4.1: Reporting on food waste at EU and global levels

Eurostat

FOOD LOSS AND WASTE MONITORING SUB-GROUP

Online, 11 May 2023

Food waste data collection 2022 (RY2020):
data gathering, validation and publication process

- Food waste data collections 2022 (reference year 2020) was a new reporting obligation;
- Launch of food waste data collection 2022 for reference year 2020: 3 June 2022 (submission deadline 30 June 2022)
- Data validation and exchanges with countries: 24 countries ended Oct2022, + 3 countries ended Feb2023
- Follow-up late countries: second reminder sent on 18 July, request of informing of transmission delay
- Food waste measurement unit is tonnes of fresh mass: some countries were requested to confirm
- All countries were able to provide the breakdown by NACE Rev2 activities (Primary production, Processing and manufacturing, Retail and other distribution of food, Restaurants and food services, Households)
- Most of the countries reported according to the methodologies set out in ANNEX III of DD 2019/1597 EC
- Publication of EU-level statistics: most data were released in Q4 (end of October) in the Eurostat dissemination database and in the Statistic Explained article, with second publication in March 2023

Food waste data collection 2022 (RY2020):
timeliness

- Compared to other waste streams, the timeliness of **RY2020 first submission** was very good:

	Periods						
	By 30 June 2022	***of which, from 16 to 29 June***	**1 - 7 JUL 2022**	**8 - 22 JUL 2022**	**23 JUL 2022 - 23 OCT 2022**	**24 OCT 2022 - 6 MAR 2023**	**TOTAL (6 MAR 2023)**
First submissions	18 MS+ 1 EFTA	*7 MS*	3 MS	3 MS	1 MS	1 MS	**26 MS + 1 EFTA**
Published countries					23 MS + 1 EFTA	26 MS + 1 EFTA	**26 MS + 1 EFTA**
Publication embargo					2 MS	0	**0**
Number of revisions	*0*	*0*	*0*	*0*	*17*	*5*	*22*

Note: the missing MS preannounced delay in transmission in due time

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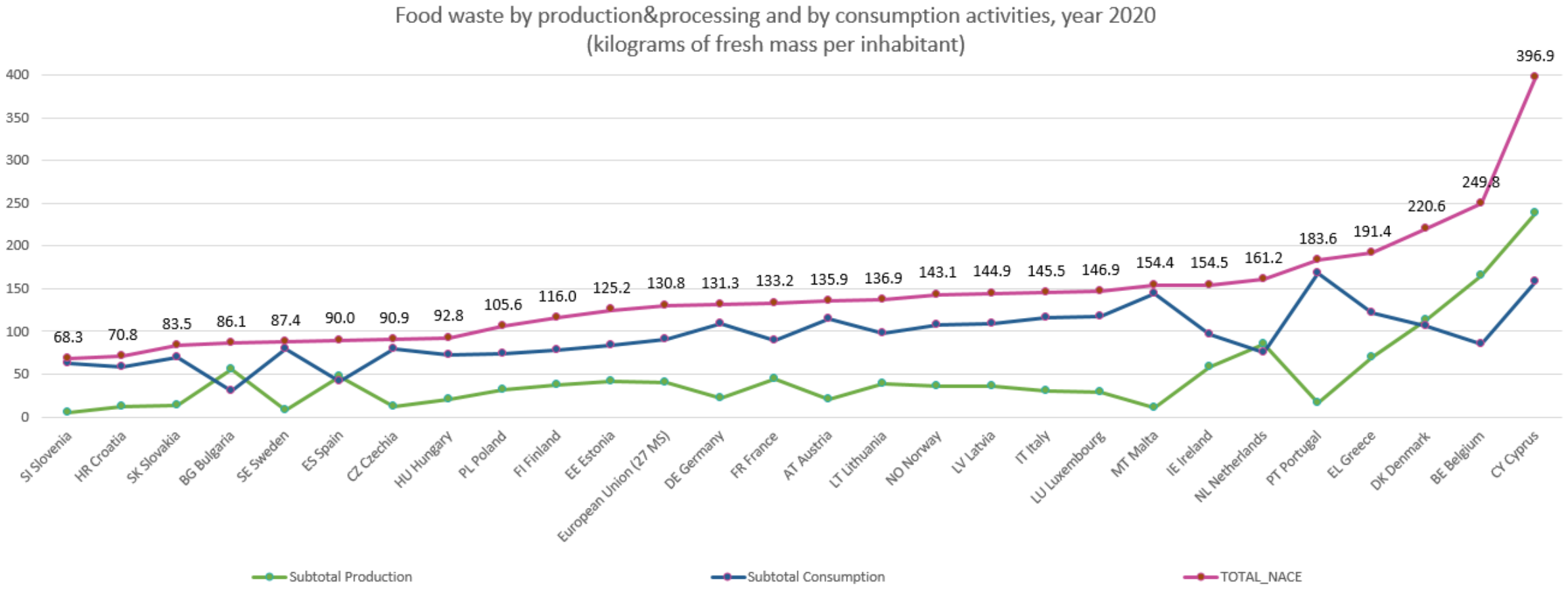
Data analysis – numerical
examples of cross-country comparison

