Compiling guidance for the new reporting format of BATT Excel questionnaire to be transferred via eDAMIS.

Introduction

The purpose of this document is to provide guidance to Member States[1] on the reporting of batteries and accumulators waste data, pursuant to the requirements laid down in Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators and Commission Regulation 493/2012 laying down detailed rules regarding the calculation of recycling efficiencies of the recycling processes of waste batteries and accumulators.

Why the new excel format

In year 2020, Eurostat had started resolving a longstanding IT issue with the eDAMIS server, due to the fact that Java system (used in the Webforms) was currently encountering security issues and incompatibility with Windows 10 for some webforms (in particular Batteries BATT and End of life vehicles ELV). Eurostat had prepared, in place of the BATT Webforms, a beta release excel file. The questionnaire included validation macros and warning messages in order to alert data compilers of potential errors or missing information. This renovation process continued in 2021 and the current new version of BATT Excel questionnaire is harmonised with the other Waste Statistics data collections. The most of the changes are in the textual part of the sheets "**Basic instructions**" (that does not anymore contain administrative information) and "**Validation Rules**", were Eurostat has improved definitions and explanations.

There is an important change implemented in Table_1 for data collection 2021: the reporting of the disaggregated amounts of Sales, Collection and Collection Rates for Lead (W160601), Nickel-Cadmium (W160602) and other batteries and accumulators (W160605) have been set in light blue to indicate that they are voluntary; the Commission encourages countries to provide voluntary data on the disaggregated amounts, however Eurostat acknowledges that the quality of voluntary data is not as high as expected for mandatory data and therefore the validation of this section will occur only for information.

Two sheets have been added:

- **Index,** which contain the links to the sheets in the questionnaire, with a short description

[1] As Directive 2006/66/EC and Commission Regulation 493/2012 are incorporated into the EEA Agreement, this guidance note also applies to Iceland, Liechtenstein and Norway.

- **Getting started,** that now collects the information that were formerly gathered in **Basic instructions**: submitting country and reference year (both prefilled) and the administrative data to be filled in by the reporting officer.

The sheets colours, fonts and sizes have been harmonised, but overall the data input tables had little changes, few final changes have been made to the validation functions and to the macros required for the upload in the IT system.

Finally, Annex 2 has been added to this guidance in order to advise Member States whenever it occurs, on their territories, a temporary storage of collected batteries before these quantities are finally shipped to the recycling facilities (usually after several years from the temporary stocking of the collected waste batteries and accumulators). It is necessary to accurately read the Annex 2 for any such similar case.

As a reminder of the changes occurred already in year 2020, compared to previous Webfoms reporting system, few additional warnings had been added in order to:

- shorten the validation process
- improve the gathering of information regarding data discrepancies
- limit the risk of infringement procedures
- highlight additional information required in the methodological report.

These extra features were selected in order to tackle the most common validation issues. Please be aware that these warning messages are very complex and they cannot cover all cases, though in the new version they cover some more cases as compared to 2020 exercise.

In addition, the labels of the rows (variable names and categories) has been chosen as close as possible to the Regulation 493/2012, in order to ease the reporting of these values.

Eurostat **sends a prefilled version of the BATT excel questionnaire (valid for data transmission)** containing the data that Member States have transmitted in the past years. Member States will then have to transmit the new official questionnaire via eDAMIS4, with a procedure similar to the one that Member States have used for the upload of the methodological report. Member States should make sure that they are using the excel prefilled questionnaire before sending to Eurostat any data.

As for the webforms, Member States have to provide explanations for any missing value or for any discrepancy detected during validation. In the excel questionnaire there is a footnote list where Member States can insert these explanations in order to complete the validation process.

The **BATT excel questionnaire** allows Member States to insert data for the reference year and to revise the previous two years, for both table 1 and table 2. This choice has been made in order to limit the reporting burden, since there was in the past a problem with the updates of table 1. All the three years will be uploaded, even if no figure is revised. If by data from previous years is changed by accident, it is sufficient to reopen the original prefilled questionnaire and recompile the year of interest.

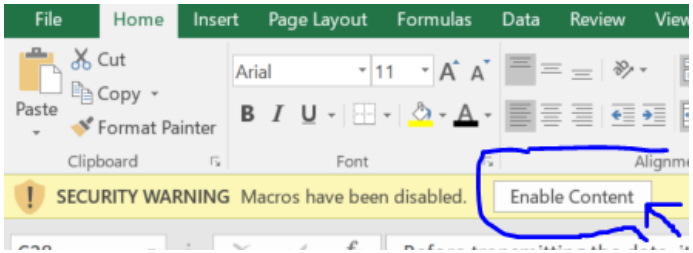
It is possible to insert decimal numbers up to the third digit. In the past the system was able to upload only one decimal digit. The display of decimal positions is limited to three decimal places. It is recommended to use all the decimal places when this information is available.
Should a Member State need to modify years previous to those provided in the prefilled questionnaire, **or wishes to already submit year 2020**, it is necessary to contact Eurostat via email in order to receive prefilled questionnaire for the requested years:

Cristina.re@ec.europa.eu

ESTAT-WASTE-STATISTICS@EC.EUROPA.EU

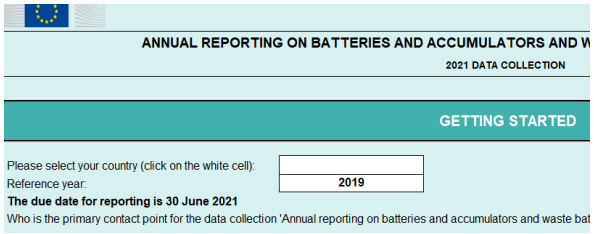
Before start

First of all, Member States have to download and save the file to a local or a network drive in order to be allowed to enable the macros; macros need to be enabled in order to dealing correctly with the questionnaire:



The **BATT excel questionnaire** allows to insert data in the reference year and to revise the previous two years.

When compiling an empty questionnaire (without prefilled data), in the GETTING STARTED worksheet, as first operation, choose the country name and reference year as in the picture below.



Starting from a prefilled questionnaire: for the 2021 data collection country name, the reference year 2019, and the data for years 2017, 2018 and eventually 2019 are already compiled; past figures for years 2017 and 2018 can be revised if needed in the same exercise. It is important to keep a copy of the prefilled file sent from Eurostat in order to be able to easily compare which are the changed values and set an explanatory footnote aside each revised figure, so that during analysis performed by Eurostat there will not ne the need to further ask the reason for revision. All the three years will be uploaded, even if no figure is revised. If by mistake some data from previous years are changed, it is sufficient that the original prefilled questionnaire is reopened and the year of interest is recompiled.

This year the Member States will receive the prefilled BATT excel questionnaire containing the prefilled data column for reference years 2019, 2018 and 2017; in Table_1 there are also the data summaries for reference years 2016 and 2015. Therefore please check that these data, country name and reference year, are prefilled and correspond in terms of country and the current reference year 2019.

If the other years except 2017, 2018 and 2019 should be also modified, please remember to contact Eurostat via email in order to receive prefilled questionnaire for the years under revisions, or year 2020 (in case the year 2019 is already transmitted):

Cristina.re@ec.europa.eu

ESTAT-WASTE-STATISTICS@EC.EUROPA.EU

Please remember that in the BATT questionnaire both the tables are prefilled; the previous two prefilled years (2017 and 2018) will be loaded in the database and can be revised . Prefilled data are provided for revision and for the plausibility checks on the time series and as support in identifying open validation issues.

