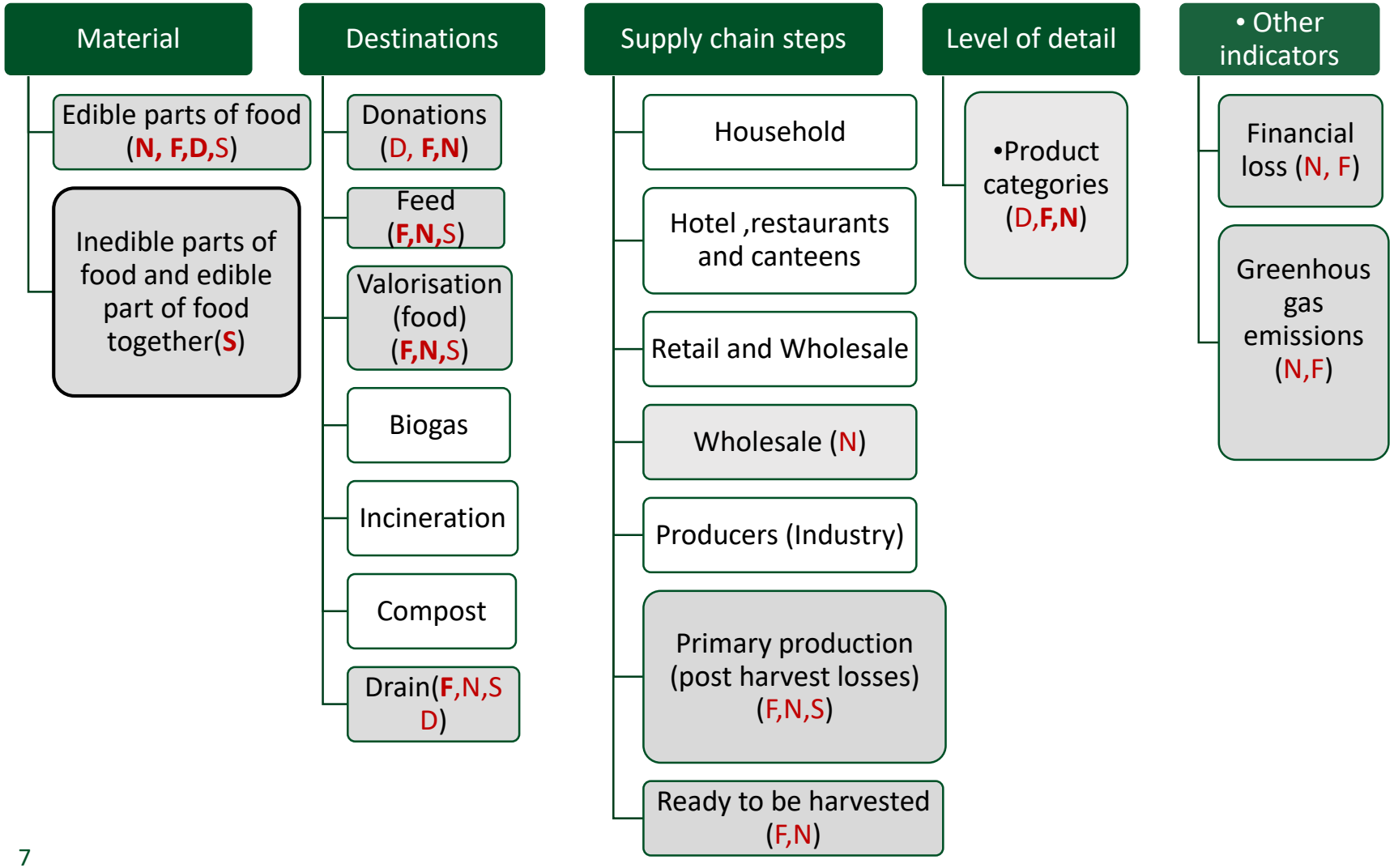
Denmark: Reporting commissioned by authorities

Finland: National collabotative research project led by LUKE

Norway: Bransjeavtalet (MATVETT)