As there was no previous baseline for comparison, the validation was focused on cross-country comparison: data from neighbouring countries and countries with similar per capita Gross National Income (GNI) were compared in terms of kilograms per capita food waste measurements

Cross-country comparison of food production and food consumption



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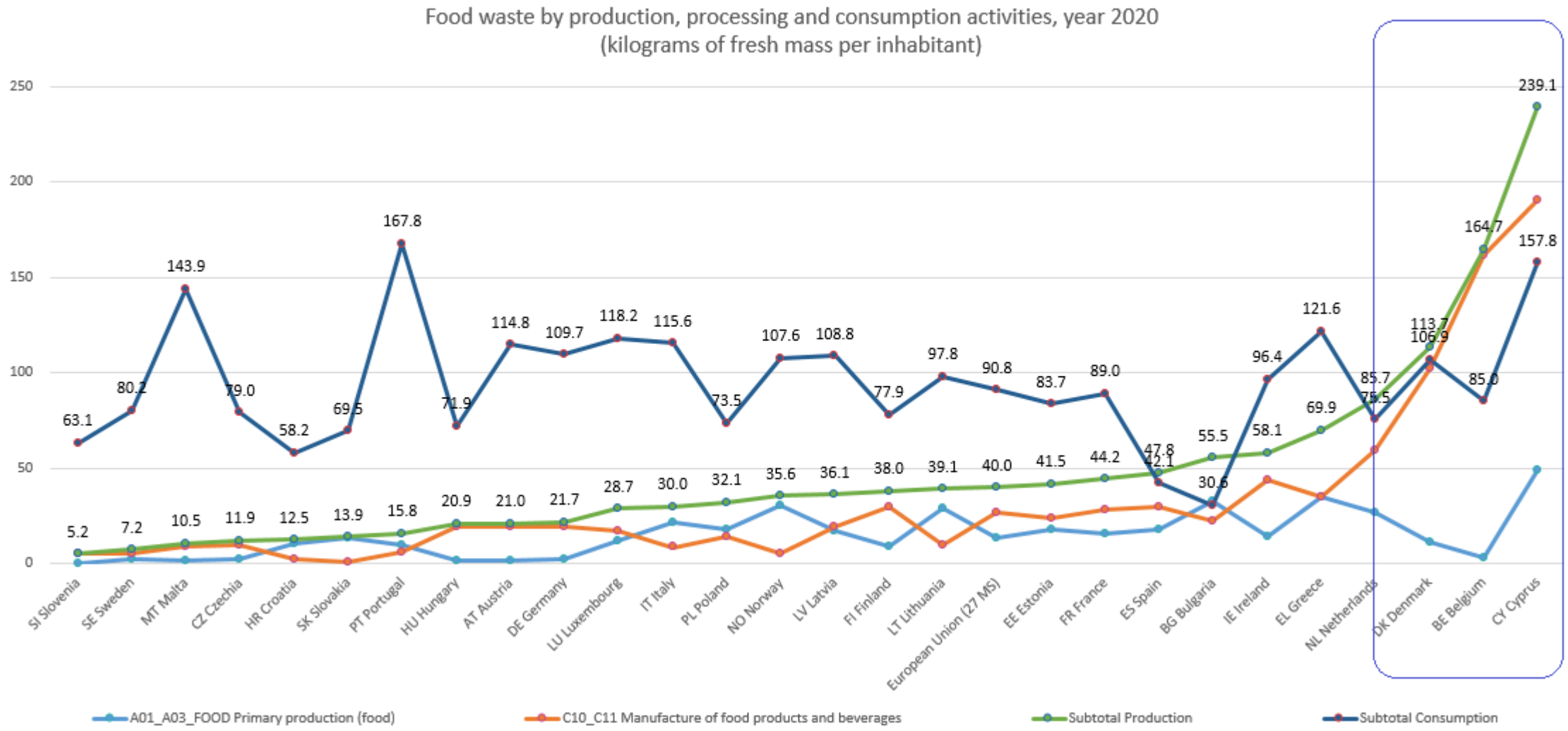
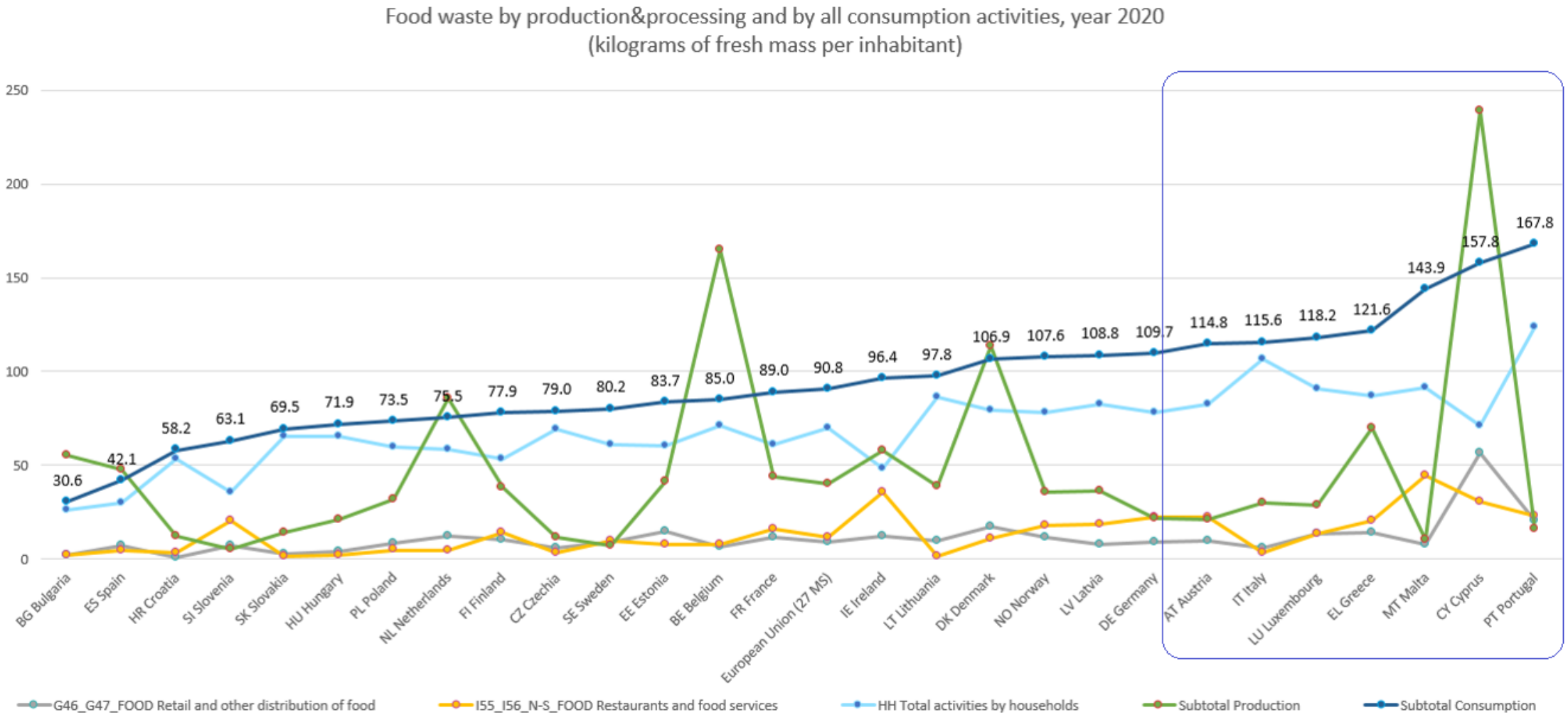
Cross-country comparison of food production by activities