Compiling the values from Table_1 to Table_2

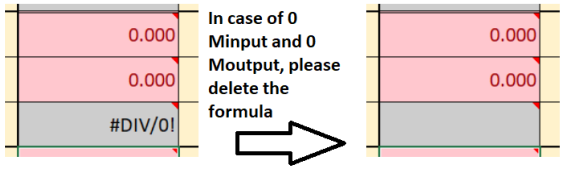
When compile the data in the tables, please remember the new **reporting conventions** (see **sheet Basic instructions section 2**):

Description	Symbol
Real zero	0
Not available	

Remember that an empty cell is considered as a not available or missing value and is not encoded in Eurobase as a 0 but with the symbol ":" for not available. When the reporting in the cell is mandatory, the explanatory footnote is always required. Many cells in the questionnaire are checked by formulas. When these cells are mandatory and for any reason they are not containing a different value from the one expected, a warning or a validation error message might appear . Here the list of conventions and the special cases descriptions.

Type of cells	Colour	Explanation on how to fill it in
1. White shaded (uncoloured) boxes: Provision of data is mandatory		This type of cell appears always unlocked for all the three years. There are no formulas in these cells. The formulas to calculate the rates are reminded in the sheet Validation Rules. The macros will verify the correctness of your calculations. If a validation or warning message highlighting a discrepancy appears, please fill in the explanatory footnote.
2. Light blue (cyan): Data provision is voluntary.		The Commission encourages countries to provide voluntary data whenever available; Eurostat acknowledges that the quality of voluntary data is not as high as expected for mandatory data (validation of such cells is usually only for information)
3. Dark grey shaded boxes: prefilled data coming from previous year, to facilitate prevalidation; these data cannot be changed and inserted		These data are prefilled by Eurostat on the basis of the previous years submissions. These values appear only in Table_1, they are used for time series analysis for supporting the user in detecting discrepancies (look at the warning panes) and are always locked.
4. Light grey shaded boxes: usually these cells contain a formula and the calculation is automatic		In this questionnaire these cells are never locked to permit the prefilling of the questionnaire. Therefore, please do not input any data into these cells if the automatic calculation is preferred. In any case, the validation process is highlighting errors and is warning about any inserted value differing from the expected formulas. Finally, inserting manually a formula that differs from the original one is forbidden.

Regarding the formulas, it was not possible to prevent the DIV/0 in not applicable situations (for instance when both numerator and denominator are 0). It is necessary in these situations to delete DIV/0, as in the picture below. It is necessary, in all such cases, to carefully read Annex 2 regarding late shipment and to insert the mandatory explanatory footnotes.



First steps for compiling the Tables

Table_1 and Table_2 shapes are slightly different form the batteries webforms. In webforms there are several columns and rows per year (tabular form). In the new excel questionnaire each column is referring only to one year and each row is corresponding to a specific variable (column based form), so to allow an overview of the time series evolution. Here below the correspondence for both tables:

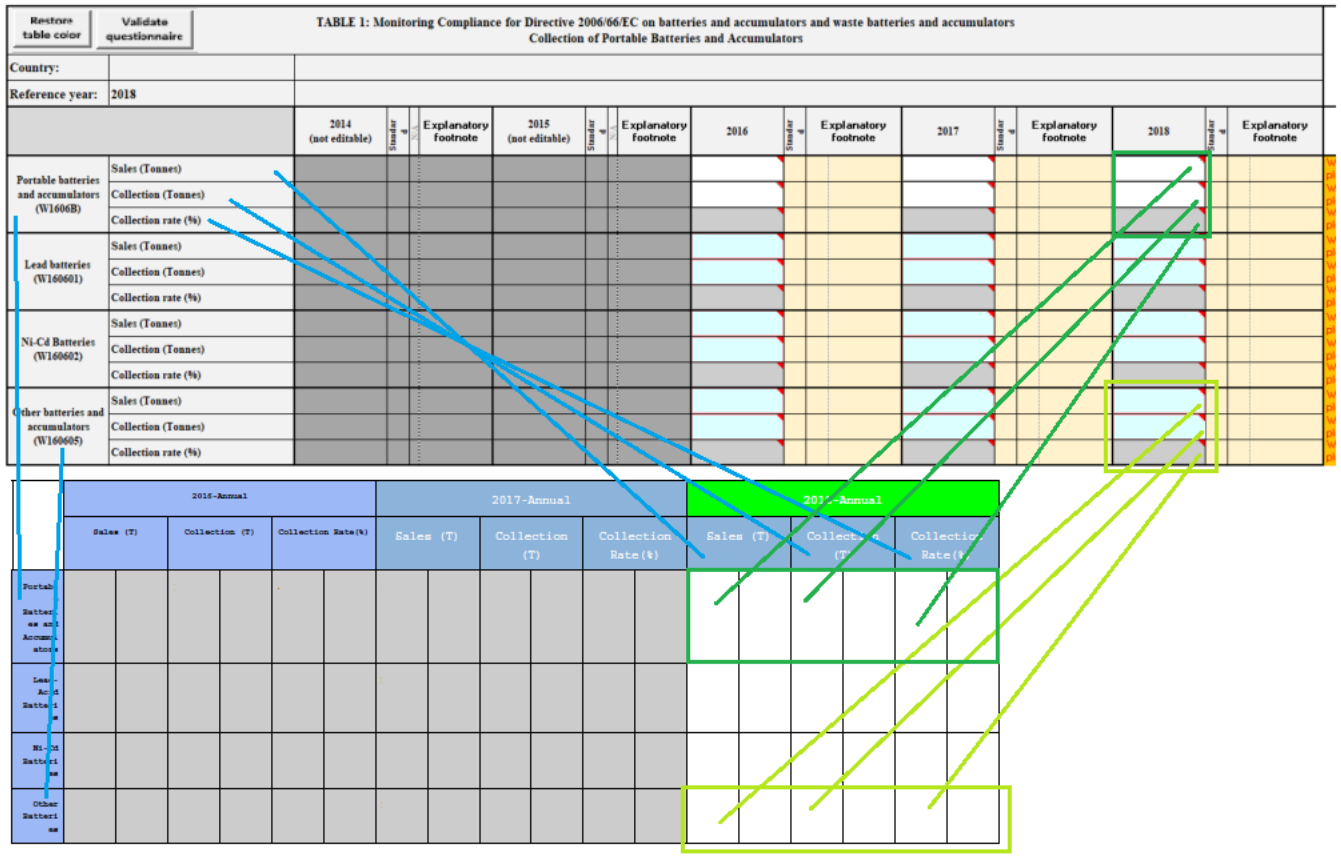


Table 1 versus webforms BATT1

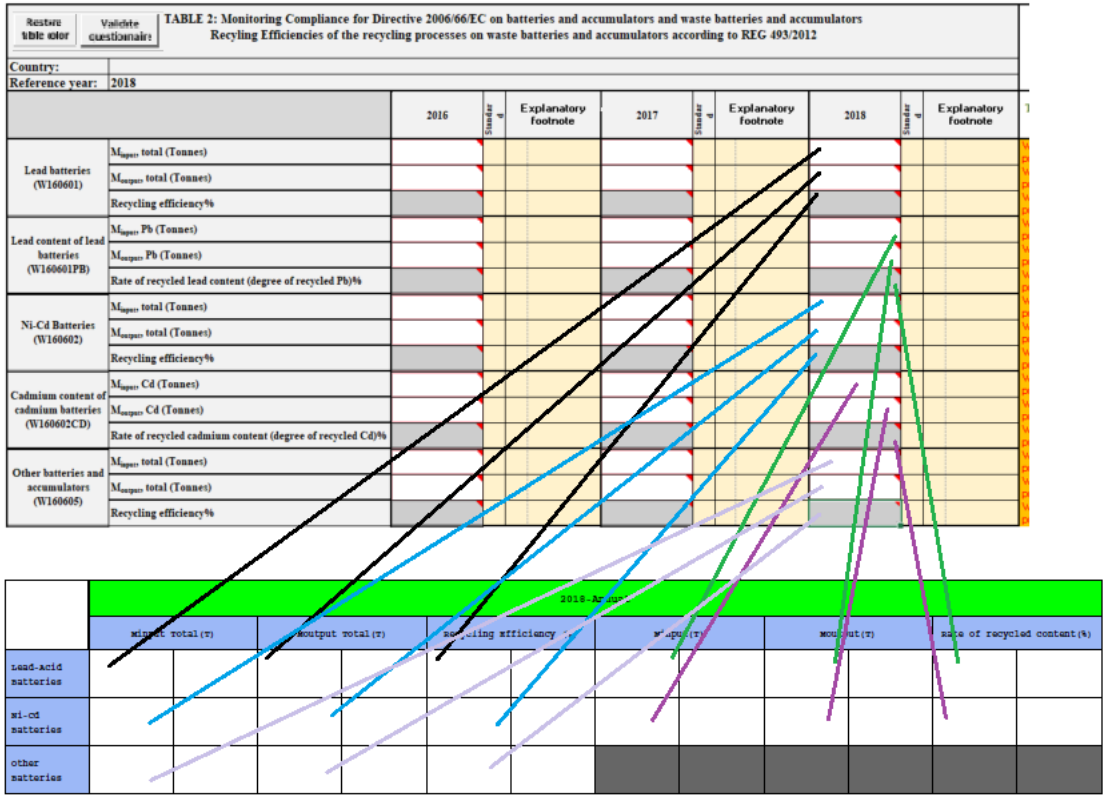
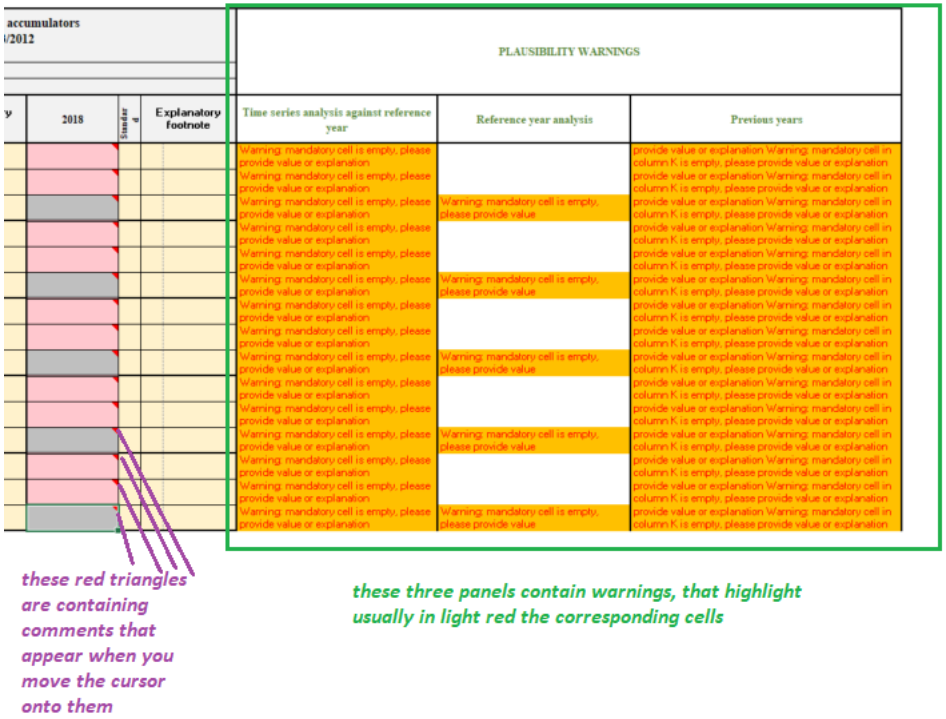


Table 2 versus webforms BATT2

For each year, the data have to be filled in; any empty cell requires an explanatory footnote (see paragraph Explanatory footnotes).

Any past figure can be revised in a prefilled questionnaire; when revising the figures, please set an explanatory footnote aside. If by mistake some data from previous years are changed, it is possible to reopen the original prefilled questionnaire and to recompile the year of interest.

In the next picture three panels contoured by green lines are visible; these panels contain guidance warnings that appears when compiling the data; these warnings are usually only hints. Please be aware that these warning messages are very complex and they cannot cover all cases. Usually, if a warning related to a certain level of severity (a potential error) appears, the cells will also appear in light red; when running the **Validate questionnaire** (see chapter Validation of questionnaire) this cell will probably arise an error message and the cell will appear fully red.

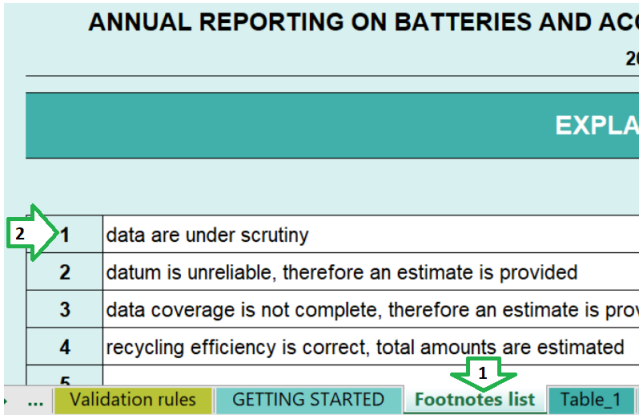


There are some small red triangles in the cells bearing formulas. These red triangles are containing comments, these appear when the cursor is moving upon them. These comments are also suggesting which problems might be encountered.

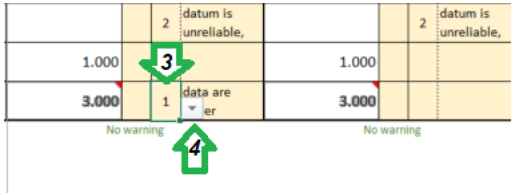
Explanatory footnotes

The explanatory footnotes can be used for any meaning beyond the standard footnotes. When a cell is mandatory, the explanatory footnote is required as well.

To include the explanatory footnotes, please report the explanatory footnote texts in the worksheet 'Footnotes list' (as in the picture below, arrow 1) starting from number 1 (as in the picture below, arrow 2).



The number of the explanatory footnote from the drop-down menu aside the value cell can be selected, as shown in the steps 3 and 4 in the picture here below.

