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Antimicrobial Sales and Use (ASU) Power BI Application

User guide for National Competent Authorities users

Official address Domenico Scarlattilaan 6 • 1083 HS Amsterdam • The Netherlands

Address for visits and deliveries Refer to www.ema.europa.eu/how-to-find-us

Send us a question Go to www.ema.europa.eu/contact **Telephone** +31 (0)88 781 6000

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1. Introduction

The ASU Power BI application is part of the ASU Platform and is accessed through the ASU Platform web interface. It allows users to analyse and validate their uploaded sales, use and animal population data through dedicated data validation reports.

The aim of this user guide is to:

- provide clear instructions for NCA users on how to access and use the Power BI component of ASU Platform and its functionalities.
- provide detailed information on the content of each Data Validation Report available in the ASU Power BI application.

2. Related Documents

- [Antimicrobial Sales and Use \(ASU\) Platform User Guide for NCA users](#)
- [Antimicrobial Sales and Use \(ASU\) technical implementation protocol](#)
- [Guideline on the reporting of antimicrobial sales and use in animals at the EU level – denominators and indicators](#)
- [Microsoft Power BI support](#)

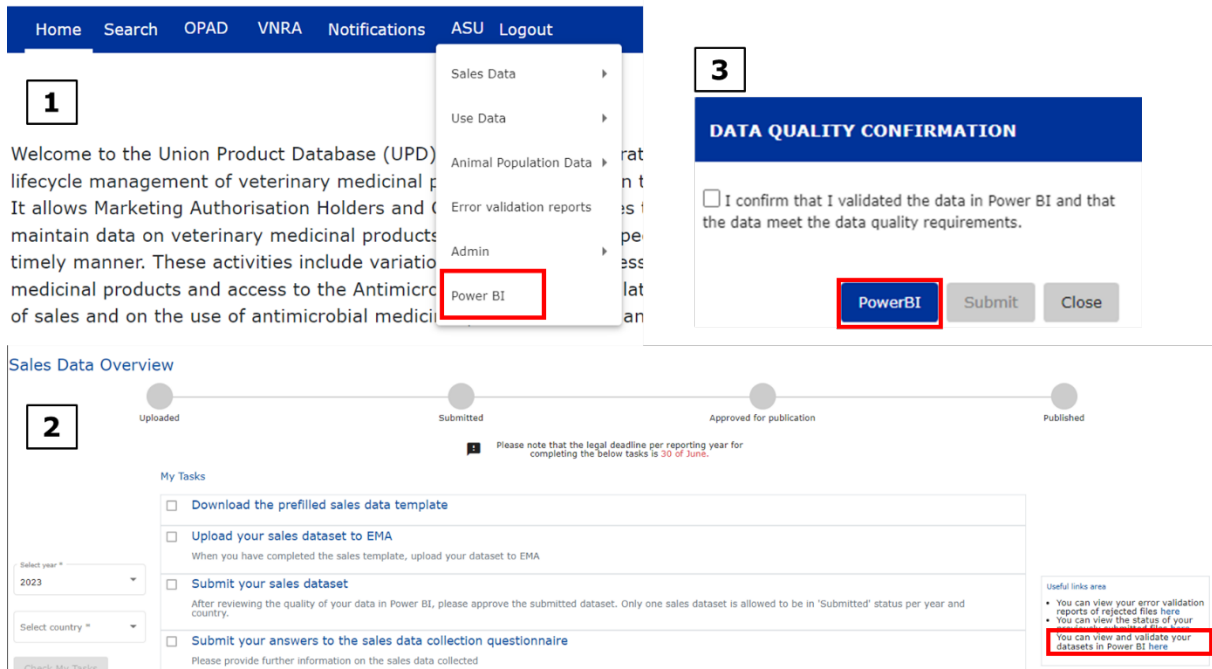
3. Access to the ASU Power BI application

For instructions on how to request the role to access the ASU Platform and the ASU Power BI application, please refer to section 4 of the ASU Platform User Guide for NCA users (referred to in section 2 of this document).

Once NCA users have logged in to the [ASU Platform](#), they can access the ASU Power BI application via the following links:

- The *ASU Power BI reports* item of the main ASU menu (Screenshot 1 of Figure 1)
- The link available in the *Useful links* area of the different *Data overview* pages (Screenshot 2 of Figure 1)
- On the pop-up message that appears when NCA users submit a dataset for the first time (Screenshot 3 of Figure 1)

Figure 1. Links that allow users to navigate from the ASU Platform to the ASU Power BI application.

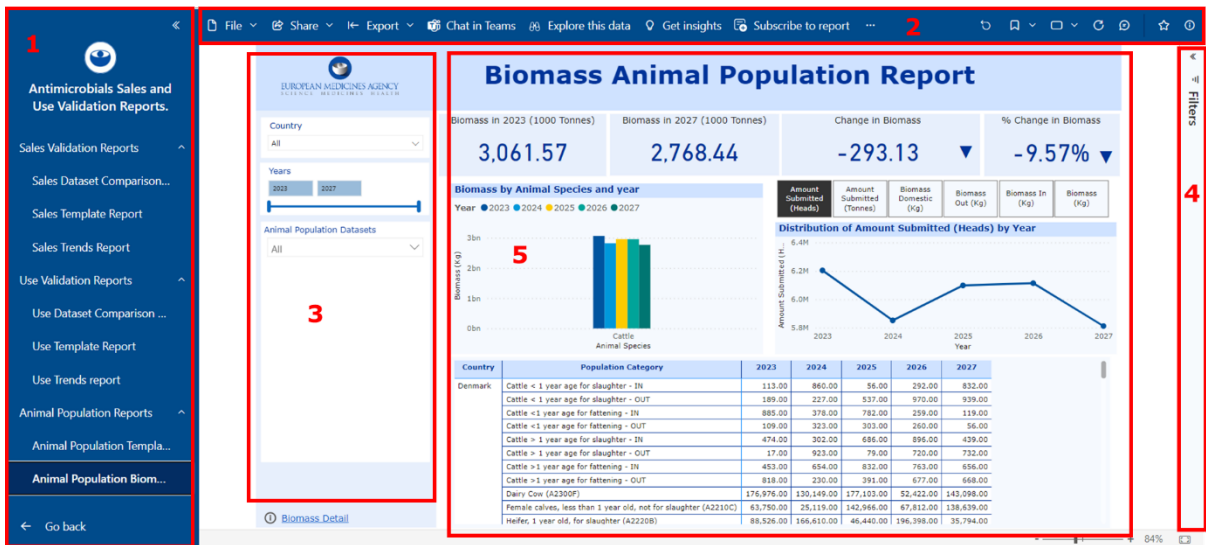


4. Power BI quick tips

All the ASU Power BI reports have the following main components:

- **Navigation panel** on the left to quickly navigate between the different ASU Data Validation reports (Box 1 of Figure 2).
- A **top horizontal bar** with different buttons that offer different functionalities (Box 2 of Figure 2).
- A **left-hand filter panel** with different filters that can be applied to the reports (Box 3 of Figure 2).
- A **hidden right-hand filter panel** that offers additional filtering options (Box 4 of Figure 2).
- A **main report body** which shows different visualisations of the data and consists of a title and key performance indicators (KPIs) in the top half and different visuals or tables in the bottom half (Box 5 of Figure 2).

Figure 2. Main components of the ASU Data Validation Power BI reports.



In the following subsections, the main Power BI functionalities available for each of these components will be described in further detail.

4.1. Top horizontal bar

In the top horizontal bar, the following buttons are of interest for the ASU Data Validation reports:

- The **Reset** button: allows the user to reset all the filters that have been applied to the report and any other data view change that may have been performed. It resets all the parameters to the default state, so that single-select filters go back to displaying the preselected value and multiselect filters go back to displaying the 'All' value (Box 1 of Figure 3).
- The **View** button: allows the user to change the view of a report (or a specific element in case it has been opened in focus mode). The following options are available: Full screen, Fit to page, Fit to width, Actual size. The recommended view option for navigating the ASU Data Validation reports is Fit to page (Box 2 of Figure 3).
- The **Refresh** button: allows the user to refresh all the elements of a report in case the data of has been updated while the user is navigating the report (e.g. a new dataset was uploaded to the ASU Platform). Note that every time a user selects another report from the navigation menu of the ASU Power BI app, the data of the report is automatically refreshed (Box 3 of Figure 3).

Figure 3. Functionalities available in the top horizontal bar.



4.2. Left-hand filter panel

In the left-hand filter panel, the following types of filters are available to be applied to the report:

- **Tile filters:** a type of single-select filters that are located on top of the left-hand filter panel of some Sales and Use Data Validation Reports. These filters allow the user to change the unit or measurement (UoM) in which the data of the report is expressed. By default, in all reports the UoM 'Tonnes' is preselected (e.g. box 1 of Figure 4)

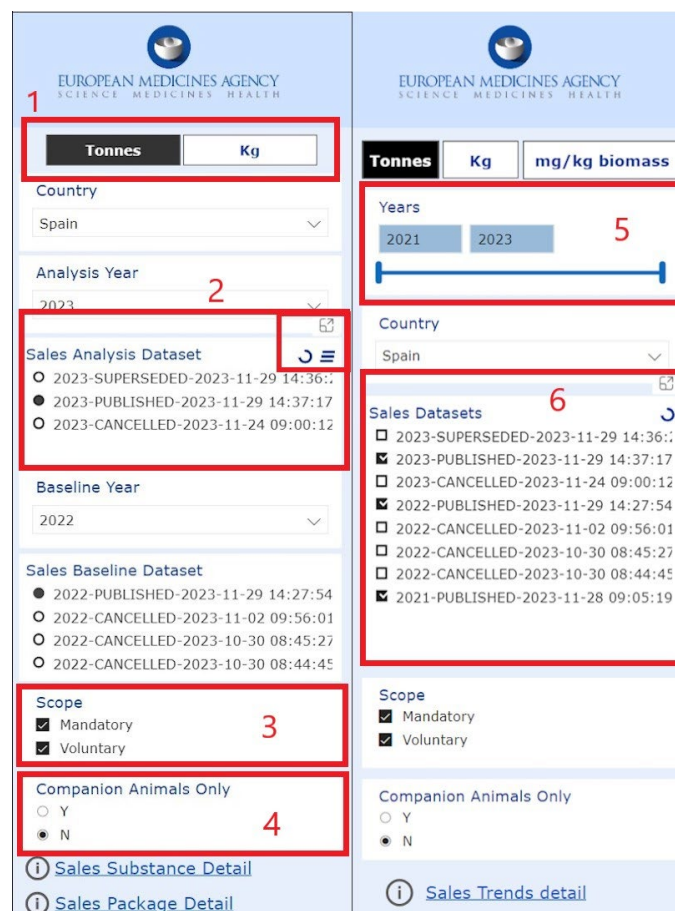
- **Single-select filters:** allow the user to select only one of various filtering options at the same time (e.g. boxes 2 and 4 of Figure 4). The preselected option for each single-select filter is specified in the description of each Data Validation Report in Section 5.
- **Multiselect filters:** allow the user to select various filtering options at the same time (e.g. boxes 3 and 6 of Figure 4). The default option for each multiselect filter is specified in the description of each Data Validation Report in Section 5.
- **Range filters:** allow the user to select a specific range of years for which they want data in the report to be shown. The user can define the year range either by typing the preferred start and end year in the available boxes or by using the sliding bar that this filter offers (e.g. box 5 of Figure 4). The default start and end year for all range filters in the Data Validation Reports correspond to those of the available datasets uploaded to the ASU Platform.