Cross-country comparison of food consumption by activities



Data analysis – Quality Report information

- Issues identified by the countries during the reporting
- Issues identified during validation
- Suggested classifications
- Suggested future reporting

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Applied methodologies: overview

- This table summarises that most of the countries were able to measure according to the methodologies set out in ANNEX III of DD 2019/1597 EC

- DC 2023: Prefilling of JRC data will be done only for the 2 countries that have used it

- All countries: Prefilling of data 2020 for the comparison with 2021 data (QR section 7.2: Explanation of tonnage difference (variation >20% in terms of absolute value)

	Method Annex III	On the basis of data collected for WStatR	Based on dedicated studies	Other sources or combinations	**Method Annex IV**	**JRC**
A01_A03_FOOD	**26**	5	11	16	**3**	**2**
C10_C11	**27**	12	7	15	**1**	
G46_G47_FOOD	**26**	9	10	14	**2**	
I55_I56_N-S_FOOD	**24**	8	10	14	**3**	**2**
HH	**27**	9	10	16	**3**	

Food waste: QR 7.2 highlight for 20% difference compared to the previous year

- Variations greater than 20% by food stage are mandatory according to legislation: COMMISSION IMPLEMENTING DECISION (EU) 2019/2000, Annex, section B:

  7.2. Explanation of tonnage difference (if applicable)

  Please explain the causes of the tonnage difference (which stages of the food supply chain, sectors or estimates have caused the difference, and what the underlying cause is) where the variation is greater than 20 % compared to the data submitted for the previous reporting year.