Sweden: National food waste reporting commissioned by the authorities

Overview of current data-collection



Bold = majority of supply chain steps
Normal= 1-2 supply chain steps

Denmark (D): WFD

Finland(F) Collabotative Project led by LUKE

Norway (N) : Bransjeavtalet

Sweden (S): National food waste reporting

Examples of initiatives taken place after the mapping (2019)

Country	Work in Progress
Denmark	-The Ministry of Environment and Food has established a Voluntary agreement/ Thinktank (ONE\THIRD. ONE\THIRD) on reduction targets, and data reporting
Finland	-Published the first version of the national food waste reduction road map by the end of 2020. - Aim to include financial and environmental impacts as well
Norway	- Further develop the system into national statistics and official reporting of data on food waste to EuroStat, according to new EU regulations.
Sweden	-Developing a methodologies to follow up on losses (”Livsmedelsförluster”) *to follow up on the milestone target on reducing food waste (as defined by EU) “with 20% /capita from 2020 to 2025, an increased amount of food produced shall reach retail and consumer by 2025”*. o Methods to monitor food losses (edible parts of food) and next year data will be collected Report is available in Swedish ,an English version will come (Swedish Board of Agriculture) o Methods for public meals have been developed by authorities and granular data are collected (National Food Agency) -Voluntary agreement “Samarbetet för minskat matsvinn” (SAMS) that will set target and contribute to the data reporting

Food waste monitoring systems – basic methodological elements

I. **Quantifying** food waste at the point of generation, i.e. in farms, in the dairies and slaughterers, retail shops, households etc. This is the key element in monitoring

II. **Data gathering and systematization**. Once data are available as primary data, it is necessary to get access to the data in a systematic and efficient way, presently through web-based portals, questionnaires

III. **Upscaling to national statistics**, based in food waste factors and production or sales statistics for sectors or subsectors

IV. **Reporting** which can be done annualy on company level, sector level or on national level of food waste statistics through national official statistics and to Eurostat/EU.

What we have focused in the evaluation of food waste monitoring systems in each country

	Denmark	Finland	Norway	Sweden
Starting of and frequency of monitoring				
Responsibility and involvement				
Internal use of food waste monitoring to manage and prevent food waste				
Representative samples				
Type of measuring method				
Unit of measuring				
Other impacts reported, eg. GWP and economic value				
Type of food products being monitored and reported				
Validation and control				
Upscaling methodology				
Gap analyses				

Most typical methods for food waste registration in the Nordic countries

	Denmark	Finland	Norway	Sweden
Primary production	Data are compiled from both expert estimates and national statistics on production volumes, biogas-production and waste from fisheries.	Data is partly based on statistics and farmer's voluntary reporting: 1) Questionnaires: Field losses and postharvest based on producer's own estimates Storage losses are based on inventory data. 2) Statistics: meat, eggs, fishing	Started for the fisheries sector in 2018 and in the agriculture sector in 2020 – combination of weighing, counting and estimating volumes of food being wasted, in some cases scanning from storing after packing	Research based from an older report. Update ongoing.
Food industry	Data is collected though questionnaires and targeted interviews to the largest producers. This will be combined with waste reporting to the national waste system	Scanning, weighting and mass-flow analyses (food industry execute). Data is collected through questionnaires.	Weighing, counting or measuring volumes - and in some cases scanning of data. Web-based data gathering	Environmental reports and questionnaires
Retail and wholesale	Scanning and weighing of food waste from 60 % of retail chains in Denmark. Previously waste composition analyses were used from a limited number of retail shops.	Scanning, weighing and comparison to total sales (retail stores execute). Data is collected using questionnaires.	- Scanning combined with weighing of waste from non-packed products, - Information about destination of unsold products	Scanning and weighing of waste. No data from wholesale available
Hospitality	Weighing of food waste and residual waste as well as waste composition analysis.	Online diaries where data is collected using electronic kitchen scales (weighting), scanning, and calculating the amounts of units (crates etc.). Qualitative data: online questionnaires.	Combination of direct weighing of food being wasted by electronic or manual scales, diaries and weighing of waste/waste composition analyses. Web based data gathering	Weighing of food waste and residual waste as well as waste composition analysis
Households	Weighing of sorted food waste and residual waste combined with waste composition analyses	Quantitative data: online diaries, waste composition analyses. Qualitative data: online questionnaires.	Weighing of sorted food waste and residual waste combined with waste composition analyses	Weighing of food waste and residual waste combined with waste composition analysis