On some filters (e.g., those that allow for the selection of single or multiple datasets) the following additional functionalities may be available (see the box contained in box 2 of Figure 4):

- a **focus mode button** to facilitate the visualisation of the full name of the filter options. For more information on the focus mode button, please refer to section 4.4.2.
- a **reset button** and a **clear selection button** that enable users to reset the filter selection to the default preselection or to clear all selections, respectively.

In the reports that include large tables (e.g., template reports or detail reports), the left-hand filter panel is relocated to the top of the reports.

Figure 4. Examples of filter types available in the left-hand filter panel.



4.3. Hidden right-hand filter panel

This filter panel is opened by clicking on the **Show/hide pane** arrow button at the top of the panel. Three types of filters are available in this panel:

- **Filters on this visual:** these filters allow the user to filter the data provided in a specific visual such as tables, bar graphs or line charts, among others (e.g. *Use Dataset Comparison by Product Form* bar graph). These filters operate within the context of both the page-level and all-pages-level filters, meaning that visual-level filters cannot override the filtering options selected in the previous two¹.
- **Filters on this page:** these filters allow the user to filter the data provided in the entire report page (e.g. on the Use Dataset Comparison Report). When selected, any related sub-reports (e.g. Use Substance Detail Report) will automatically also have the same page-level filters applied.
- **Filters on all pages:** these filters allow the user to filter the data on all the reports that exist under the same section in the navigation panel (e.g. all Use Data validation reports at once without affecting the Sales or Animal population Data Validation Reports).

Using these different filters (as depicted in Table 1), basic or advanced filtering options can be applied to the different elements of the reports:

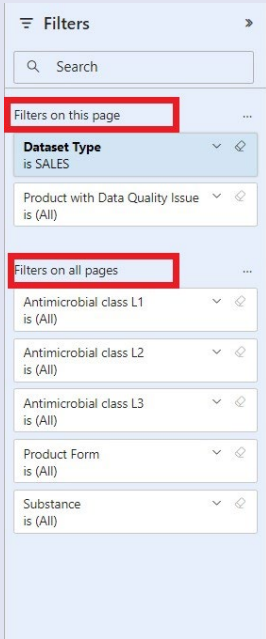
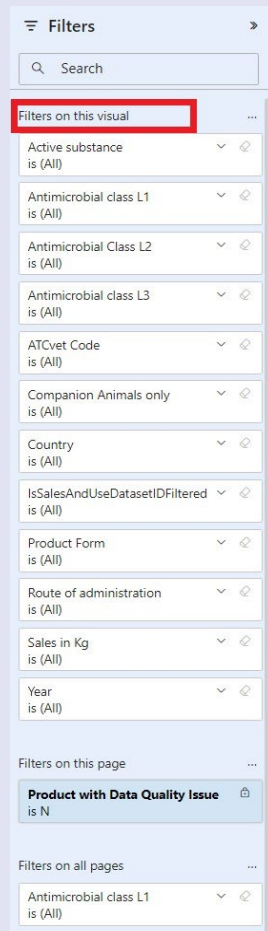
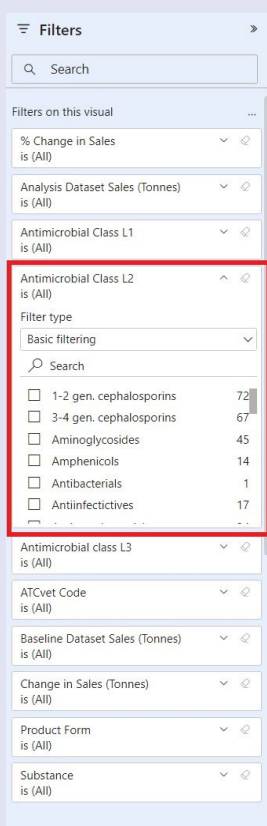
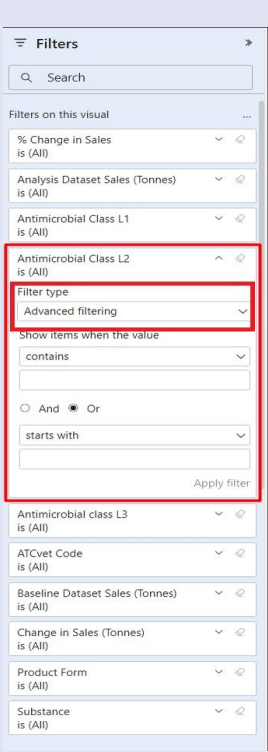
- For the **basic filtering** the user should click on the expand button of the desired filter and select one or multiple values by clicking on the corresponding checkboxes. The user can also search for a specific value using the 'search' box which is above the list of values. After the user selects a value, the colour of the slicer changes to light blue and the filters are automatically applied. The user can clear the filtering by clicking on the clear button next to the expand/collapse button.
- For the **advanced filtering** the user should click on the expand button of the desired filter and select the 'Advanced filtering' option of the 'Filter type' drop-down list. This enables the selection of different or multiple additional filtering criteria. The user can clear the filtering by clicking on the clear button next to the expand/collapse button.

For the alphanumeric fields, the drop-down list of operators includes the following options: "Contains", "Does not contain", "Starts with", "Does not start with", "Is", "Is not", "Is blank", "Is not blank", "Is empty" and "Is not empty".

For the numeric fields, the drop-down list of operators includes the following options: "Is less than", "Is less than or equal to", "Is greater than", "Is greater than or equal to", "Is", "Is not", "Is blank" and "Is not blank".

¹ In the future, the 'filters on this visual' option will only be available for the tables in the Template and Detail ASU Data Validation Reports and it will be deactivated for all other types of visuals to avoid confusion with other filters.

Table 1. Filtering options available in the hidden right-hand filter panel.

Filters on page vs Filters on all pages	Filters on visual level	Basic Filtering	Advanced Filtering
<p>Upon expanding the right-hand filter panel, the user is able to see the available filters at page and all pages level.</p>	<p>In case a specific visual is selected, the user is able to see the available filters that can be applied to the selected visual.</p>	<p>The user can expand any filter (except locked ones) to make their desired selection. The default filter type is the Basic Filtering.</p>	<p>The user can change the filter type to Advanced Filtering by using the drop-down list and selecting this option.</p>
			

4.4. Main report body

4.4.1. KPIs

In the context of ASU Data Validation Reports, Key Performance Indicators or KPIs refer to key overall measures of the data contained in the reports and serve as a quick and accessible way for the users to understand the most important metrics related to the purpose of each report.

The values displayed in the KPI boxes are automatically updated when the user selects different filtering options and, in some cases, when the user clicks on specific elements of the different visuals and tables available in the report. For further information on the interactivity between different report elements, please refer to the corresponding detailed descriptions of each data validation report.

4.4.2. Visuals and tables

The visuals of the ASU Data Validation Reports serve to display specific graphic representations of the data contained in each report. They are automatically updated when the user selects different filtering options and, in some cases, when the user clicks on specific elements of other visuals from the same report. For further information on the interactivity between different report elements, please refer to the corresponding detailed descriptions of each data validation report.

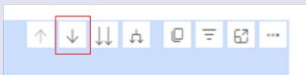
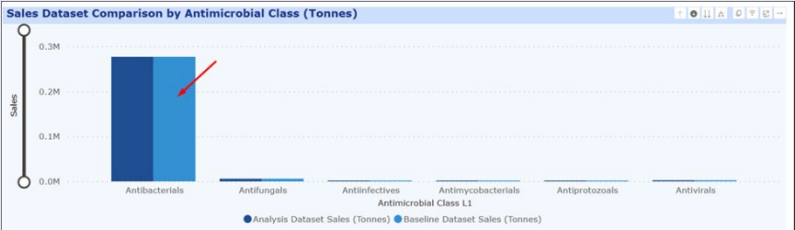
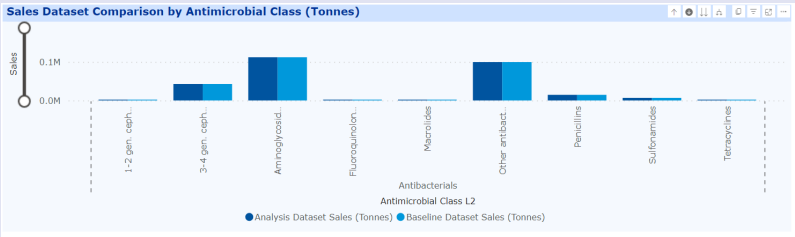
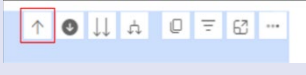
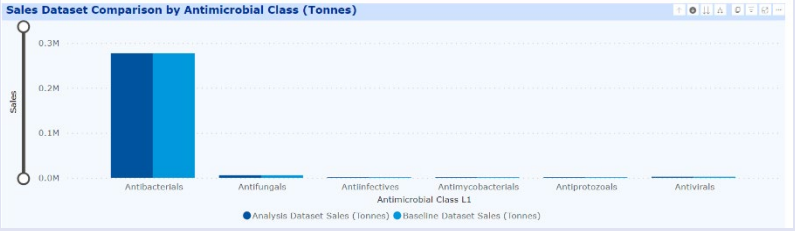

When the user clicks on a visual, a series of white action buttons appear in the top right-hand corner of the visual (see Figure 5). Of these action buttons, the following offer functionalities relevant for the ASU Data Validation Reports:

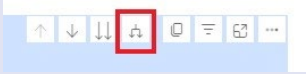
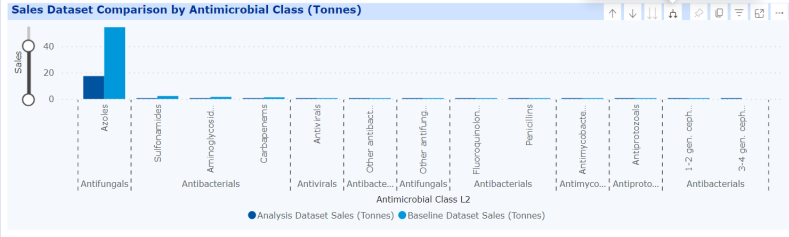
- The **Drill down** action buttons (Box 1 of Figure 5 and Table 2). There are three types of drill down action buttons:
 - **Drill up/drill down:** allows users to move from a lower level of data to a higher level of data or vice versa for a specific data point in a visual. To use these buttons, the user should:
 1. Click on the drill down button to enable the feature for the visual
 2. Click on a specific data point to see the next level of granularity.
 3. Click on the drill up button to return to the previous level of data.
 - **Go to the next level in the hierarchy:** allows the user to move to a lower level of data and applies to all the data in the visual and not to a single selected data point.
 - **Expand all down one level in the hierarchy:** allows the user to move to a lower level of data while still displaying the higher level of the data, so that the user can see the full structure and hierarchy of the data. As with the previous drill down button, it applies to all the data in the visual and not to a single selected data point.
- **Copy as image with caption** action button (Box 2 of Figure 5): allows the user to copy a static image of the selected visual along with a link back into the Power BI dashboard or report, the title of the report or dashboard the content was copied from, the time stamp of when the data was last updated and the filters applied to the visual
- **Focus mode** action button (Box 3 in Figure 5): allows to show an enlarged version of the visual which is opened in a new page. This feature is especially useful for complex visuals in which the user may want to drill up and down or see the components in more detail. To exit the focus mode and return to the main report, click the 'Back to report' button that will appear on the top left of the focus mode page.
- **More options** action button (Box 4 of Figure 5): of the various additional buttons available, the most relevant ones for the ASU Power BI reports are:
 - The **Export data** action button: allows the user to export the data in excel format. This is especially relevant for the data displayed in tables. Upon clicking this button, a pop-up window appears asking the user which data they want to export. It is advised to use the option predefined in Power BI for each visual or table.
 - The **Sort by** action button: that allows the user to select in what order the data are displayed in the corresponding visual or table.

Figure 5. Action buttons relevant for ASU Data Validation Reports.



Table 2. Drill down buttons available in the ASU Data Validation Reports.

Button	Resulting action
<p>Drill down</p> 	<p>Upon activating the drill down button and clicking on a specific data element (e.g. Antimicrobial Class Level 1 = Antibacterials):</p>  <p>That data element opens into the next level of granularity (e.g. All the Antimicrobial Class Level 2 <u>corresponding to the selected Antimicrobial Class Level 1</u> are displayed):</p> 
<p>Drill up</p> 	<p>Upon clicking the drill up button after drilling down on a specific element, the displayed data returns to the previous level of granularity:</p> 
<p>Go to the next level in the hierarchy</p> 	<p>Upon clicking the 'Go to next level in the hierarchy' button, all the displayed data move to the next more granular level of the hierarchy (e.g. Antimicrobial Class L2 of <u>all the data</u> is displayed)</p> 

Button	Resulting action
<p>Expand all down one level in the hierarchy</p> 	<p>Upon clicking the 'Expand all down one level in the hierarchy' button, all the displayed data expand to the next more granular level of hierarchy whilst maintaining the information of the previous level visible (e.g. Antimicrobial Class L2 of all the data is shown while simultaneously displaying the Antimicrobial Class Level 1 information)</p> 

Finally, given the size of some of the tables displayed in the ASU Data Validation Reports, the contained data are not always completely visible given that not all columns may fit on the same screen. To improve table visualisation, the following is recommended:

- Explore the different view options using the **View** button in the top horizontal bar (see section 4.1).
- Use the **Focus mode** button to display the table in a new page without any of the other report elements.
- Disable the 'fixed' columns functionality (that allows the user to scroll right and left in only part of the table) by right clicking on the table and selecting the option 'unfreeze row headers'. By unfreezing the row headers, the user will be able to scroll the entire table right and left. User can switch back to the default mode by right clicking and selecting the option 'freeze row headers'.
- Export the table to excel format using the **Export data** button.

5. Data Validation Reports

In this section, all the Data Validation Reports available in the ASU Power BI application are described. There are data validation reports available for each of the types of data collected via the ASU Platform: volume of sales of veterinary antimicrobials, use of antimicrobials in animals and animal population data.

The purpose of the ASU Data validation Reports is to help NCA users validate the data uploaded to the ASU Platform and ensure that it meets the quality standards indicated in the legislation. For a full description of the workflow leading to the validation of data in the ASU Power BI application, please refer to section 5.1 of ASU Platform User Guide for NCA users referred to in section 2 of this document.

All the data validation reports can be accessed by clicking on the corresponding title in the left-hand navigation panel mentioned in section 4.

Disclaimers:

- The screenshots of the Data Validation Reports included in the following sections contain **dummy data** and the parameters have been indicatively selected.

- UoM (Unit of Measurement) is mentioned in the titles of specific visuals in the following sections. This means that the unit of measurement can be dynamically updated in those visuals based on the user's selection.
- Products with UPD data quality issues that impede the calculation of total amount of antimicrobial active substance per product presentation are automatically excluded from the Sales and Use Data Validation Reports and do not contribute to the calculations of the displayed measures/calculated columns. The only way a user can see products with data quality issues is by using the Sales Template Report and Use Template Report.

5.1. Sales Validation Reports

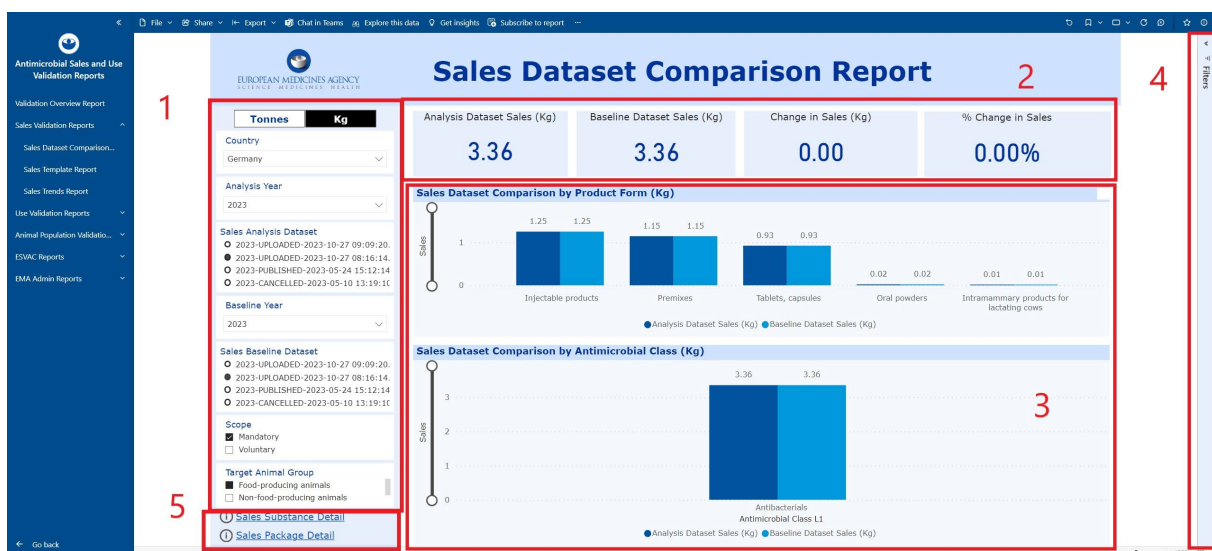
The ASU Sales Validation Reports enable NCA users to validate and analyse the data on volume of sales of veterinary antimicrobials uploaded to the ASU Platform.

5.1.1. Sales Dataset Comparison Report

The purpose of the Sales Dataset Comparison Report is to allow the NCA user to compare two sales datasets of their choice. In the report it is possible to select an **analysis sales dataset** (automatically preselected as the latest sales dataset uploaded for the reporting year) and a **baseline sales dataset** to which the analysis sales dataset will be compared. For validation purposes, it is recommended for the user to compare the sales dataset of the reporting year with that of the previous year to detect major changes that may need to be further explored or justified. However, the selection of analysis and baseline sales datasets is completely flexible, allowing the user to make whatever comparisons they like.

The structure and the different functionalities of the Sales Dataset Comparison Report are shown in Figure 6 and described below.

Figure 6. Components of the ASU Sales Dataset Comparison Report.



1. Left filter panel – includes the following filters:

- Tonnes/Kg: allows the user to select whether the data of the report is shown in Tonnes or in kilograms.

- b. Country: in this dropdown, single-select filter, the NCA user will only be able to see their own country.
- c. Analysis Year: dropdown, single-select filter in which the reporting year is preselected. The selected Analysis Year determines which Sales Analysis Datasets are available for selection in the next filter.
- d. Sales Analysis Dataset: dropdown, single-select filter in which all the available datasets of the selected Country and Analysis Year appear. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time).
- e. Baseline Year²: dropdown, single-select filter in which the reporting year is preselected. The selected Baseline Year determines which Sales Baseline Datasets are available for selection in the next filter.
- f. Sales Baseline Dataset: dropdown, single-select filter in which all the available datasets of the selected Country and Baseline Year appear. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time).
- g. Scope: multiselect filter that enables users to choose whether the report include sales of products that fall in the mandatory reporting scope, sales of products that fall in the voluntary reporting scope or both³.
- h. Target Animal Group: multiselect filter that enables users to choose whether the report includes sales of products destined for food-producing, non-food-producing animals or both⁴.

2. Main KPIs: The following measures are available:

- a. Analysis Dataset Sales (UoM): total of sales in the selected Analysis Dataset.
- b. Baseline Dataset Sales (UoM): total sales in the selected Baseline Dataset.
- c. Change in Sales (UoM): change in total sales between the selected datasets.

$$\text{Change in sales (UoM)} = \text{Sales in Analysis Dataset} - \text{Sales in Baseline dataset}$$

- d. % Change in Sales: percentage change in total sales between the selected datasets.

$$\% \text{ Change in sales} = \frac{\text{Sales in Analysis Dataset} - \text{Sales in Baseline dataset}}{\text{Sales in Baseline dataset}} \times 100$$

3. Visuals: The following visuals are available:

- a. Sales Dataset Comparison by Product Form (UoM): this bar graph enables the user to compare the sales by product form between the selected datasets. The scale of the Y axis can be manually adjusted by the user. By selecting the different bars of the graph, the KPIs and the second visual of the report are automatically updated to show the data corresponding to the product form of the selected bar. To remove this selection,

² The initial requirement to have the Baseline Year as the year before the Analysis Year is not technically feasible.