- Eurostat has to inform DG SANTE about missing mandatory information

- It applies from reference year 2021 (second reporting year. The previous reference year (RY-1) is prefilled by Eurostat.

Food waste: QR 7.2 highlight for 20% difference compared to the previous year: how does validation work

- You have to insert data in Table 1, first column:

Restore table colour | Validate questionnaire

TABLE 1: Data on food waste amounts
Unit: tonnes of fresh mass

Country:																PLAUSIBILITY WARNINGS
Reference year:	2021															
		Total food waste according to Article 1 of 2019/1597*														
		Total food waste**					Of which: edible food waste***					Food drained as or with wastewaters				
nace_r2	Stage of the food supply chain	COL	Standard footnote	Confidentiality	Explanatory footnote		COL_ED	Standard footnote	Confidentiality	Explanatory footnote		DSP_WW	Standard footnote	Confidentiality	Explanatory footnote	Comparison with previous year (20% variation according to QR section 7.2) or missing data
A01_A03_FOOD	Primary production	15000.000														Warning: please report in the quality report, section 7.2, the reason why there is a variation higher than 20% compared to the previous year data
C10_C11	Processing and manufacturing	14000.000														Warning: please report in the quality report, section 7.2, the reason why there is a variation higher than 20% compared to the previous year data
G46_G47_FOOD	Retail and other distribution of food	25000.000														No issue detected
I55_I56_N-S_FOOD	Restaurants and food services	50000.000														Warning: please report in the quality report, section 7.2, the reason why there is a variation higher than 20% compared to the previous year data
HH	Households	120000.000														No issue detected
TOT	Total	224000.000														No issue detected

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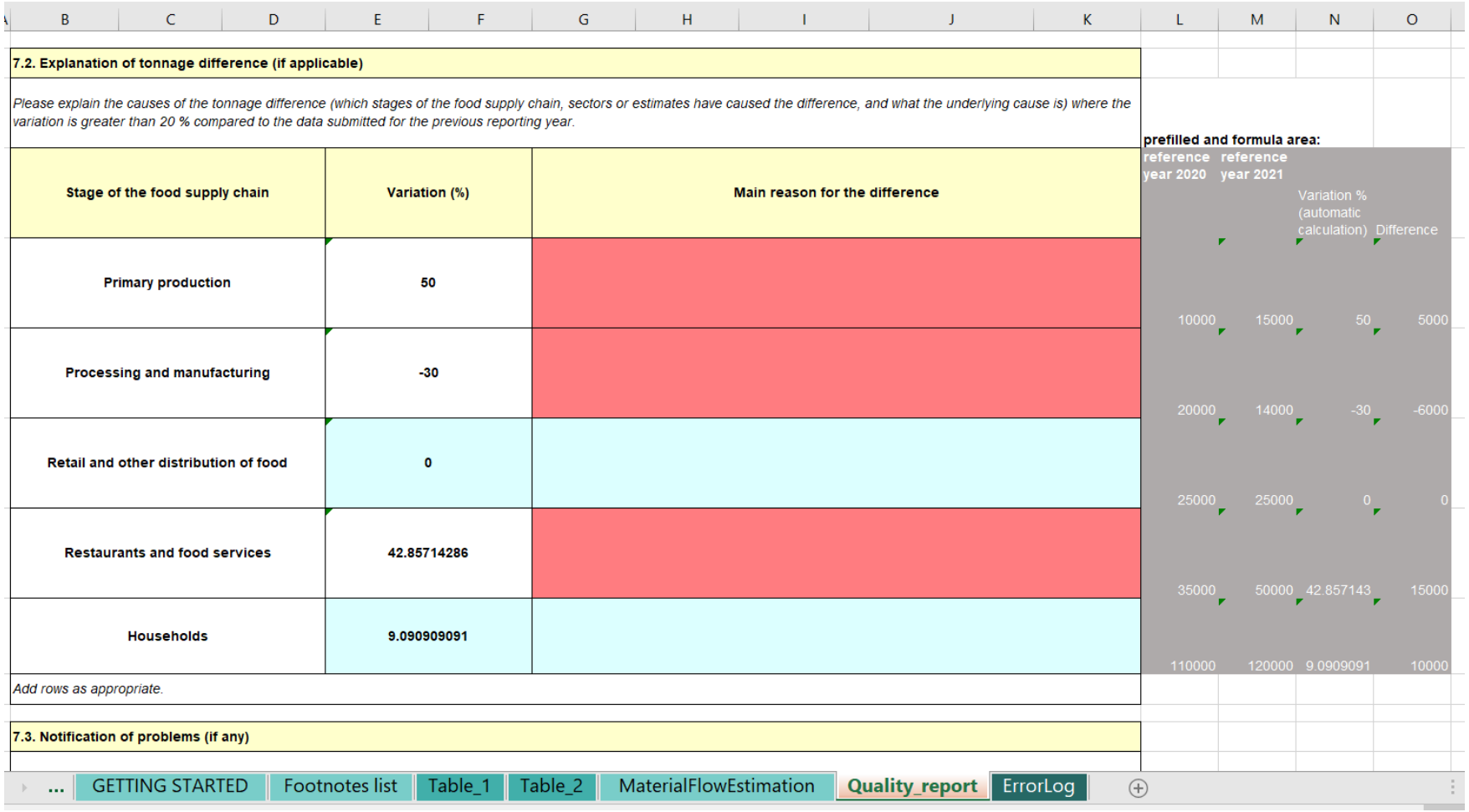
Food waste: QR 7.2 highlight for 20% difference compared to the previous year: how does validation work