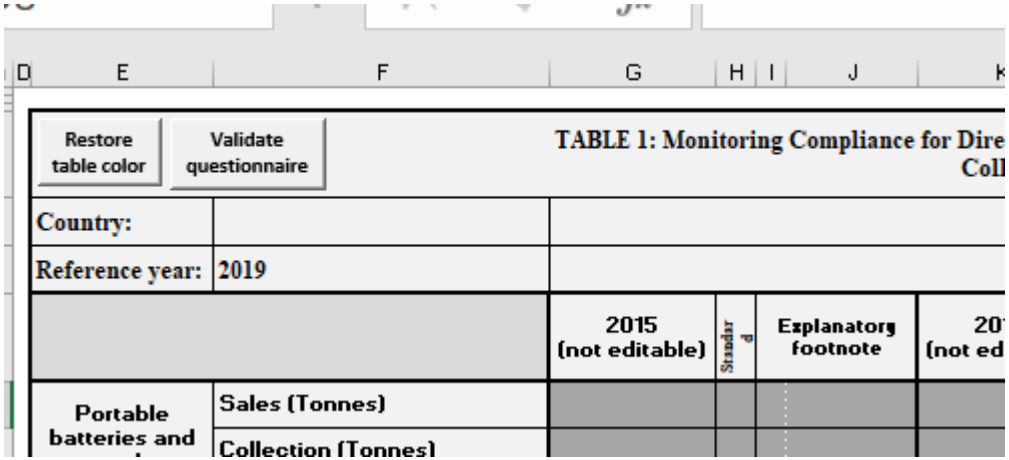


The same explanatory footnote can be chosen for all the values for which the same explanation applies. If by mistake a number is chosen from the drop-down menu, it is sufficient to press the key delete to clean the cell.

Please do not report footnotes that elaborate on e.g. source data and compilation methods; these are to be described in the quality report document.

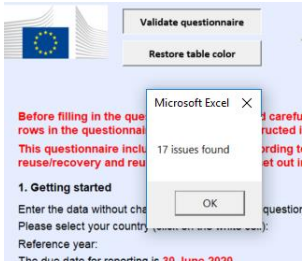
Validation of questionnaire

Before transmitting the data, it is necessary to validate the data by pressing the button **Validate questionnaire** in the top left of the data entry tables (e.g. sheet Table_1).



It is mandatory to verify the **ErrorLog** sheet and provide explanatory footnotes or corrections for all the errors. The validation rules are explained in detail in sheet **Validation Rules**.

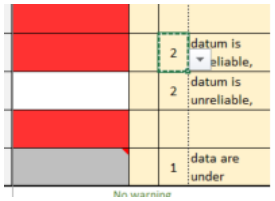
Once the button **Validate questionnaire** is pressed**,** there will appear a message similar to this:



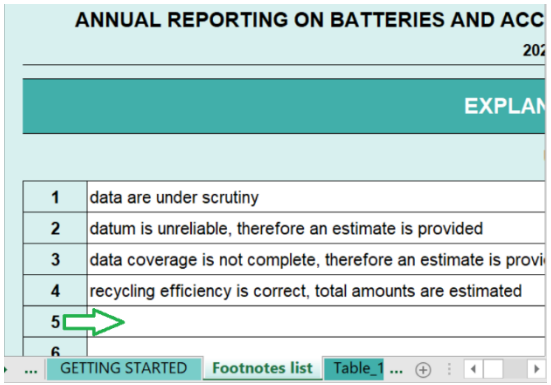
As soon as the Ok is pressed, the excel turn to the **ErrorLog** sheet:

	A	B	C	D	E	F
1	Link to Error	Validation Rule	Cell	Sheet	Description	Severity
2	Go to cell	Mandatory	S18	Table_1	Empty mandatory cell with no explanatory footnote	Error
3	Go to cell	Mandatory	W18	Table_1	Empty mandatory cell with no explanatory footnote	Error
4	Go to cell	Mandatory	G8	Table_2	Empty mandatory cell with no explanatory footnote	Error
5	Go to cell	Mandatory	G9	Table_2	Empty mandatory cell with no explanatory footnote	Error
6	Go to cell	Mandatory	G11	Table_2	Empty mandatory cell with no explanatory footnote	Error
7	Go to cell	Mandatory	K11	Table_2	Empty mandatory cell with no explanatory footnote	Error
8	Go to cell	Mandatory	K12	Table_2	Empty mandatory cell with no explanatory footnote	Error
9	Go to cell	Mandatory	O8	Table_2	Empty mandatory cell with no explanatory footnote	Error

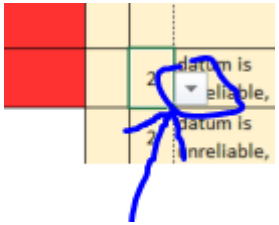
Then press on the **Go to cell** link and will be automatically directed to the corresponding error. Then check the cell and decide if to correct/insert the value or provide an explanation:



If an explanatory footnote aside the cell is to be added, first insert the explanation in the first empty row aside a number in the sheet **Footnote list**, then go back to the table and chose the number

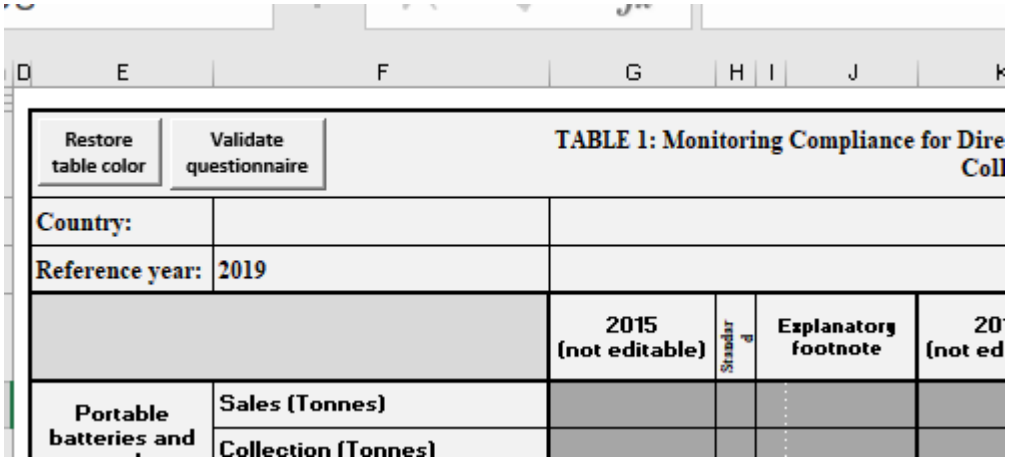


then it is necessary to go back to the table and chose the number pressing the scroll.



It is mandatory to proceed through the **ErrorLog** sheet until all the issues are checked for each data table.

Once correcting each error, if some cells still appear red despite no error in 'ErrorLog', press the button **Restore table color** in the top left of the data table sheet.



Transmission of questionnaire

Please refer to sheet Basic instructions, section 1. Data transmission, or contact your local eDAMIS coordinator or the Eurostat eDAMIS helpdesk at: https://webgate.ec.europa.eu/edamis/helpcenter/website/index.htm, this e-mail address: estat-support-edamis@ec.europa.eu or call (+352) 4301 33213

ANNEX I: Visual comparison cheat sheet of webforms, new questionnaire and original form in legislation