³ As per Articles 1 and 2 of the Commission Delegated Regulation (EU) 2021/578 and specified in annexes 1 and 2.

⁴ This filter is based on the sales template field Companion animals only, where 'non-food-producing animals' is equivalent to Companion animals only = Y and 'food-producing animals' to Companion animals only = N.

click elsewhere on the visual. Additionally, user can hover over a visual to see additional information such as the absolute change in Sales

- b. Sales Dataset Comparison by Antimicrobial Class (UoM):** this bar graph enables the user to compare the sales by antimicrobial class (levels 1, 2 and 3) or substance between the selected datasets. The scale of the Y axis can be manually adjusted by the user. By selecting the different bars of the graph, the KPIs and the first visual of the report are automatically updated to show the data corresponding to the antimicrobial class of the selected bar. To remove this selection, click elsewhere on the visual. In this visual, the drill down buttons described in section 4.4.2 are activated to allow users to navigate between the different levels of granularity (3 levels of antimicrobial classes and antimicrobial substance). By default, Antimicrobial Class Level 1 is presented and it is advised to use focus mode (also described in section 4.4.2) to visualise the more granular levels of information. Additionally, user can hover over a visual to see additional information such as the absolute change in Sales.

4. Right filter panel (expandable): as described in section 4.3 the following additional types of filters are available for this report:

- a.** Filter on this visual: although currently available, this type of filter will be deactivated in this report.
- b.** Filters on this page: includes only the *Product with data quality issue* filter which is locked as products with data quality issues are excluded by default from this report and this selection cannot be changed by the user.
- c.** Filters on all pages: when applied on this report the selection is automatically applied to all the remaining sales reports. These additional filters include *ASU product form*, *Antimicrobial Class Level 1*, *Antimicrobial Class Level 2*, *Antimicrobial Class Level 3* and *Antimicrobial Substance*.

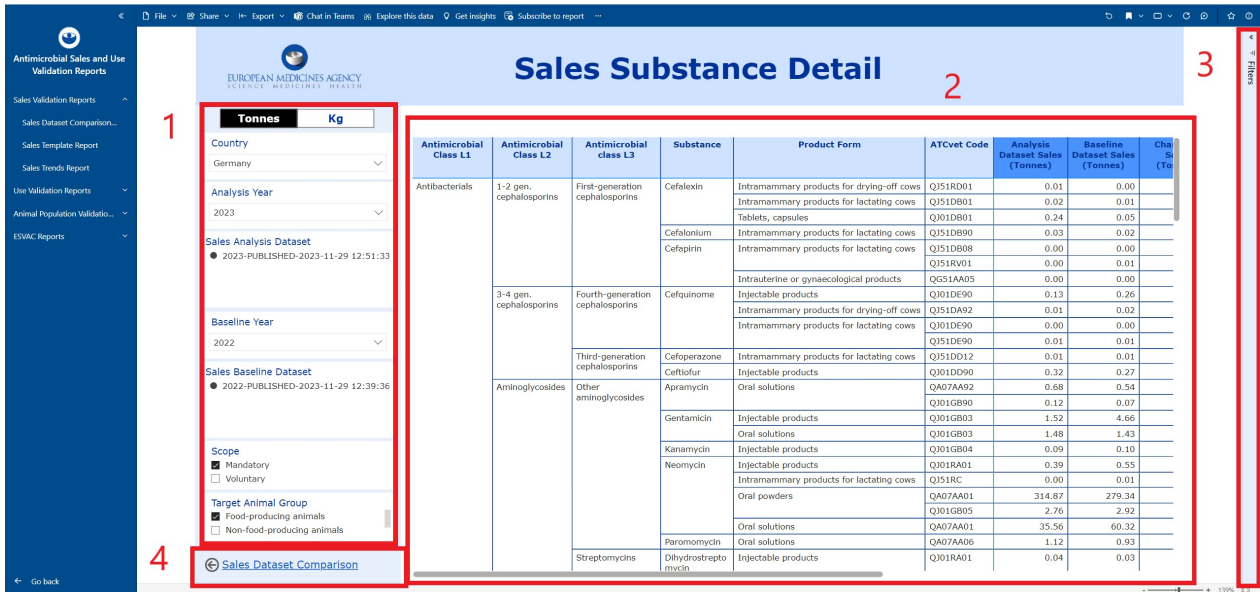
5. Links to sub reports: in the left-hand bottom corner of this report there are two links that redirect the user to the Sales Substance Detail Report and Sales Package Detail Report which are described in the next subsections.

5.1.1.1. Sales Substance Detail Report

The purpose of the Sales Substance Detail report is to allow the NCA user to compare two sales datasets of their choice at the substance level in a similar manner to the main Sales Dataset Comparison Report by selecting analysis and baseline datasets.

The structure and the different functionalities of the Sales Substance Detail Report are shown in Figure 7 and described below.

Figure 7. Components of the ASU Sales Substance Detail Report.



1. **Left filter panel:** The left filter panel includes the exact same filters as in the main Sales Dataset Comparison Report. Any filter selections made in the main report are maintained when the user goes to the Sales Substance Detail Report and vice versa.
2. **Table:** the table that constitutes the main body of the report and contains two types of columns:
 - a. Light blue columns that correspond to non-calculated fields that provide information at substance level and include: Antimicrobial Class L1, Antimicrobial Class L2, Antimicrobial Class L3, Substance, Product Form, ATCvet Code. For more information about these fields please refer to the ASU protocol linked in section 2.
 - b. Dark blue columns that represent calculated fields that correspond to the main KPIs that presented at the top of the main Sales Dataset Comparison Report but calculated at substance level. Please refer to the previous section for the KPI details.
3. **Right filter panel (expandable):** The right filter panel includes the exact same filters as in the main Sales Dataset Comparison Report with the exception that the 'Filters on this visual' option will not be disabled in this report so that users can filter the data by the different variables displayed in the column headers of the table. The 'Filters on this visual' option becomes available when the user clicks on the table in the main body of the report.
4. **Link to main report:** in the left-hand bottom corner of this report there is a link that redirects the user to the main Sales Dataset Comparison Report.

5.1.1.2. Sales Package Detail Report

The purpose of the Sales Package Detail Report is to allow the NCA user to compare two sales datasets of their choice at the antimicrobial medicinal package level in a similar manner to the main Sales Dataset Comparison Report by selecting analysis and baseline datasets.

The structure and the different functionalities of the Sales Package Detail Report are shown in Figure 8 and described below.

Figure 8. Components of the ASU Sales Package Detail Report.

Permanent Identifier	Package Identifier	Product Reference Number	Product Name	Product Form	Pack Size	Substance	ATCvet Code	Strength	Analysis Dataset Sales (Number of Packs)	Baseline Dataset Sales (Number of Packs)	Analysis Dataset Sales (To)
600000042106	11e8a59d-e1dc-4909-9fa3-c8d6d7338ff0		PULMODOX 5% PREMIX	Premixes	25 kg	Doxycycline	QJ01AA02	57700 mg/kg		551.00	
					25000 kg	Doxycycline	QJ01AA02	57700 mg/kg	98.00		
					5 kg	Doxycycline	QJ01AA02	57700 mg/kg		735.00	
					5000 kg	Doxycycline	QJ01AA02	57700 mg/kg	462.00		
600000072894	b6191d49-da94-4666-bf6f-06891e881936		Tylo-Suscit 100% Kompaktat	Oral solutions	156 kg	Tylosin	QJ01FA90	924000 mg/kg	629.00	90.00	
					550 kg	Tylosin	QJ01FA90	924000 mg/kg	301.00	153.00	
					79200 g	Tylosin	QJ01FA90	924 mg/g	501.00	171.00	
					39600 g	Tylosin	QJ01FA90	924 mg/g	402.00	222.00	
					42 kg	Tylosin	QJ01FA90	924000 mg/kg	560.00	433.00	
					550 g	Tylosin	QJ01FA90	924 mg/g	555.00	217.00	
					275 g	Tylosin	QJ01FA90	924 mg/g	660.00	617.00	
					110 g	Tylosin	QJ01FA90	924 mg/g	145.00	717.00	
					1 kg	Tylosin	QJ01FA90	924000 mg/kg	117.00	836.00	
					6 kg	Tylosin	QJ01FA90	924000 mg/kg	74.00	196.00	
					15840 g	Tylosin	QJ01FA90	924 mg/g	631.00	939.00	
					19800 g	Tylosin	QJ01FA90	924 mg/g	136.00	629.00	
600000073094	ebf7-00b-f3fd-40e1-a3e9-9ab3a6f6c08b		Sulfadimidin 100% Pulver	Oral powders	140 kg	Tylosin	QJ01FA90	924000 mg/kg	61.00	399.00	
					576 kg	Sulfadimidine	QJ01EQ03	1000000 mg/kg	672.00	599.00	
					36 kg	Sulfadimidine	QJ01EQ03	1000000 mg/kg	895.00	454.00	
					144 kg	Sulfadimidine	QJ01EQ03	1000000 mg/kg	412.00	307.00	
					24 kg	Sulfadimidine	QJ01EQ03	1000000 mg/kg	174.00	39.00	
6 kg	Sulfadimidine	QJ01EQ03	1000000 mg/kg	607.00	234.00						
2 kg	Sulfadimidine	QJ01EQ03	1000000 mg/kg	374.00	8.00						