Summarizing use of methods to quantify food waste in different stages of the food chain

- Weighing combined with waste composition analyses, scanning and diaries most often used – how data are collected differs between the different parts of the food chain
  - Primary production – Not yet started on systematic data collection
  - Food industry –weighing of food being wasted/counting/scanning/ weighing of waste being collected
  - Retail and wholesale – scanning and weighing of food being wasted
  - Hospitality sector – weighing of food being wasted, diaries and weighing of waste being collected/waste composition analyses (Norway, Finland)
  - Households - weighing waste being collected/dairies (Finland)/waste composition analyses

Gap analysis against new EU requirements

	Denmark	Finland	Norway	Sweden
Primary production	- No problems	- No problems	- Definition not including animal feed/by-products and non-edible parts	- No problems
Food industry	- No problems	- No problems	- Definition not including animal feed/by-products and non-edible parts	- No problems
Retail and wholesale	- No problems	- No problems	- Definition not including animal feed/by-products and non-edible parts	- No problems
Hospitality	- No problems	- No problems	- Definition not a problem with regard to animal feed and by-products - Non-edible parts – need supplementary data for EU reporting	- No problems
Households	- No problems	- No problems	- No problems to fulfil requirements based in present methodologies	- No problems

Gap analyses between present methods for food waste quantification used in the Nordic countries and their «ideal national ambitions»

	Most important gaps
Primary production	- In general little experience so far from most Nordic countries – national reporting generally not available for gap evaluation except for Finland - Definition not including animal feed/byproducts and non-edible parts (Norway)
Food industry	- Methods applied OK, but definitions and system boundaries not always correctly practised by all companies. - Generally low representation of SME companies - Definition not including animal feed/by-products and non-edible parts (Norway)
Retail and wholesale	- Methods and representativeness not a problem in Norway and Finland, but need more and better data in other countries - Definition not including animal feed/by-products and non-edible parts (Norway)
Hospitality sector	- Methods applied OK in most companies - Low representation of SME companies, public sector (Norway) and “Grab and go” sector - Definition not a problem as food waste can generally not be used for animal feed or as by-products
Households	- Methods and representativeness not a problem with regard to food waste as defined by EU regulation

Estimates of costs of monitoring

I. Our survey has not been able to evaluate in-depth differences in costs between monitoring systems

II. Most of the costs will be at the stage where primary data are generated, i.e. among waste generators in companies and municipaltities, and is not easy to estimate

III. At waste generators we will find the most important difference between the detailed bottom-up approach and the top-down approach

IV. Data gathering and upscaling to national statistics will not be as influenced by the different approaches

V. Waste generators have the most benefits from waste reduction, which can be quite substantial by being involved in bottom-up monitoring

Summary of main findings from methodology survey

- From research based to more systematic and formal monitoring the past few years
- Representativeness first of all from an economic point and not necessarily statistical samples – representativeness should be improved for some stages in the food chain
- Data are collected by those who generate food waste, based in guidelines being developed on national levels, with basis in internationally accepted methods
- Quality checks of the data by research institutes if they differ too much from earlier years/sector-wise waste factors (Norway and Finland).
- Norway and Finland report edible food waste on very detailed levels (about 10 food types) – Sweden and Denmark follow EU definition's unit for registration, except edible food waste at household stage.
- Norway has implemented annual data collection based in detailed bottom-up registrations, partly also the case in Finland
- Only Norway does so far report both in tonnes food waste and estimates for tonnes of CO_2-eqv and economic value of food waste – normally only tonnes of total food waste or kg/capita

Summary on main findings linked to approaches for monitoring food waste

- The Nordic countries have a lot of similarities and some dissimilarities in their approach to food waste monitoring
- All Nordic countries can with some modifications and transformation of data (Norway – animal feed and non-edible food) meet the new requirements for reporting food waste considering boundary conditions.
- A better understanding of different approaches opens for closer collaboration on methodologies and data-sharing and by that a faster advancement towards SDG12.3 and national goals within the Nordic countries.