Table_1 correspondence

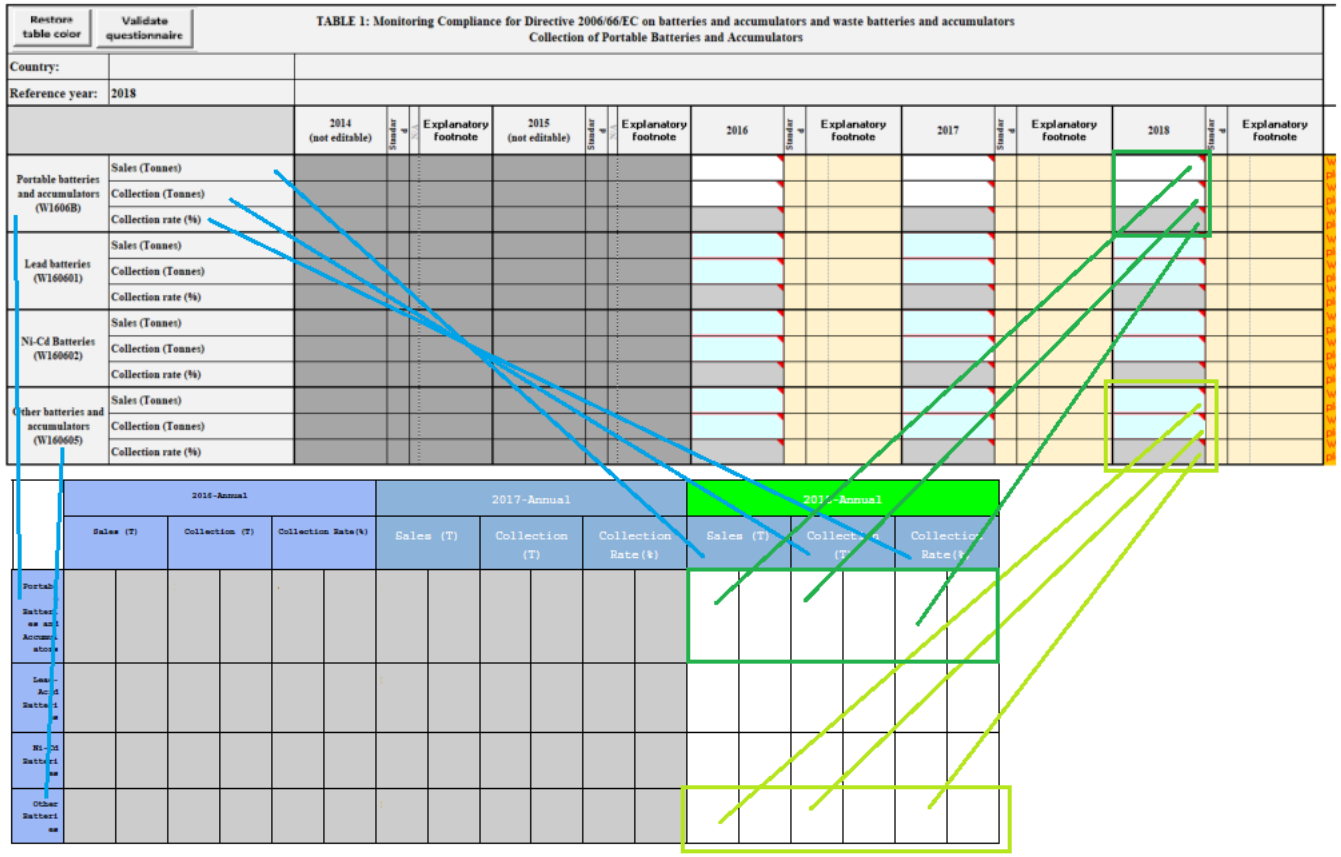


Table 1 versus webforms BATT1

Table_2 correspondence

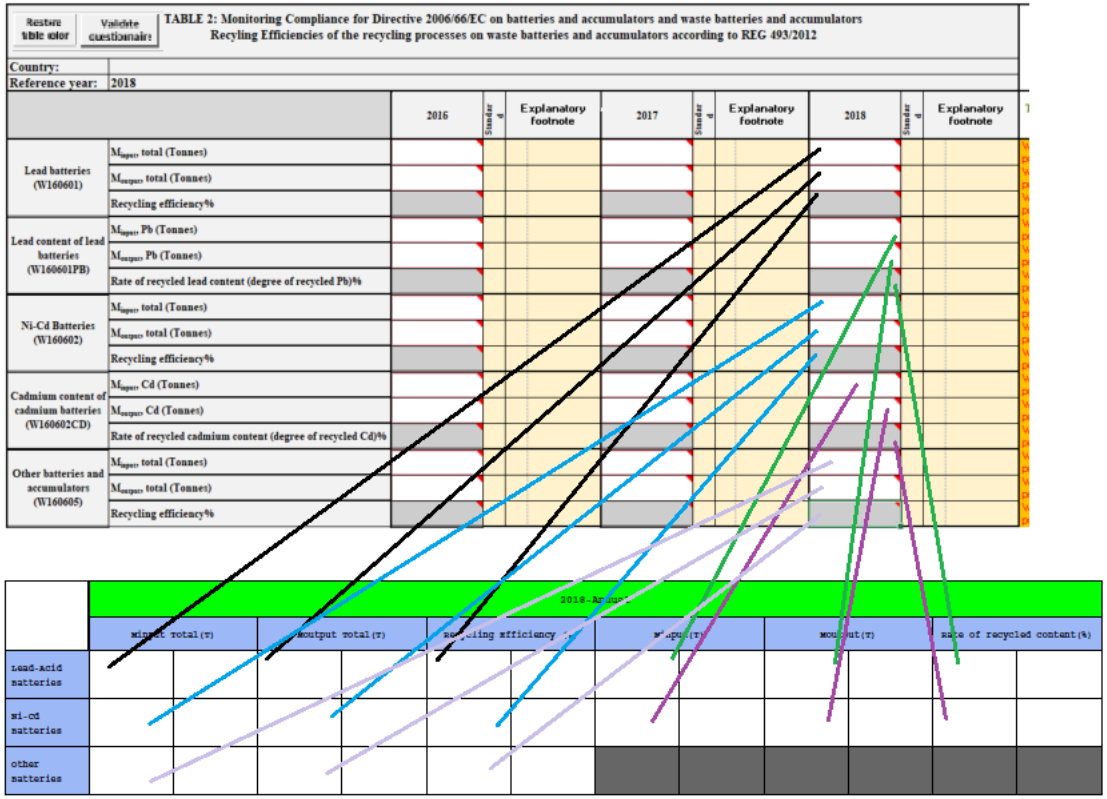


Table 2 versus webforms BATT2

Restore table color | Validate questionnaire

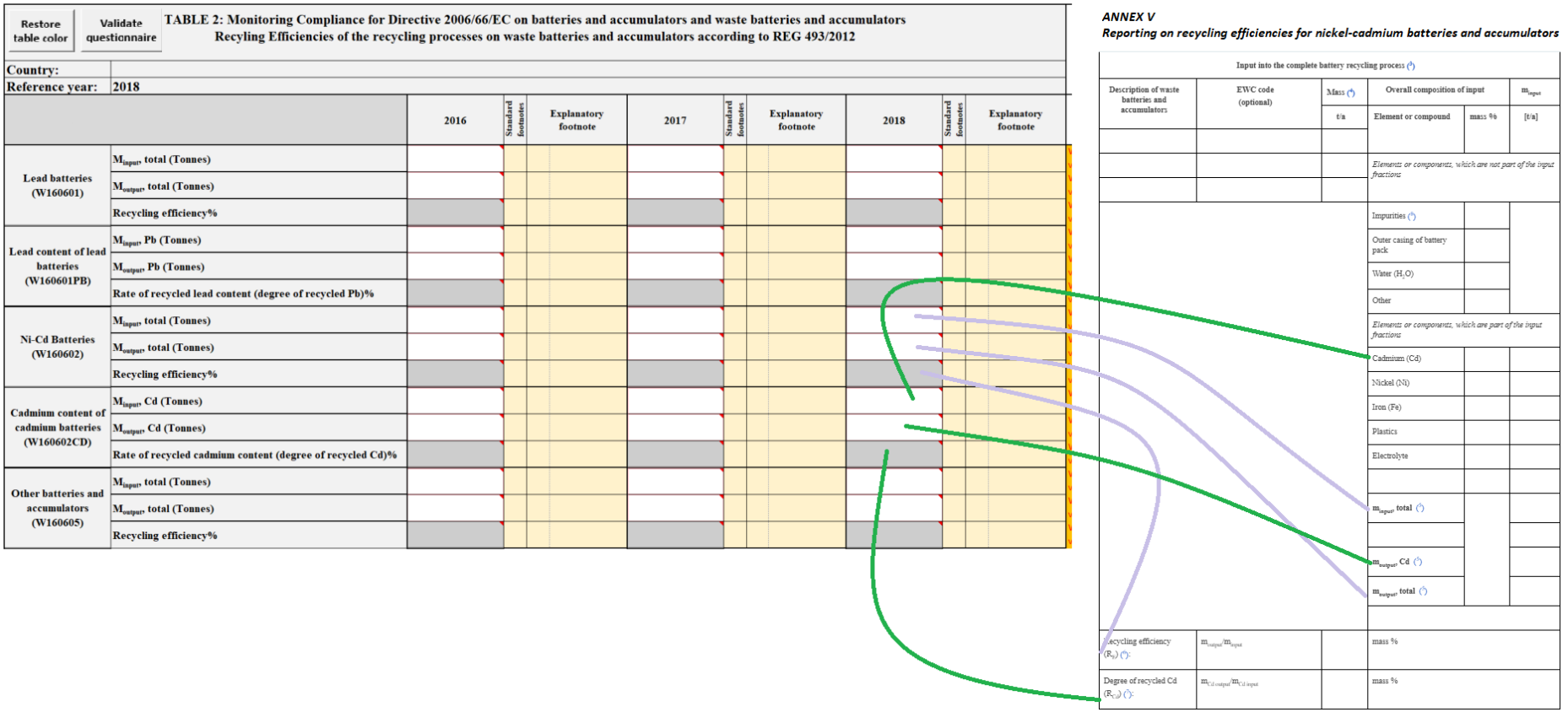
TABLE 2: Monitoring Compliance for Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators
Recyling Efficiencies of the recycling processes on waste batteries and accumulators according to REG 493/2012

Country:										
Reference year:	**2018**									
		2016	**Standard footnotes**	**Explanatory footnote**	**2017**	**Standard footnotes**	**Explanatory footnote**	**2018**	**Standard footnotes**	**Explanatory footnote**
Lead batteries (W160601)	**M_{input}, total (Tonnes)**									
	M_{output}, total (Tonnes)									
	Recycling efficiency%									
Lead content of lead batteries (W160601PB)	**M_{input}, Pb (Tonnes)**									
	M_{output}, Pb (Tonnes)									
	Rate of recycled lead content (degree of recycled Pb)%									
Ni-Cd Batteries (W160602)	**M_{input}, total (Tonnes)**									
	M_{output}, total (Tonnes)									
	Recycling efficiency%									
Cadmium content of cadmium batteries (W160602CD)	**M_{input}, Cd (Tonnes)**									
	M_{output}, Cd (Tonnes)									
	Rate of recycled cadmium content (degree of recycled Cd)%									
Other batteries and accumulators (W160605)	**M_{input}, total (Tonnes)**									
	M_{output}, total (Tonnes)									
	Recycling efficiency%									

ANNEX IV:
Reporting on recycling efficiencies for lead-acid batteries and accumulators

Input to the complete battery recycling process (*)					
Description of waste batteries and accumulators	**EWC code (optional)**	**Mass (*)**	**Overall composition of input**		**m_{input}**
		t/a	**Element or compound**	**mass %**	**[t/a]**
			Elements or components, which are not part of the input fractions		
			Impurities (*)		
			Outer casing of battery pack		
			Water (H_2O)		
			Other		
			Elements or components, which are part of the input fractions		
			Lead (Pb)		
			Sulphuric acid (H_2SO_4)		
			Plastics		
			Other		
			m_{input}, total (*)		
			m_{output}, Pb (*)		
			m_{output}, total (*)		
Recycling efficiency (R_U) (*):	m_{output}/m_{input}		mass %		
Degree of recycled Pb (R_{Pb}) (*):	$m_{Pb\ output}/m_{Pb\ input}$		mass %		

Table 2 versus Annex IV COMMISSION REGULATION (EU) No 493/2012



Restore table color | Validate questionnaire

TABLE 2: Monitoring Compliance for Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators
Recyling Efficiencies of the recycling processes on waste batteries and accumulators according to REG 493/2012

Country:
Reference year: 2018

		2016	Standard footnotes	Explanatory footnote	2017	Standard footnotes	Explanatory footnote	2018	Standard footnotes	Explanatory footnote