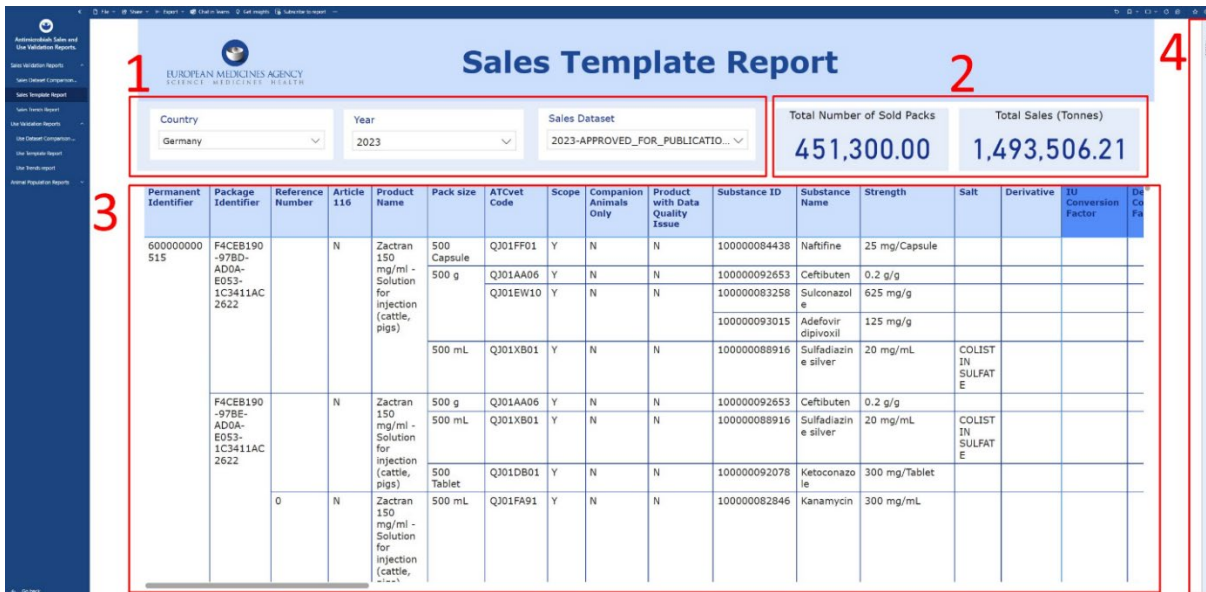
1. **Left filter panel:** The left filter panel includes the exact same filters as in the main Sales Dataset Comparison Report. Any filter selections made in the main report are maintained when the user goes to the Sales Package Detail Report and vice versa.
2. **Table:** the table that constitutes the main body of the report and contains two types of columns:
 - a. Light blue columns that correspond to non-calculated fields that provide information at package level. These fields are: Permanent Identifier, Package Identifier, Product Reference Number, Product Name, Product Form, Pack Size, Substance, ATCvet Code, Strength. For more information about these fields please refer to the ASU protocol linked in section 2.
 - b. Dark blue columns that include:
 - i. **Analysis Dataset Sales (Number of Packs):** This measure displays the total number of packs sold per product presentation in the selected Analysis Dataset.
 - ii. **Baseline Dataset Sales (Number of Packs):** This measure displays the total number of packs sold for each product presentation in the selected Baseline Dataset.
 - iii. The remaining fields correspond to the main KPIs presented at the top of the main Sales Dataset Comparison Report. Please refer to the previous section on the main report for the KPI details.
3. **Right filter panel (expandable):** The right filter panel includes the exact same filters as in the main Sales Dataset Comparison Report with the exception that the 'Filters on this visual' option will not be disabled in this report so that users can filter the data by the different variables displayed in the column headers of the table. The 'Filters on this visual' option becomes available when the user clicks on the table in the main body of the report.
4. **Link to main report:** in the left-hand bottom corner of this report there is a link that redirects the user to the main Sales Dataset Comparison Report.

5.1.2. Sales Template Report

The purpose of the Sales Template Report is for the NCA user to visualise the data contained in an uploaded sales template of their choice in combination to additional information such as the conversion factors applied to each row (if applicable), the amount of antimicrobial substance content calculated per row and the total sold kilograms calculated per row. Each row corresponds to an ingredient of an antimicrobial product presentation.

The structure and the different functionalities of the Sales Template Report are shown in Figure 9 and described below.

Figure 9. Components of the ASU Sales Template Report.



1. Top filter panel – includes the following filters:

- a. **Country:** in this dropdown, single-select filter the user will only be able to see their own country.
- b. **Year:** dropdown, single-select filter in which the reporting year is preselected. The selected Year determines which Sales Datasets are available for selection in the next filter.
- c. **Sales Dataset:** dropdown, single-select filter in which all the available datasets of the selected Country and Year appear. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time).

2. Main KPIs: The following measures are available:

- a. **Total number of Sold Packs:** total number of packs sold in the selected Sales Dataset.
- b. **Total Sales (Tonnes):** total sales in Tonnes in the selected Sales Dataset.

3. Table: the table that constitutes the main body of the report and contains two types of columns:

- a. Light blue columns that correspond to fields originally included in the ASU Sales template⁵. These fields are: Permanent Identifier, Package Identifier, Reference Number, Article 116, Product Name, Pack size, ATCvet code, Scope, Target Animal Group, Product with data quality issue, Substance ID, Substance name, Strength, Salt, Derivative and Total sold packs. For more information about these fields please refer to the ASU protocol linked in section 2.
- b. Dark blue columns that represent fields that have been included specifically for the purpose of this report. These fields are:
 - i. IU conversion factor: provided when the substance of the product presentation has a strength expressed in IU and for which there is a defined IU conversion factor. For more information, please refer to the ASU protocol.
 - ii. Derivative conversion factor: provided when the substance of the product presentation corresponds to an ASU Derivative that has a defined conversion factor. For more information, please refer to the ASU protocol.
 - iii. Substance content per pack (g): obtained by multiplying the strength of each product presentation by the pack size and by the corresponding conversion factor (if applicable).
 - iv. Total Sales (Kg): obtained by multiplying the substance content per pack by the total number of packs sold and converting the amount from grams to kilograms.

4. Right filter panel (expandable): as described in section 4.3 the following additional types of filters are available for this report:

- a. Filter on this visual: these types of filters become available when the user clicks on the table in the report and enable the user to filter the data by the different variables displayed in the column headers of said table.
- b. Filters on this page: includes only the *Product with data quality issue* filter which in this report is not locked so that the user can choose whether to include or not products with data quality issues in the displayed data.
- c. Filters on all pages: when applied on this report the selection is automatically applied to all the remaining sales reports. These additional filters include *ASU product form*, *Antimicrobial Class Level 1*, *Antimicrobial Class Level 2*, *Antimicrobial Class Level 3* and *Antimicrobial Substance*.

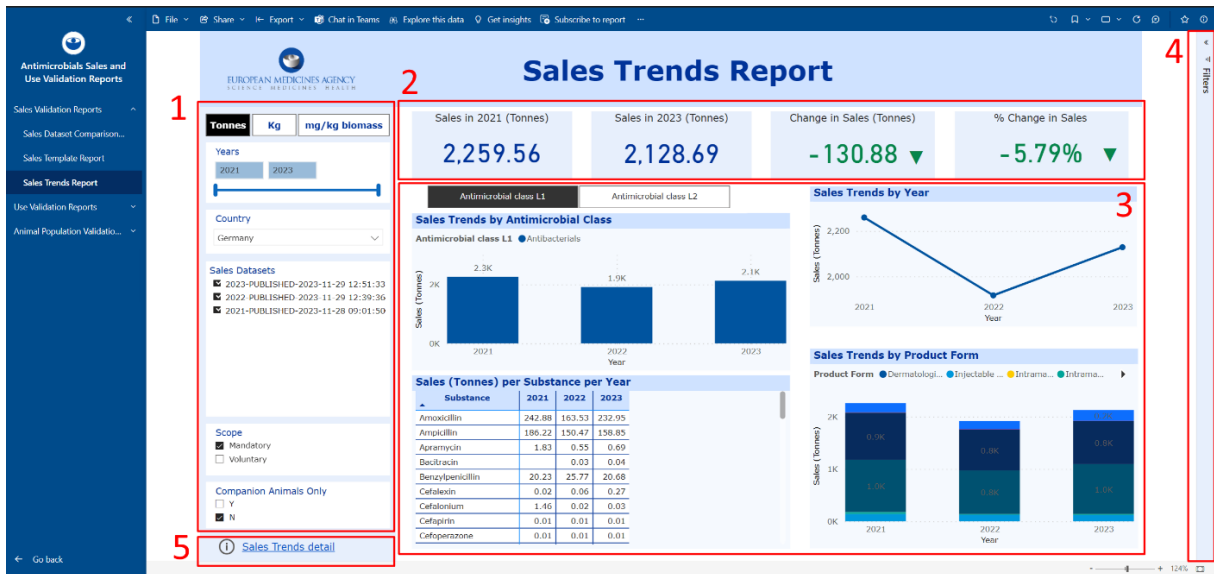
5.1.3. Sales Trends Report

The purpose of Sales Trends Report is for the NCA user to be able to visualise and analyse the sales trends for their country over the time range of their choice.

The structure and the different functionalities of the Sales Trends Report are shown in Figure 10 and described below.

⁵ Column 'Product with Data Quality Issues' is not part of the Sales Template but is added in the Power BI reports to indicate whether there are any data quality issue(s) related to a product presentation.

Figure 10. Components of the ASU Sales Trends Report.



1. Left filter panel – includes the following filters:

- a. Tonnes/Kg/mg/kg biomass: allows the user to select whether the data of the report is shown in Tonnes, kilograms (Kg) or milligrams per kilogram of animal biomass (mg/kg biomass).
- b. Years: range filter with which the user can select a specific range of years by using the slider (with all years available for the existent sales datasets) or by typing the first and the last year in the corresponding boxes. The selected range of years will determine the sales and animal population datasets available for selection in the corresponding filter.
- c. Country: in this dropdown, single-select filter, the NCA user will only be able to see their own country.
- d. Sales Datasets: dropdown, multiselect filter in which all the available sales datasets of the selected country and year range appear, sorted from the most recent to the oldest year in the selected range. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time). The user can change this default selection to that of their preference by using the checkboxes that appear next to each dataset.
- e. Animal Population Datasets: dropdown, multiselect filter in which all the available animal population datasets of the selected country and year range appear, sorted from the most recent to the oldest year in the selected range. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time). The user can change this default selection to that of their preference by using the checkboxes that appear next to each dataset. This filter is only available when the UoM 'mg/kg biomass' is selected.

- f. Scope: multiselect filter that enables users to choose whether the report include sales of products that fall in the mandatory reporting scope, sales of products that fall in the voluntary reporting scope or both⁶.
- g. Target Animal Group: multiselect filter that enables users to choose whether the report includes sales of products destined for food-producing, non-food-producing animals or both⁷.