Top-down vs bottom-up approaches

In the Nordic region Sweden and Denmark are mainly driven by the authorities applying the top-down approach while Finland and Norway has evolved making use of the bottom-up perspective driven by the business sector and R&D

- The top-down approaches are generally commissioned by the authorities to collect national data on food waste. They are driven by the need to follow up on regulations as EU Delegated Act and national targets. The main interest is to produce aggregated data for national statistics
- The bottom-up approaches are aimed for change management on stakeholder level. Focus on much more detailed data and with an aim to identify opportunity for prevention. Aggregated data are collected among the engaged stakeholder for benchmarking and to develop common strategies for collaboration.

Top-down vs bottom-up approaches

Commissioned by Authorities

Top-down

- To collect national data on food waste
- Governed by regulations eg. EU WFD, Agenda 2030
- Aggregated data
- Upscaling of representative data using validated statistical methods

Policy measures

Stakeholders: Benchmarking, change management
Authorities: Provides waste rates that feed into the national model.

Bottom-up

- Focus is on the entity
- KPI
- Aggregated information

Initiated by the stakeholders e.g. through voluntary agreements and collaborative projects (Authorities)

The report from the project with recommendations to Nordic Council of Ministers is available for downloading here:

- https://www.norden.org/en/publication/monitoring-food-waste-and-loss-nordic-region

Food waste statistics from Norway 2015-2019

- Increasing number of companies are reporting food waste statistics from own operations annually
  - From 13 to 47 food industries
  - From 3 to 5 retail companies
  - From 0 to more than 600 hospitality companies
- The report is available here: https://www.matvett.no/uploads/documents/OR.51.20-Matsvinn-i-Norge-2015-2019-translated.pdf