7.2. Explanation of tonnage difference (if applicable)

Please explain the causes of the tonnage difference (which stages of the food supply chain, sectors or estimates have caused the difference, and what the underlying cause is) where the variation is greater than 20 % compared to the data submitted for the previous reporting year.

Stage of the food supply chain	Variation (%)	Main reason for the difference
Primary production	50	
Processing and manufacturing	-30	
Retail and other distribution of food	0	
Restaurants and food services	42.85714286	
Households	9.090909091	

Add rows as appropriate.

7.3. Notification of problems (if any)

prefilled and formula area:

reference year 2020	reference year 2021	Variation % (automatic calculation)	Difference
10000	15000	50	5000
20000	14000	-30	-6000
25000	25000	0	0
35000	50000	42.857143	15000
110000	120000	9.0909091	10000

GETTING STARTED | Footnotes list | Table_1 | Table_2 | MaterialFlowEstimation | Quality_report | ErrorLog

Red cells will appear in the quality report where the explanatory note is mandatory. Light blue: voluntary reporting (variation less than 20%)

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Food waste: QR 7.2 highlight for 20% difference compared to the previous year: how does validation work

7.2. Explanation of tonnage difference (if applicable)						
Please explain the causes of the tonnage difference (which stages of the food supply chain, sectors or estimates have caused the difference, and what the underlying cause is) where the variation is greater than 20 % compared to the data submitted for the previous reporting year.			prefilled and formula area:			
Stage of the food supply chain	**Variation (%)**	**Main reason for the difference**	reference year 2020	reference year 2021	Variation % (automatic calculation)	Difference
Primary production	**50**	**Less post harvested production entered in the manufacturing facilities**	10000	15000	50	5000
Processing and manufacturing	**-30**	**Demand of processed food fell of 30%, therefore there was less maufacturing and processing**	20000	14000	-30	-6000
Retail and other distribution of food	**0**	**No significative difference was registered, values are rounded to the thousands tonnes**	25000	25000	0	0
Restaurants and food services	**42.85714286**	**As all the food services were fully operating (end of COVID restriction), there was more waste in that sector. Also, there were more tourists.**	35000	50000	42.857143	15000
Households	**9.090909091**	**Under investigation: as Covid restriction where lifted, there were more tourists and transborder workers non permanently residing on the territory**	110000	120000	9.0909091	10000
Add rows as appropriate						

- Once compiled, red cells will disappear (voluntary stays cyan colour, as these cells are not mandatory)

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Food waste guidance: additional information on methodology

Eurostat has received only one request regarding more information on animal by products:

> *“how to differentiate between animal by product waste covered by 1774/2002 and article 5 WFD 2008/98/EC”*

- After collecting DG SANTE’s advice on by products, the guidance will be updated with a special note in paragraph 3.2

Food waste guidance: additional information on validation (Chapter 4)

Validation rules presented during the WSWG:

- 3 of the validation rules presented during WSWG were already implemented in the questionnaire (basic macro validation)
- As formerly illustrated, section ***QR section 7.2 Explanation of tonnage difference (if applicable)*** of the guidance will contain also the new explanation on the validation highlights
- One was dropped (validation versus the MFA)
- The time series validation are instead part of the in-depth validation process
- The guidance will contain a table summarising where to find the validation rules in the guidance and in the excel (end of chapter 4)