Lead batteries (W160601)	M_{input}, total (Tonnes)									
	M_{output}, total (Tonnes)									
	Recycling efficiency%									
Lead content of lead batteries (W160601PB)	M_{input}, Pb (Tonnes)									
	M_{output}, Pb (Tonnes)									
	Rate of recycled lead content (degree of recycled Pb)%									
Ni-Cd Batteries (W160602)	M_{input}, total (Tonnes)									
	M_{output}, total (Tonnes)									
	Recycling efficiency%									
Cadmium content of cadmium batteries (W160602CD)	M_{input}, Cd (Tonnes)									
	M_{output}, Cd (Tonnes)									
	Rate of recycled cadmium content (degree of recycled Cd)%									
Other batteries and accumulators (W160605)	M_{input}, total (Tonnes)									
	M_{output}, total (Tonnes)									
	Recycling efficiency%									

ANNEX V
Reporting on recycling efficiencies for nickel-cadmium batteries and accumulators

Input into the complete battery recycling process (4)					
Description of waste batteries and accumulators	EWC code (optional)	Mass (4)	Overall composition of input		m_{input}
		t/a	Element or compound	mass %	[t/a]
			Elements or components, which are not part of the input fractions		
			Impurities (5)		
			Outer casing of battery pack		
			Water (H_2O)		
			Other		
			Elements or components, which are part of the input fractions		
			Cadmium (Cd)		
			Nickel (Ni)		
			Iron (Fe)		
			Plastics		
			Electrolyte		
			m_{input}, total (7)		
			m_{output}, Cd (7)		
			m_{output}, total (7)		
Recycling efficiency (R_{eff}) (7):	$m_{total\,output}/m_{input}$		mass %		
Degree of recycled Cd (R_{Cd}) (7):	$m_{Cd\,output}/m_{Cd\,input}$		mass %		

Table 2 versus Annex V COMMISSION REGULATION (EU) No 493/2012

Restore table color | Validate questionnaire

TABLE 2: Monitoring Compliance for Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators
Recyling Efficiencies of the recycling processes on waste batteries and accumulators according to REG 493/2012

Country:
Reference year: 2018

		2016	Standard footnotes	Explanatory footnote	2017	Standard footnotes	Explanatory footnote	2018	Standard footnotes	Explanatory footnote
Lead batteries (W160601)	M_{input}, total (Tonnes)									
	M_{output}, total (Tonnes)									
	Recycling efficiency%									
Lead content of lead batteries (W160601PB)	M_{input}, Pb (Tonnes)									
	M_{output}, Pb (Tonnes)									
	Rate of recycled lead content (degree of recycled Pb)%									
Ni-Cd Batteries (W160602)	M_{input}, total (Tonnes)									
	M_{output}, total (Tonnes)									
	Recycling efficiency%									
Cadmium content of cadmium batteries (W160602CD)	M_{input}, Cd (Tonnes)									
	M_{output}, Cd (Tonnes)									
	Rate of recycled cadmium content (degree of recycled Cd)%									
Other batteries and accumulators (W160605)	M_{input}, total (Tonnes)									
	M_{output}, total (Tonnes)									
	Recycling efficiency%									