Food Waste in Norway: Report on Key Figures 2015-2019

AUTHORS
AINA ELSTAD STENSGÅRD, KJERSTI PRESTRUD AND PIETER CALLEWAERT

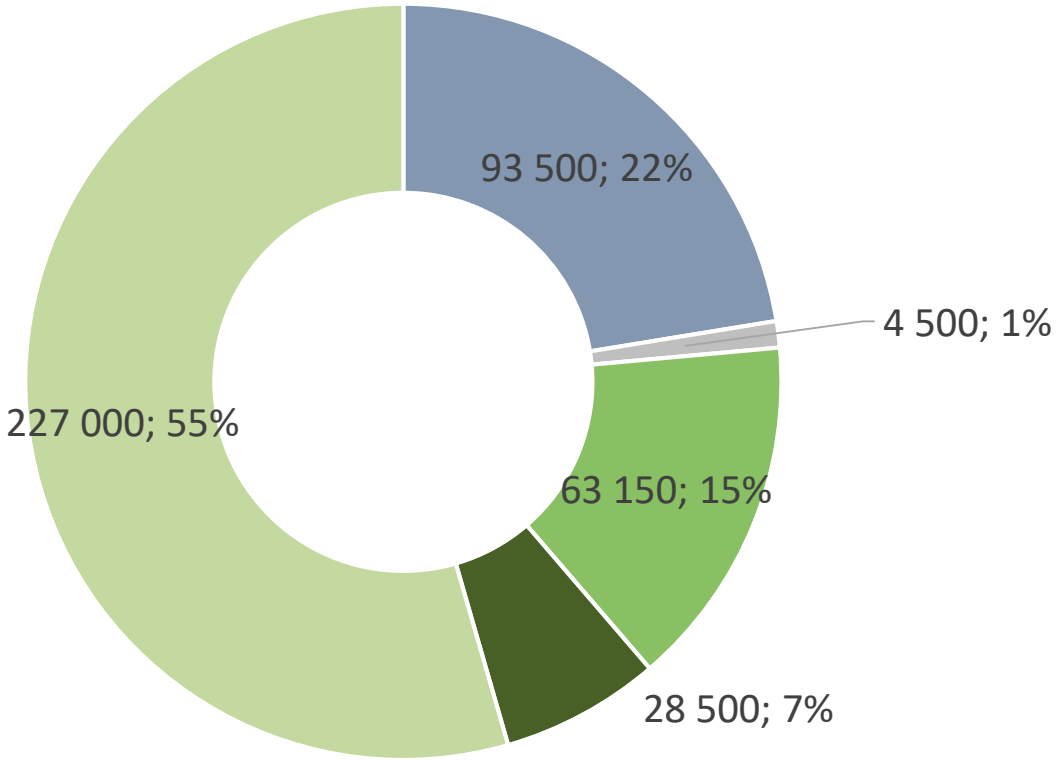
REPORT NO. OR.51.20
YEAR 2020

The economic representativeness of the 2019 data are very good

Sector/part of food chain	**Number of companies or organisations sharing data in 2019**	**Share of sector represented in Norway**
Food industries	47 bedrifter	46 %
Whole salers	5 bedrifter	65 %
Retail sector	5 Kjeder	100 %
Hotels	44 Serveringssteder	47 %
Canteens	598 Serveringssteder	36 %
Restaurants	59 Serveringssteder	2 %
KBS	3 kjeder	50 %
Elderly centers	6 kommuner	7,6 %
Child care	3 kommuner	0,7 %
After school child care	2 kommuner	3 %

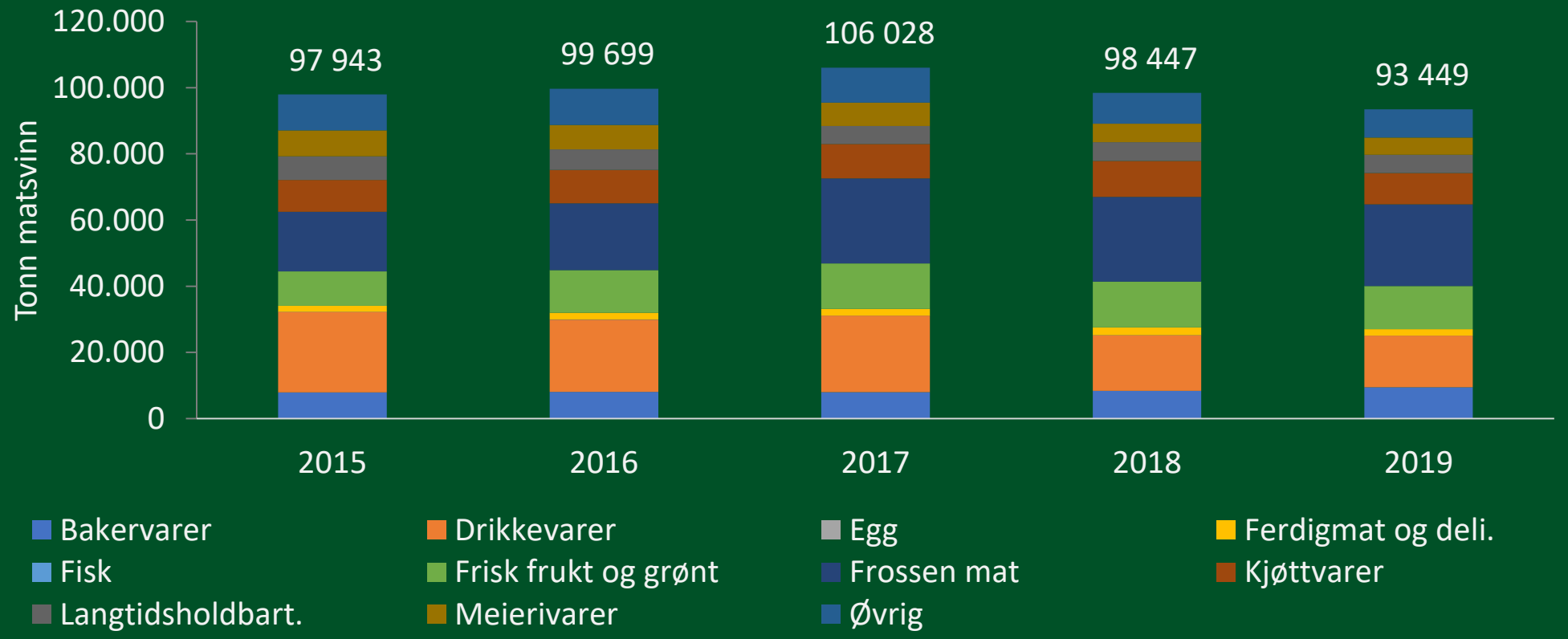
Sjømatnæringa og landbruket ikke inkludert.
https://www.sintef.no/publikasjoner/publikasjon/?pubid=1820857