Food waste

Data quality issues identified by the countries and reported in the quality report

- Missing or exclusion of reporting subsectors (no response to survey, no identification of potential respondents, costs of inclusions of small businesses)
- Low share of respondents from survey, discards of respondents **lacking knowledge of food and food waste definitions**, or discards of respondents unfitting the sectors (country validation and auditing procedure of respondent's applicable sector)
- Some countries informed Eurostat on the risk of reporting as collected waste amounts (tonnes) in place of tonnes of fresh mass
- Covid related 2020 special issues (mainly the lockdown consequences on restaurants and canteens)
- **Recommendation: if not highlighted in 2020 reporting, please inform Eurostat in QR section 7.3, indicating also the concerned years**

Food waste

Analysis of results: exchanges with the countries on outliers

- DK, CY and BE reported very high per capita food wastes in processing and manufacturing due to high exports of processed food. Most affected are: small countries, countries exporting products with very high waste coefficients (oil, meat, fish, dairy and beer). Some countries may even import raw products to satisfy processed food demand;

- Countries with many semi subsistence farms (SI confirmed) have problems in disaggregating PP (primary production) and HH (household) food waste.

- In most of the countries HH data are measured with surveys, or surveys are used to identify coefficients to be applied to municipal mixed waste or separately collected biowaste. Despite the very low number of respondents (surveying 1 out of 1000 households to 1 out of 10000 households) it seems the data are quite stable

Outliers still under investigations:

- in the food services and households activities a risk of per capita overestimation has been identified and may be attributed to tourism or non permanent residents (students, commuter workers, pensioners);

- some definition differs (e.g. ES - HH survey measures only edible fraction of food waste)

- **Recommendation: please highlight in section 7.2 any methodological change/improvement, even in the case that it has not evidenced a variation higher than 20%, so that Eurostat can verify sensitivity to methodological changes**

Food waste *Challenges and opportunities – mid term*

DG Eurostat has started a classification process of the methodologies in order to cross compare countries:

- This classification is a coding of the applied methods (in particular identification of common methodological approaches) according to the analysis of the declarations provided by the countries in the quality reports and, in case, verified via email during the validation
- Eurostat will send, to each country, after validation, a metadata methodology document that will contain the codes summaries for year 2020 and 2021 and will request to confirm measurement in fresh mass or correction factors applied to calculate fresh mass.
- Eurostat kindly asks countries to check the assigned classification of their methodologies or to choose the one that reflect the country applied methodologies. Eurostat provides a short summary of country information in the sheet: the countries have to verify/correct the text and also delete sensitive information. The metadata has to be published and will be revised at each data revision. Each year countries can amend the metadata (that will stay short, ~5 lines maximum per each stage, per each methodology change)
- The results will be used for the metadata and will also be used by DG SANTE in the impact assessment for the food waste targets proposals

Food waste *The metadata document : draft overview*

	METADATA				CLASSIFICATION OF APPLIED METHODOLOGY					
	Year		Year				Fresh Mass			
Stage:	**2020**	**Flag**	**2021**	**Flag**	**Method 2020**	**Method 2021**	**Year 2020**	**Year 2021**	**Description year 2020**	**Description Year 2021**
Primary production (A01_A03_FOOD):	Main types of productions were covered, making up to 80% of companies	D	Same methodology applied	D	QI_WG_CS	QI_WG_CS	Y	Y	questionnaires and/or interviews at waste generators combined with coefficients or scaling factors	questionnaires and/or interviews at waste generators combined with coefficients or scaling factors
Processing and manufacturing (C10_C11):	Main companies were selected, based on product production statistics; some companies were not able to provide sufficient information	D	Same methodology applied	D	QI_WG_CS_MB	QI_WG_CS_MB	Y	Y	questionnaires and/or interviews at waste generators combined with coefficients or scaling factors and finally combined with mass balance	questionnaires and/or interviews at waste generators combined with coefficients or scaling factors and finally combined with mass balance
Retail and other distribution of food (G46_G47_FOOD):	Main sectors were selected based on statistical data related to the number of companies and production value; some companies were not able to provide sufficient information	D	Same methodology applied	D	QI_WG_MB	QI_WG_MB	Y	Y	questionnaires and/or interviews at waste generators combined with mass balance	questionnaires and/or interviews at waste generators combined with mass balance
Restaurants and food services (I55_I56_N-S_FOOD):	The main catering sectors were selected based on statistical data related to the number of companies and production value; it was not possible to use direct measurement or diaries due to COVID-19 limitations	D	Methodolgy has improved by using direct measurements and diaries to cover the missing sectors		QI_WG_MB	QI_WG_MB_DM_SU	Y	Y	questionnaires and/or interviews at waste generators combined with mass balance	questionnaires and/or interviews at waste generators combined with mass balance, direct measurments and surveys
Households (HH):	Information was collected from 68 households; the Cochran formula (statistical significance) was used to determine the sample	D	Methodolgy has improved by surveying 60% of the former year surveyed households and by additionally analysing 200 households reported survey. The confidence level of the data was higher than 95%, by means of One-way ANOVA, both performed as group intra comparison with the previous year and groups; the average of kg per capita of year 2021 is differing less than 1 kg per capita.		DI_WG	DI_WG	Y	Y	diaries at waste generators	diaries at waste generators