2. Main KPIs: The following measures are available:

- a. Sales in YYYY1 Year (UoM): total sales in the oldest year of the selected range.
- b. Sales in YYYY2 Year (UoM): total sales in the most recent year of the selected range.
- c. Change in Sales (UoM): change in total sales between the first and last years of the selected range.

$$\text{Change in sales (UoM)} = \text{Sales in YYYY2 (most recent year)} - \text{Sales in (YYYY1 oldest year)}$$

- d. % Change in Sales: percentage change in total sales between the first and last years of the selected range.

$$\% \text{ Change in sales} = \frac{\text{Sales in YYYY2 (most recent year)} - \text{Sales in (YYYY1 oldest year)}}{\text{Sales in YYYY1 (oldest year)}} \times 100$$

3. Visuals: The following visuals are available:

- a. Sales Trends by Antimicrobial Class: this top left-hand stacked bar graph enables the user to analyse the sales trends by antimicrobial class (level 1 or 2) over the last ten years of the selected year range. By selecting the different bars of the graph, the KPIs and the other visuals of the report are automatically updated to show the data corresponding to the antimicrobial class of the selected bar. To remove this selection, click elsewhere on the visual. By default, Antimicrobial Class Level 1 is presented and it is advised to use focus mode (described in section 4.4.2) to visualise the Antimicrobial Class Level 2.
- b. Sales Trends by Year: this top right-hand line chart enables the user to analyse the total sales trends over the entire selected year range. By selecting the different time points of the line chart, the KPIs and the other visuals of the report are automatically updated to show the data corresponding to the selected year. To remove this selection, click elsewhere on the visual.
- c. Sales (UoM) per Substance per Year: this bottom left-hand table enables the user to analyse the sales per antimicrobial substance over the entire selected year range. By selecting the different cells of the table, the KPIs and the other visuals of the report are automatically updated to show the data corresponding to the selected substance, year or substance/year combination. To remove this selection, click elsewhere on the visual.
- d. Sales Trends by Product Form: this stacked bar graph enables the user to analyse the sales trends per product over the last ten years of the selected year range. By selecting the different bars of the graph, the KPIs and the other visuals of the report are automatically updated to show the data corresponding to the product form of the selected bar. To remove this selection, click elsewhere on the visual.

⁶ As per Articles 1 and 2 of the Commission Delegated Regulation (EU) 2021/578 and specified in annexes 1 and 2.

⁷ This filter is based on the sales template field Companion animals only, where 'non-food-producing animals' is equivalent to Companion animals only = Y and 'food-producing animals' to Companion animals only = N.

4. Right filter panel (expandable): as described in section 4.3 the following additional types of filters are available for this report:

- a. Filter on this visual: although currently available, this type of filter will be deactivated in this report.
- b. Filters on this page: includes only the *Product with data quality issue* filter which is locked as products with data quality issues are excluded by default from the data displayed in the report and this selection cannot be changed by the user.
- c. Filters on all pages: when applied on this report the selection is automatically applied to all the remaining sales reports. These additional filters include *ASU product form*, *Antimicrobial Class Level 1*, *Antimicrobial Class Level 2*, *Antimicrobial Class Level 3* and *Antimicrobial Substance*.

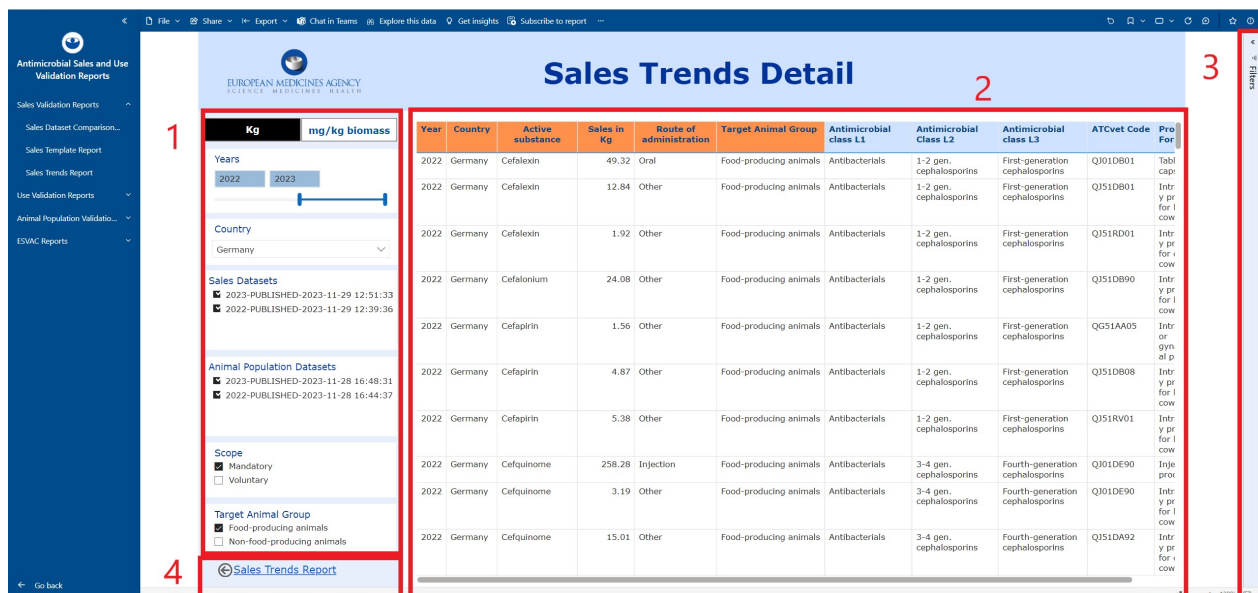
5. Links to sub reports: in the left-hand bottom corner of this report there is one link that redirects the user to the Sales Trends Detail Report which is described in the next subsection.

5.1.3.1. Sales Trends Detail Report

The purpose of Sales Trends Detail Report is for the NCA user to be able to visualise and analyse the sales trends at substance level for their country over the time range of their choice. Furthermore, **it allows users to extract data in the format requested for reporting antimicrobial sales data to WOAH via ANIMUSE⁸.**

The structure and the different functionalities of the Sales Trends Detail Report are shown in Figure 11 and described below.

Figure 11. Components of the ASU Sales Trends Detail Report.



1. Left filter panel: The left filter panel includes the exact same filters as in the main Sales Trends Report. Any filter selections made in the main report are maintained when the user goes to the Sales Trends Detail Report and vice versa.

⁸ <https://amu.woah.org/amu-system-portal/home>

2. **Table:** the table that constitutes the main body of the report and contains two types of columns:
 - a. Orange columns that provide information in the correct order and format for reporting data to ANIMUSE and include Year, Country, Active Substance, Sales in Kg, Route of administration, Target Animal Group⁹. To extract the data for WOA ANIMUSE reporting purposes the 'Export data' action button can be used (for more information please refer to section 4.4.2)
 - b. Light blue columns that provide additional information not needed for WOA ANIMUSE reporting purposes: Antimicrobial Class L1, Antimicrobial Class L2, Antimicrobial Class L3, ATCvet Code, Product Form.
3. **Right filter panel (expandable):** The right filter panel includes the exact same filters as in the main Sales Trends Report with the exception that the 'Filters on this visual' option will not be disabled in this report so that users can filter the data by the different variables displayed in the column headers of the table. The 'Filters on this visual' option becomes available when the user clicks on the table in the main body of the report.
4. **Link to main report:** in the left-hand bottom corner of this report there is a link that redirects the user to the main Sales Trends Report.

5.2. Use Validation Reports

The ASU Use Validation Reports enable NCA users to validate and analyse the data on use of antimicrobial medicinal products in animals uploaded to the ASU Platform.

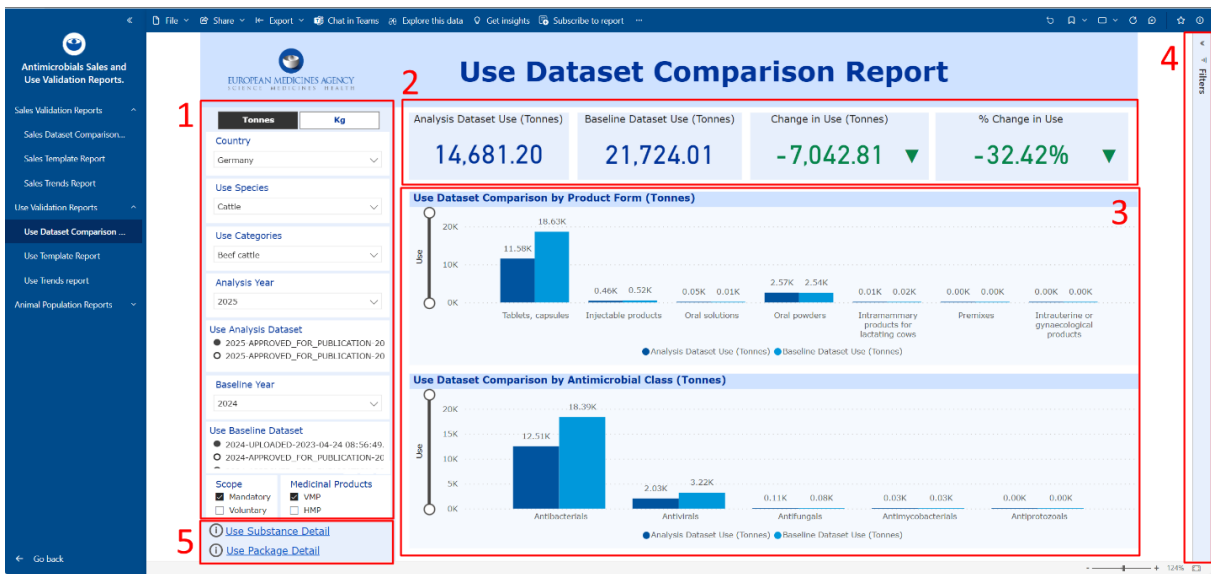
5.2.1. Use Dataset Comparison Report

The purpose of the Use Dataset Comparison Report is to allow the NCA user to compare two use datasets of their choice. In the report it is possible to select an **analysis use dataset** (automatically preselected as the latest use dataset uploaded for the reporting year) and a **baseline use dataset** to which the analysis use dataset will be compared. For validation purposes, it is recommended for the user to compare the use dataset of the reporting year with that of the previous year to detect major changes that may need to be further explored or justified. However, the selection of analysis and baseline use datasets is completely flexible, allowing the user to make whatever comparisons they like.

The structure and the different functionalities of the Use Dataset Comparison Report are shown in Figure 12 and described below.

⁹ This column is based on the sales template field Companion animals only, where 'non-food-producing animals' is equivalent to Companion animals only = Y and 'food-producing animals' to Companion animals only = N.