More than 417 000 tonnes food waste in Norway



Trends in the food industries

- 5 % tonn
- 9 % NOK
- 6 % CO2



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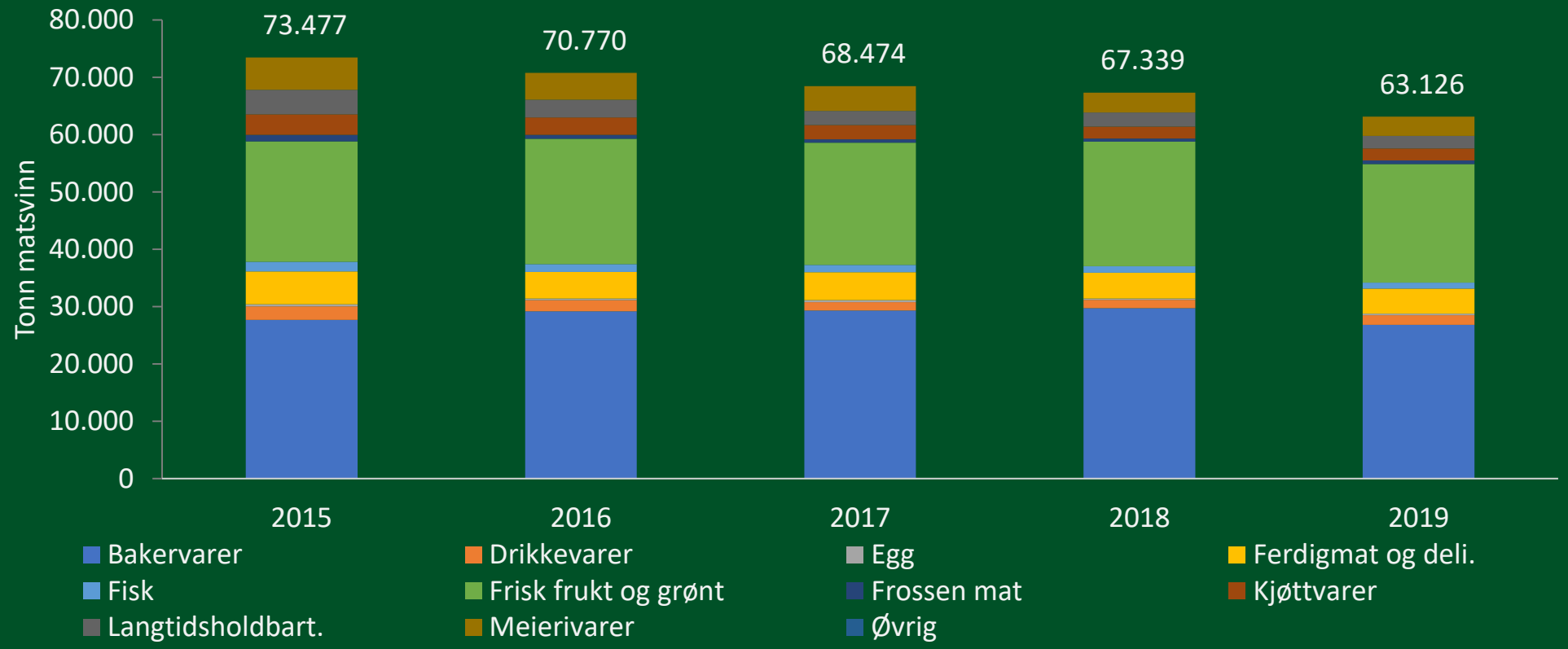
Trends in the retail sector