ANNEX VI
Reporting on recycling efficiencies for other batteries and accumulators

Input into the complete battery recycling process (*)					
Description of waste batteries and accumulators	EWC code (optional)	Mass (*)	Overall composition of input		m_{input}
		t/a	Element or compound	mass %	[t/a]
			Elements or components, which are not part of the input fractions		
			Impurities (*)		
			Outer casing of battery pack		
			Water (H_2O)		
			Other		
			Elements or components, which are part of the input fractions		
			Metals (e.g. Fe, Mn, Zn, Ni, Co, Li, Ag, Cu, Al)		
			Mercury (Hg)		
			Carbon		
			Plastics		
			Electrolyte		
			m_{input}, total (*)		
			m_{output}, total (*)		
Recycling efficiency (R_{eff}) (*):	m_{output}/m_{input}		mass %		

Table 2 versus Annex VI COMMISSION REGULATION (EU) No 493/2012

ANNEX 2: How to fill in data in the situation of shipment to recycling facilities after several years from the waste batteries and accumulators collection

This Annex is providing an example and legal explanation on how to correctly report all the situation of temporary storage of collected batteries before these are finally shipped, in the coming years, to the recycling facility.

Practical example on how to report late shipment

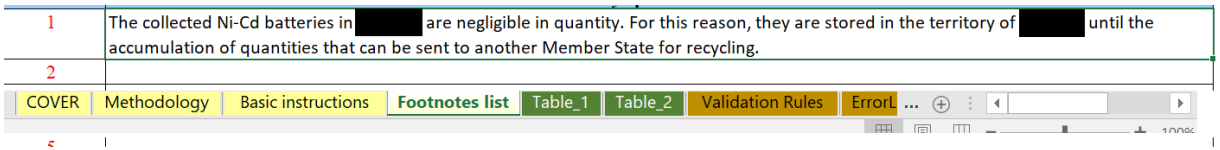
This is a practical example an example of how to provide the information according to the rules in force. This example considers the case of Nickel Cadmium batteries stored in a country XXXX before the total amount for the shipment is reached.

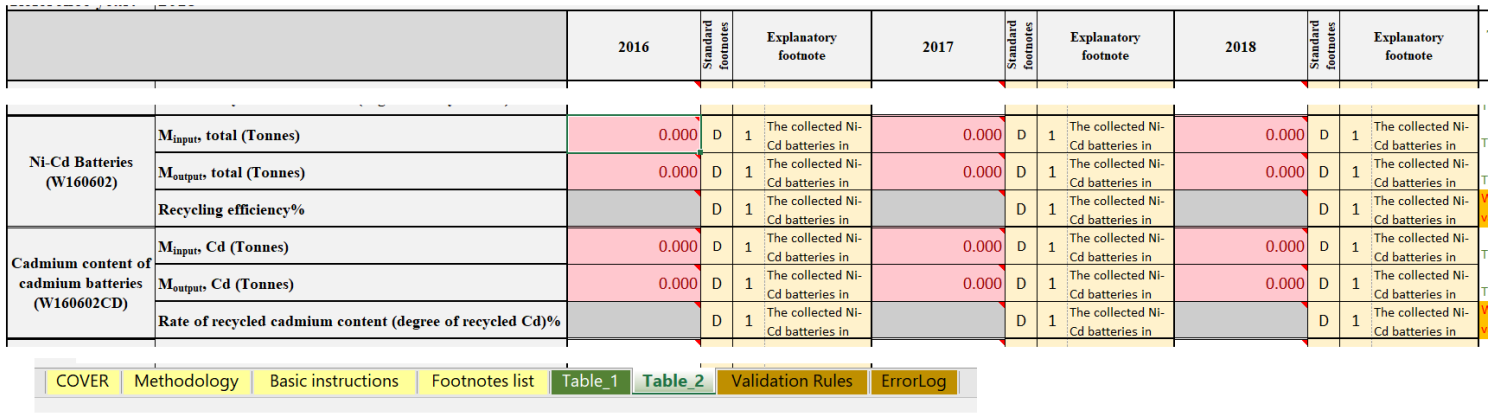
This text has to be inserted for each year in which a country XXXX has collected and stored the batteries in a collection facility, before to deliver the Battery waste to the recycling facility (input to the recycling facility, numbers are all fakes). For the case of NiCd, let us suppose that a country XXXX is not shipping the Cadmium batteries in year 2016, 2017 and 2018. The declaration for year 2018 in the methodological report should be similar to this:

> In 2018 the collected Ni-Cd batteries in XXXX are negligible in quantity (1 tonne collected in year 2018, accounting for a total amount of 5 tonnes stored from year 2016 to year 2018). For this reason, these amounts of waste batteries are stored in the territory of XXXX until the total collected quantity will permit to proceed with the shipping to another Member State for the start of the recycling process. For this reason the current declaration for Minput, Moutput in the excel questionnaire, for years 2016, 2017 and 2018 is 0, and therefore the recycling rate is not applicable.

This is how the Batteries excel questionnaire (section for Cadmium in table 2) then looks like:

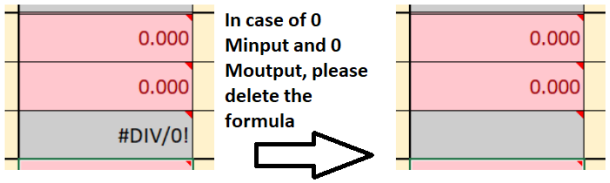
The D (definition differs) must be choosen and the footnote in the footnote list explaining the issue. The D (definition differs) is necessary for Eurostat to ensure that the issue of 0 recycling is properly documented as a special case:





		2016	Standard footnotes		Explanatory footnote	2017	Standard footnotes		Explanatory footnote	2018	Standard footnotes		Explanatory footnote
Ni-Cd Batteries (W160602)	M_{input}, total (Tonnes)	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in
	M_{output}, total (Tonnes)	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in
	Recycling efficiency%		D	1	The collected Ni-Cd batteries in		D	1	The collected Ni-Cd batteries in		D	1	The collected Ni-Cd batteries in
Cadmium content of cadmium batteries (W160602CD)	M_{input}, Cd (Tonnes)	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in
	M_{output}, Cd (Tonnes)	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in
	Rate of recycled cadmium content (degree of recycled Cd)%		D	1	The collected Ni-Cd batteries in		D	1	The collected Ni-Cd batteries in		D	1	The collected Ni-Cd batteries in

In order to avoid the DIV/0 appearing as Recycling efficiency, it is necessary to delete the formula, as in the picture below:

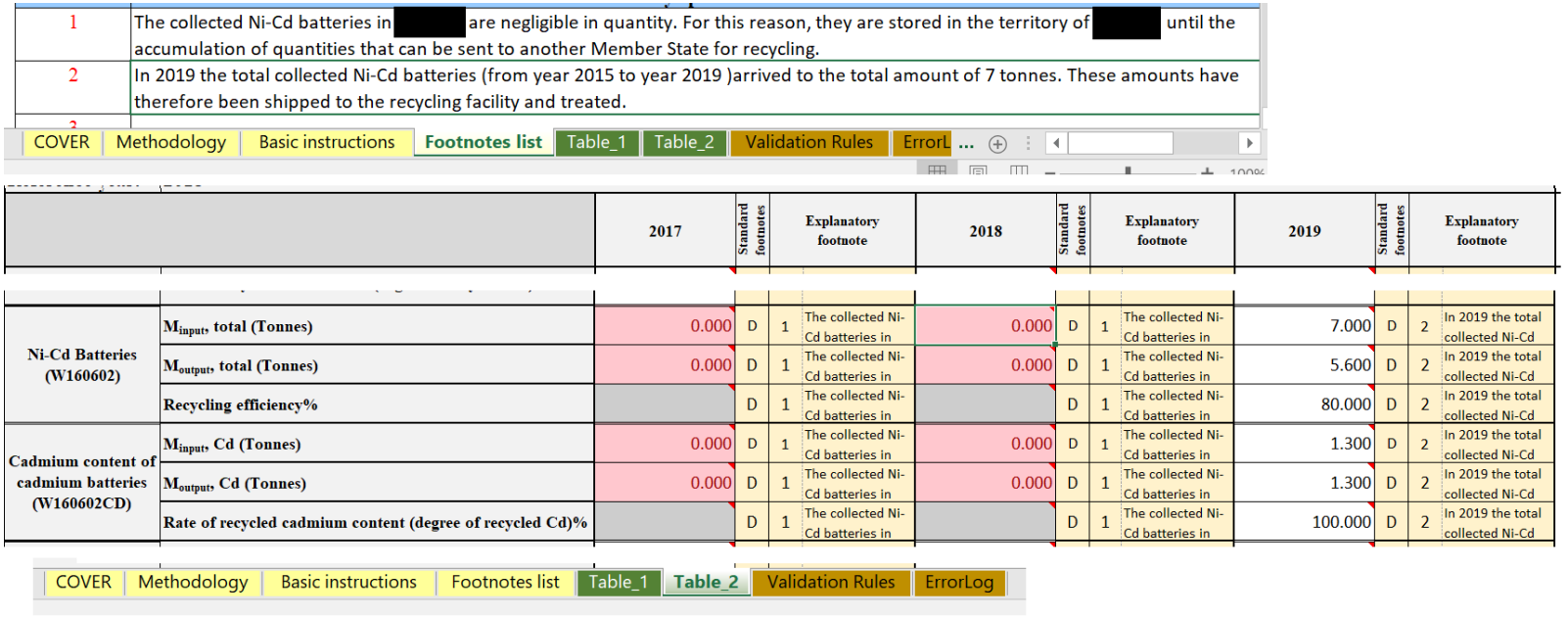


Let us suppose that country XXXX has cumulated in year 2019 a total of 7 tonnes, sufficient for the shipment; then the declaration in the Methodological report becomes (fake figures):

> In 2019 the collected Ni-Cd batteries in XXXX are still negligible in quantity (2 tonne collected in year 2019, accounting for a total amount of 7 tonnes stored from year 2016 to year 2019). For year 2019 the country XXXX has however reached the amount of 7 tonnes stored, therefore the shipment has taken place in the same year. For this reason, the amounts are stored in the territory of XXXX until the accumulation of quantities that will permit the shipping to another Member State for recycling. For this reason the current declaration for Minput, Moutput in the excel questionnaire, for years 2016, 2017 and 2018 stay to 0, and therefore the recycling

rate is not applicable; the Minput for year 2019 is 7 tonnes, the recycling efficiency declared by the recycler is 80%,the Moutput is 5.6 tonnes, the MinputCd is 1.3 tonnes, equal to the MoutputCd, according to a recycling efficiency of Cadmium content of 100%.

This is how it should look in the excel file:



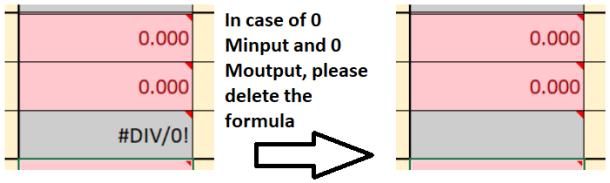
1	The collected Ni-Cd batteries in [redacted] are negligible in quantity. For this reason, they are stored in the territory of [redacted] until the accumulation of quantities that can be sent to another Member State for recycling.
2	In 2019 the total collected Ni-Cd batteries (from year 2015 to year 2019)arrived to the total amount of 7 tonnes. These amounts have therefore been shipped to the recycling facility and treated.

COVER | Methodology | Basic instructions | Footnotes list | Table_1 | Table_2 | Validation Rules | ErrorL ...

		2017	Standard footnotes		Explanatory footnote	2018	Standard footnotes		Explanatory footnote	2019	Standard footnotes		Explanatory footnote
Ni-Cd Batteries (W160602)	M_{input}, total (Tonnes)	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in	7.000	D	2	In 2019 the total collected Ni-Cd
	M_{output}, total (Tonnes)	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in	5.600	D	2	In 2019 the total collected Ni-Cd
	Recycling efficiency%		D	1	The collected Ni-Cd batteries in		D	1	The collected Ni-Cd batteries in	80.000	D	2	In 2019 the total collected Ni-Cd
Cadmium content of cadmium batteries (W160602CD)	M_{input}, Cd (Tonnes)	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in	1.300	D	2	In 2019 the total collected Ni-Cd
	M_{output}, Cd (Tonnes)	0.000	D	1	The collected Ni-Cd batteries in	0.000	D	1	The collected Ni-Cd batteries in	1.300	D	2	In 2019 the total collected Ni-Cd
	Rate of recycled cadmium content (degree of recycled Cd)%		D	1	The collected Ni-Cd batteries in		D	1	The collected Ni-Cd batteries in	100.000	D	2	In 2019 the total collected Ni-Cd

COVER | Methodology | Basic instructions | Footnotes list | Table_1 | Table_2 | Validation Rules | ErrorLog

In order to avoid the DIV/0 appearing as Recycling efficiency, it is necessary to delete the formula, as in the picture below:



Additional legal explanations

According to COMMISSION REGULATION (EU) No 493/2012 of 11 June 2012, Article 2, Definitions, points 4 and 5

> (4) 'input fraction' means the mass of collected waste batteries and accumulators **entering the recycling process** as defined in Annex I;
>
> (5) 'output fraction' **means the mass of materials that are produced from the input fraction as a result of the recycling process**, as defined in Annex I without undergoing further treatment, that have ceased to be waste or that will be used for their original purpose or for other purposes, but excluding energy recovery.

In plane words, this means that the collected amount that is stored in the collection facility and not yet entering the recycling process (for instance, not shipped yet abroad) has not to be declared in year X as Minput, but has to be declared in year X+1 when it actually enters the recycling facility for being treated (or the year in which the shipment to the recycling facility took place). The attribution of Moutput is often calculated by the recycler from the recycling rates on the basis of "continuous or representative sample" as in Annex I, point 3:

> 3. The recycling efficiency is calculated on the basis of the overall chemical composition (at elemental/compound level) of the input and output fractions. The following applies in respect of the input fraction:
>
> — recyclers shall determine the share of different types of waste battery or accumulator present in an input fraction by conducting a sorting analysis of the fraction (**by continuous or representative sampling**),
>
> — the chemical composition of each type of waste battery or accumulator present in the input fraction is determined on the basis of the chemical composition of new batteries and accumulators when placed on the market or on the basis of available data of recyclers or on information provided by the battery producers,
>
> — recyclers shall determine the overall chemical composition of the input fraction by applying the chemical composition analysis to the types of batteries or accumulators present in the input fraction.

Therefore, the M_{output} is calculated from the M_{input} according to the Recycling efficiency for the battery type

For the recycled lead content (R_{Pb}), M_{input}, Pb and M_{output}, Pb imputations and the recycled cadmium content (R_{Cd}), M_{input}, Cd and M_{output}, Cd imputations, same reasoning occurs.