Figure 12. Components of the ASU Use Dataset Comparison Report.



1. Left filter panel: The following filters are available:

- a. **Tonnes/Kg:** allows the user to select whether the data of the report is shown in Tonnes or kilograms.
- b. **Country:** in this dropdown, single-select filter, the NCA user will only be able to see their own country.
- c. **Use Species:** dropdown, single-select filter in which the use species Cattle is preselected. The selected Use Species determines which Use Categories and which Use Datasets are available for selection in the next filters.
- d. **Use Categories:** dropdown, multiselect filter which all the Use Categories belonging to the selected Use Species are selected by default. The user can select the Use Categories of their choice.
- e. **Analysis Year:** dropdown, single-select filter in which the reporting year is preselected. The selected Analysis Year determines which Use Analysis Datasets are available for selection in the next filter.
- f. **Use Analysis Dataset:** dropdown, single-select filter in which all the available datasets of the selected Country, Use Species and Analysis Year appear. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time).
- g. **Baseline Year¹⁰:** dropdown, single-select filter in which the reporting year is preselected. The selected Baseline Year determines which Use Baseline Datasets are available for selection in the next filter.
- h. **Use Baseline Dataset:** dropdown, single-select filter in which all the available datasets of the selected Country, Use Species and Baseline Year appear. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time).

¹⁰ The initial requirement to have the Baseline Year as the year before the Analysis Year is not technically feasible.

- i. Scope: multiselect filter that enables users to choose whether the report include use of products that fall in the mandatory reporting scope, use of products that fall in the voluntary reporting scope or both¹¹.
- j. Medicinal Products: multiselect filter that enables users to choose whether the report includes the reported use of VMPs (Veterinary Medicinal Products), HMPs (Human Medicinal Products) or both.

2. Main KPIs: The following measures are available:

- a. Analysis Dataset Use (UoM): total use in the selected Analysis Dataset.
- b. Baseline Dataset Use (UoM): total use in the selected Baseline Dataset.
- c. Change in Use (UoM): change in total use between the selected datasets.

$$\text{Change in use (UoM)} = \text{Use in Analysis Dataset} - \text{Use in Baseline dataset}$$

- d. % Change in Use: percentage change in total use between the selected datasets.

$$\% \text{ Change in use} = \frac{\text{Use in Analysis Dataset} - \text{Use in Baseline dataset}}{\text{Use in Baseline dataset}} \times 100$$

3. Visuals: The following visuals are available:

- a. Use Dataset Comparison by Product Form (UoM): this bar graph enables the user to compare the use by product form between the selected datasets. The scale of the Y axis can be manually adjusted by the user. By selecting the different bars of the graph, the KPIs and the second visual of the report are automatically updated to show the data corresponding to the product form of the selected bar. To remove this selection, click elsewhere on the visual. Additionally, the user can hover over a visuals to see additional information such as the absolute change in Use.
- b. Use Dataset Comparison by Antimicrobial Class (UoM): this bar graph enables the user to compare the use by antimicrobial class (levels 1, 2 and 3) or substance between the selected datasets. The scale of the Y axis can be manually adjusted by the user. By selecting the different bars of the graph, the KPIs and the first visual of the report are automatically updated to show the data corresponding to the antimicrobial class of the selected bar. To remove this selection, click elsewhere on the visual. In this visual, the drill down buttons described in section 4.4.2 are activated to allow users to navigate between the different levels of granularity (3 levels of antimicrobial classes and antimicrobial substance). By default, Antimicrobial Class Level 1 is presented and it is advised to use focus mode (also described in section 4.4.2) to visualise the more granular levels of information. Additionally, user can hover over a visual to see additional information such as the absolute change in Use.

4. Right filter panel (expandable): as described in section 4.3 the following additional types of filters are available for this report:

- a. Filter on this visual: although currently available, this type of filter will be deactivated in this report.
- b. Filters on this page: includes only the *Product with data quality issue* filter which is locked as products with data quality issues are excluded by default from the data displayed in the report and this selection cannot be changed by the user.

¹¹ As per Articles 3 and 4 of the Commission Delegated Regulation (EU) 2021/578 and specified in annexes 3 and 4.

- c. Filters on all pages: when applied on this report the selection is automatically applied to all the remaining sales reports. These additional filters include *ASU product form*, *Antimicrobial Class Level 1*, *Antimicrobial Class Level 2*, *Antimicrobial Class Level 3* and *Antimicrobial Substance*.

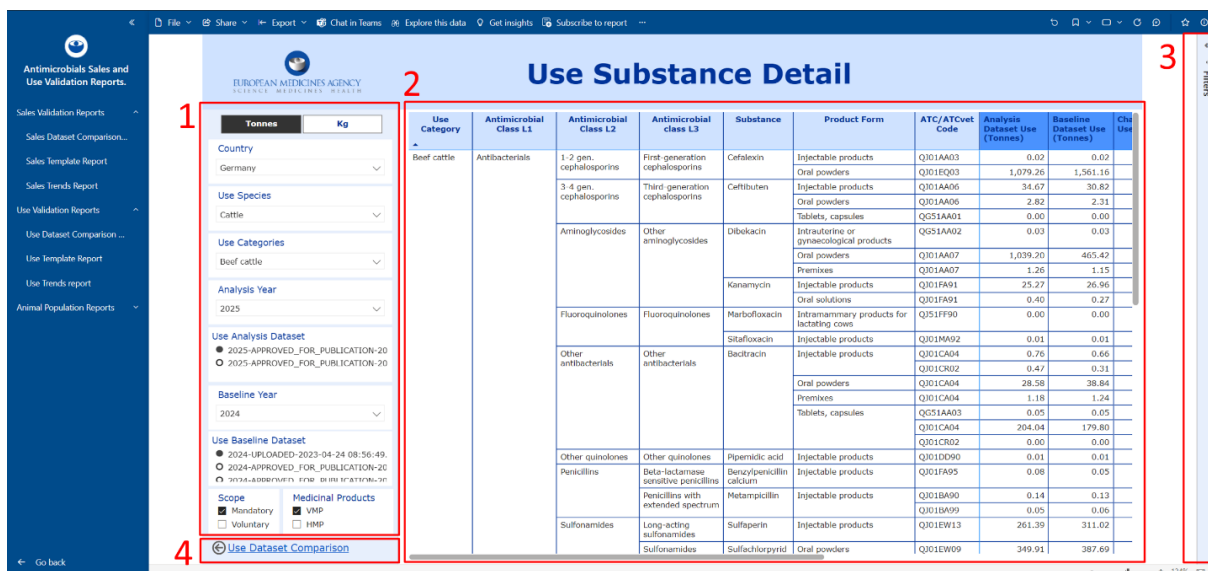
5. Links to sub reports: in the left-hand bottom corner of this report there are two links that redirect the user to the Use Substance Detail Report and Use Package Detail Report which are described in the next subsections.

5.2.1.1. Use Substance Detail Report

The purpose of the Use Substance Detail Report is to allow the NCA user to compare two use datasets of their choice at the substance level in a similar manner to the main Use Dataset Comparison Report by selecting analysis and baseline datasets.

The structure and the different functionalities of the Use Substance Detail Report are shown in Figure 13 and described below.

Figure 13. Components of the ASU Use Substance Detail Report.



- 1. Left filter panel:** The left filter panel includes the exact same filters as in the main Use Dataset Comparison Report. Any filter selections made in the main report are maintained when the user goes to the Use Substance Detail Report and vice versa.
- 2. Table:** the table that constitutes the main body of the report and contains two types of columns:
 - a. Light blue columns** that correspond to non-calculated fields that provide information at substance level. These fields are Use Category, Antimicrobial Class L1, Antimicrobial Class L2, Antimicrobial Class L3, Substance, Product Form, ATC/ATCvet Code. For more information about these fields please refer to the ASU protocol linked in section 2.
 - b. Dark blue columns** that represent calculated that correspond to the main KPIs that are presented at the top of the main Use Dataset Comparison Report. Please refer to the previous section on the main report for the KPI details.
- 3. Right filter panel (expandable):** The right filter panel includes the exact same filters as in the main Use Dataset Comparison Report with the exception that the 'Filters on this visual'

option will not be disabled in this report so that users can filter the data by the different variables displayed in the column headers of the table. The 'Filters on this visual' option becomes available when the user clicks on the table in the main body of the report.

- 4. Link to main report:** in the left-hand bottom corner of this report there is a link that redirects the user to the main Use Dataset Comparison Report.

5.2.1.2. Use Package Detail Report

The purpose of the Use Package Detail Report is to allow the NCA user to compare two use datasets of their choice at the antimicrobial medicinal package level in a similar manner to the main Use Dataset Comparison Report by selecting analysis and baseline datasets.

The structure and the different functionalities of the Use Package Detail Report are shown in Figure 14 and described below.

Figure 14. Components of the ASU Use Package Detail Report.

The screenshot shows the 'Use Package Detail' report interface. On the left is a filter panel (1) with sections for 'Country' (Germany), 'Use Species' (Cattle), 'Use Categories' (beef cattle), 'Analysis Year' (2025), 'Use Analysis Dataset' (2025-APPROVED_FOR_PUBLICATION-20), 'Baseline Year' (2024), and 'Use Baseline Dataset' (2024-UPLOADED-2023-04-24 08:56:49). The main table (2) displays data for various products like Zactran 150, Zolexis 400, Increzoa 100, Droxoin 100, and Rozoxolide 100. The right side has a filter panel (3). At the bottom left of the table area is a 'Use Dataset Comparison' link (4).

- 1. Left filter panel:** The left filter panel includes the exact same filters as in the main Use Dataset Comparison Report. Any filter selections made in the main report are maintained when the user goes to the Use Package Detail Report and vice versa.
- 2. Table:** the table that constitutes the main body of the report and contains two types of columns:
 - a. Light blue columns** that correspond to non-calculated fields that provide information at package level. These fields are Use Category, Permanent Identifier, Package Identifier, Product Reference Number, Product Name, Product Form, Pack Size, Substance, ATC/ATCvet Code, Strength. For more information about these fields please refer to the ASU protocol linked in section 2.
 - b. Dark blue columns** that include:
 - i. Analysis Dataset Use (Number of Packs):** total number of packs used per product presentation in the selected Analysis Dataset.

- ii. Baseline Dataset Use (Number of Packs): total number of packs used per product presentation in the selected Baseline Dataset.
- iii. The remaining fields correspond to the main KPIs that are presented at the top of the main Use Dataset Comparison Report. Please refer to the previous section on the main report for the KPI details.