-14 % tonn
-20 % NOK
-26 % CO2



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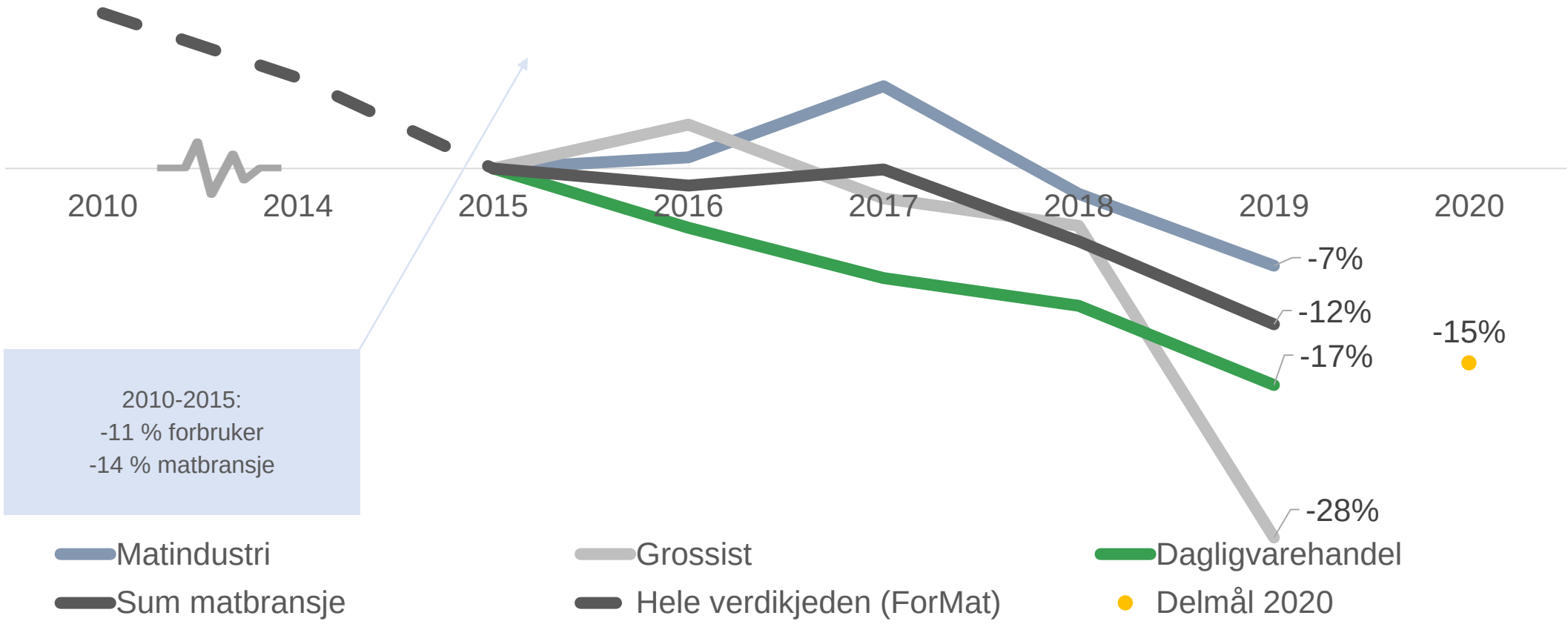
% change in kg food waste per capita and year



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