Food waste

Classification: overview of methodology list

Draft proposal in ANNEX 2 of WSWG document “9.2 Food waste reporting”

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DM_WCF	direct measurement at waste collectors and waste facilities
DM_WG_DS	direct measurement at waste generators under direct studies at waste generators
DM_WCA	direct measurement combined with waste composition analyses
DM_??_DS	direct measurement, unknown measurement point, combined with direct studies
QI_WG_CS	questionnaires and/or interviews at waste generators combined with coefficients or scaling factors
QI_WG_CS_MB	questionnaires and/or interviews at waste generators combined with coefficients or scaling factors and finally combined with mass balance
QI_WG_MB	questionnaires and/or interviews at waste generators combined with mass balance
DI_WG	diaries at waste generators
DM_WG_ER	direct measurement at waste generators electronically reported by waste generators
DM_??_MW_ER	direct measurement, unknown measurement point, by municipalities waste reporters, electronically reported by municipalities
DM_??_WG_ER_CS	direct measurement, unknown measurement point, at waste generators electronically reported by waste generators, corrected with coefficients or scaled
QI_WG_?MS	questionnaires and interviews at waste generators, unknown if mass balance or scaling is applied
SDY_QI_WG_CS	study made in a different year with questionnaires and interviews at waste generators, with coefficients or scaling factors
SDY_DM_WG_WCA_CS	study made in a different year, with direct measurement at waste generators, including WCA, finally applying coefficients or scaling factors
S_SU_WG_ER	study in the reporting year with survey at waste generators, electronically reported
S_DMOS_WG_CS	study in the reporting year with on site direct measurements at waste generators, combined with coefficients or scaling factors
S_SU_WG_SA	study conducted in the reporting year with survey at waste generators, on a sample
DI_WG+WCA_MW	diaries at waste generators combined with WCA of municipal waste
CS_MB_WG	Coefficient and/or scaling and mass balances applied to sectorial data at the level of waste generators
DM_WCF_MMW_CS	direct measurement at waste collectors and waste facilities of mixed municipal waste, corrected with coefficients or scaled
DM_WCF_NWL	direct measurement at waste collectors and waste facilities, with negligible water loss.
FMYES_UNSPEC	FMconfirmed_Measurement point not specified, coefficients to recalculate fresh mass are not specified
UNSPEC	Measurement point not specified, coefficients to recalculate fresh mass are not specified
QI_WG	questionnaires and/or interviews at waste generators
DM_MW+WCA_WG_CS	direct measurement, by municipalities waste reporters, combined with WCA at the waste generators sites, for the calculation of coefficients or scaling factors to be applied to direct measurement
DM_WCF_WCA_Q_WLU	direct measurement at waste collectors and waste facilities in combination with waste composition analyses and a questionnaire, water loss unknown (any loss of water cannot be reliably estimated)
SU_WG_SA_WR	Survey at waste generateor, on a sample with weekly reporting
SU_OS_WEMPL	Survey conducted for an other sector, weighed by employment figures of the reported sector
S_SU_WGM_ER_EST_JRC	study in the reporting year with survey on the waste generators obliged to mandatory report, electronically reported, and estimation for missing generators, combining JRC estimations
S_SU_WGM_ER_HC	study in the reporting year with survey on the waste generators obliged to mandatory report, electronically reported, high coverage
S_SU_WGM_ER_LC_JRC	study in the reporting year with survey on the waste generators obliged to mandatory report, electronically reported, low coverage, compensated with JRC estimates
DM_??_MW_ER-OS	direct measurement, unknown measurement point, by municipalities waste reporters, electronically reported by municipalities, subtracting othersectors.
DM_WCA_WG_DY	direct measurement combined with waste composition analyses at the point of waste generator, different year
JRC_MFA	only JRC mass flow analysis estimation was used
CSC+COEFF_WG	Counting sanning plus coefficients, from study on sit at waste generator
DM_WG_ER+JRC_PROD	direct measurement at waste generators electronically reported by waste generators, combined with JRC data on missing products

Food waste

Challenges and opportunities – long term

In next years, the quality reports may be revealing more information and may permit to infer additional information like:

- Country consumer habits, waste perception and waste prevention habits/initiatives
- Strategies for food and food waste awareness
- Food waste avoidance by employing food discards as by products
- *Measurements of food waste prevention*

Some reported information may be useful also for other related data collections, e.g.:

Lack/efficiency of waste treatment systems, and keys of success

Comparable information between food ready to market and total food waste (coefficients estimations)

Questions?

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Thank you

Slides 5-7 and 16, source: Eurostat

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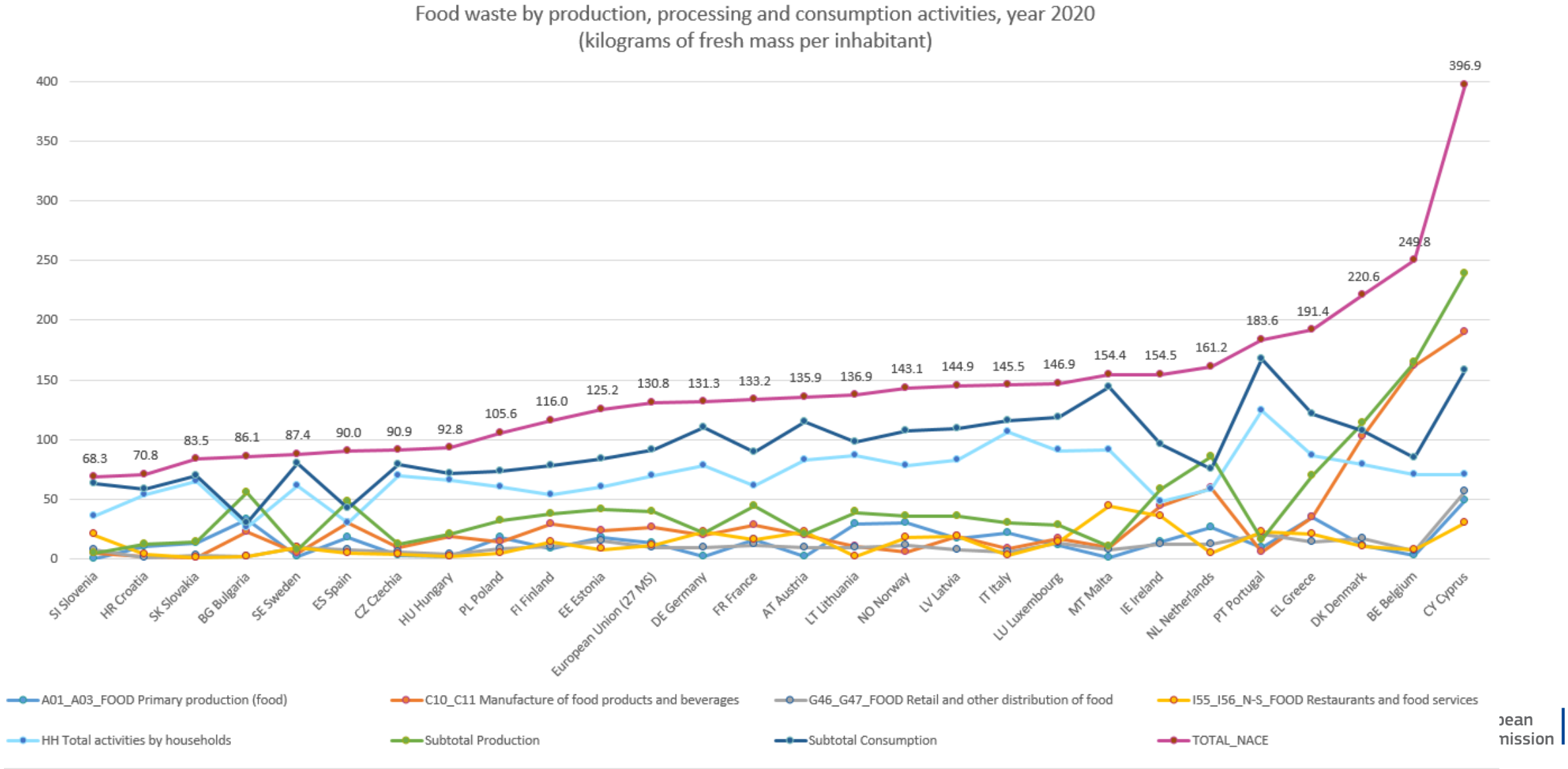
Food waste by total Nace



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