3. Right filter panel (expandable): The right filter panel includes the exact same filters as in the main Use Dataset Comparison Report with the exception that the 'Filters on this visual' option will not be disabled in this report so that users can filter the data by the different variables displayed in the column headers of the table. The 'Filters on this visual' option becomes available when the user clicks on the table in the main body of the report.

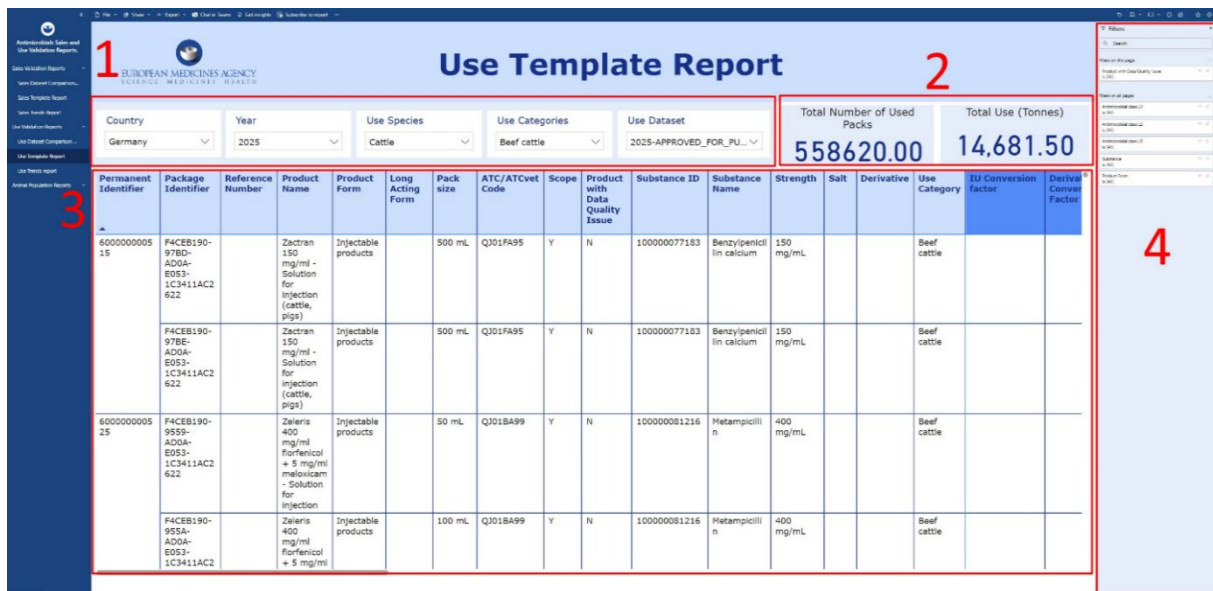
4. Link to main report: in the left-hand bottom corner of this report there is a link that redirects the user to the main Use Dataset Comparison Report.

5.2.2. Use Template Report

The purpose of the Use Template Report is for the NCA user to visualise the data contained in an uploaded use template of their choice in combination to additional information such as the conversion factors applied to each row (if applicable), the amount of antimicrobial substance content calculated per row and the total used kilograms calculated per row. Each row corresponds to an ingredient of an antimicrobial product presentation.

The structure and the different functionalities of the Use Template Report are shown in Figure 15 and described below.

Figure 15. Components of the ASU Use Template Report.



1. Filter panel on top: The following filters are available:

- a. Country: in this dropdown, single-select filter, the NCA user will only be able to see their own country.
- b. Year: dropdown, single-select filter in which the reporting year is preselected. The selected Year determines which Use Datasets are available for selection in the next filter.

- c. Use Species: dropdown, single-select filter in which the use species Cattle is preselected. The selected Use Species determines which Use Categories and which Use Datasets are available for selection in the following filters.
 - d. Use Categories: dropdown, multiselect filter which all the Use Categories belonging to the selected Use Species are selected by default. The user can select the Use Categories of their choice.
 - e. Use Dataset: dropdown, single-select filter in which all the available datasets of the selected Country, Year and Use Species appear. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time).
- 2. Main KPIs:** The following measures are available:
- a. Total number of Used Packs: total number of packs used in the selected Use Dataset.
 - b. Total Use (Tonnes): total use in Tonnes in the selected Use Dataset.
- 3. Table:** the table that constitutes the main body of the report and contains two types of columns:
- a. Light blue columns that correspond to fields originally included in the ASU Use template¹². These fields are: Permanent Identifier, Package Identifier, Reference Number, Product Name, Product form, Long-acting form, Pack size, ATC/ATCvet code, Scope, Product with data quality issue, Substance ID, Substance name, Strength, Salt, Derivative, Use category and Total Used packs. For more information about these fields please refer to the ASU protocol linked in section 2.
 - b. Dark blue columns that represent fields that have been included specifically for the purpose of this report. These fields are:
 - i. IU conversion factor: provided when the substance of the product presentation has a strength expressed in IU and for which there is a defined IU conversion factor. For more information, please refer to the ASU protocol.
 - ii. Derivative conversion factor: provided when the substance of the product presentation corresponds to an ASU Derivative that has a defined conversion factor. For more information, please refer to the ASU protocol.
 - iii. Substance content per pack (g): obtained by multiplying the strength of each product presentation by the pack size and by the corresponding conversion factor (if applicable).
 - iv. Total Use (Kg): obtained by multiplying the substance content per pack by the total number of packs used and converting the amount from grams to kilograms.
- 4. Right filter panel (expandable):** as described in section 4.3 the following additional types of filters are available for this report:

¹² Column 'Product with Data Quality Issues' is not part of the Sales Template but is added in the Power BI reports to indicate whether there are any data quality issue(s) related to a product presentation.

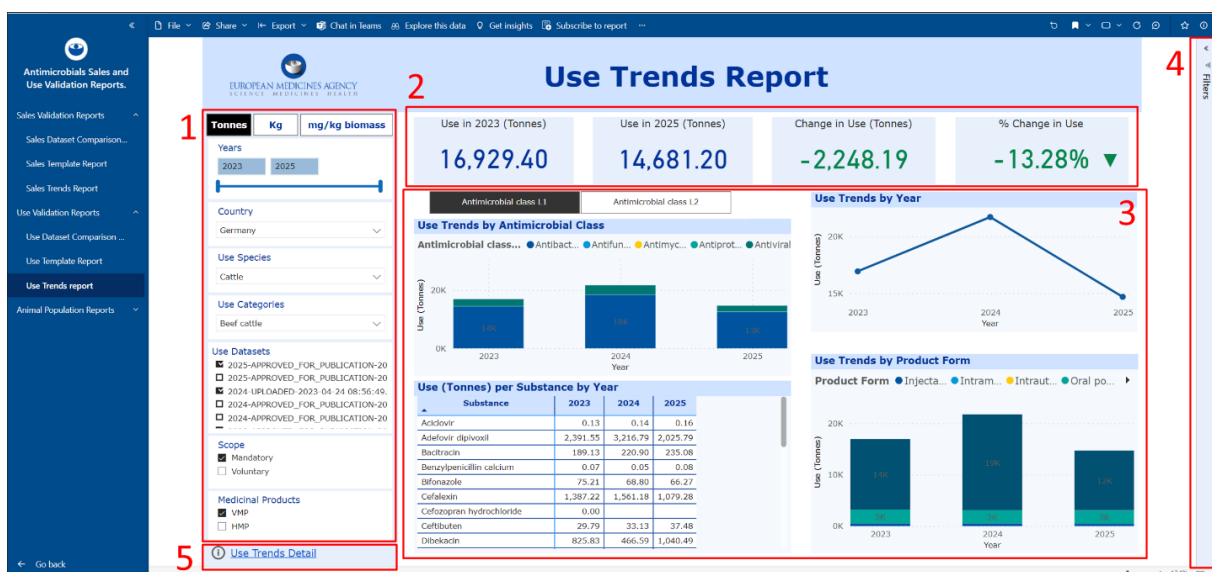
- Filter on this visual: these types of filters become available when the user clicks on the table in the report and enable the user to filter the data by the different variables displayed in the column headers of said table.
- Filters on this page: includes only the *Product with data quality issue* filter which in this report is not locked so that the user can choose whether to include or not products with data quality issues in the displayed data.
- Filters on all pages: when applied on this report the selection is automatically applied to all the remaining sales reports. These additional filters include *ASU product form*, *Antimicrobial Class Level 1*, *Antimicrobial Class Level 2*, *Antimicrobial Class Level 3* and *Antimicrobial Substance*.

5.2.3. Use Trends Report

The purpose of Use Trends Report is for the NCA user to be able to visualise and analyse the use trends for their country over the time range and animal species of their choice.

The structure and the different functionalities of the Use Trends Report are shown in Figure 16 and described below.

Figure 16. Components of the ASU Use Trends Report.



1. Left filter panel: The following filters are available:

- Tonnes/Kg/mg/kg biomass: allows the user to select whether the data of the report is shown in Tonnes, kilograms (Kg) or milligrams per kilogram of animal biomass (mg/kg biomass).
- Years: range filter with which the user can select a specific range of years by using the slider (with all years available for the existent sales datasets) or typing the first and the last year in the corresponding boxes. The selected range of years will determine the use and animal population datasets available for selection in the corresponding filter.

- c. Country: in this dropdown, single-select filter, the NCA user will only be able to see their own country.
- d. Use Species: dropdown, single-select filter in which the use species Cattle is preselected. The selected Use Species determines which Use Categories and which Use datasets are available for selection in the next filters.
- e. Use Categories: dropdown, multiselect filter which all the Use Categories belonging to the selected Use Species are selected by default. The user can select the Use categories of their choice.
- f. Use Datasets: dropdown, multiselect filter in which all the available use datasets of the selected country, year range and Use Species appear, sorted from the most recent to the oldest year in the selected range. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time). The user can change this default selection to that of their preference by using the checkboxes that appear next to each dataset.
- g. Animal Population Datasets: dropdown, multiselect filter in which all the available animal population datasets of the selected country and year range appear, sorted from the most recent to the oldest year in the selected range. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time). The user can change this default selection to that of their preference by using the checkboxes that appear next to each dataset. This filter is only available when the UoM 'mg/kg biomass' is selected.
- h. Scope: multiselect filter that enables users to choose whether the report include use of products that fall in the mandatory reporting scope, use of products that fall in the voluntary reporting scope or both¹³.
- i. Medicinal Products. multiselect filter that enables users to choose whether the report includes the reported use of VMPs (Veterinary Medicinal Products), HMPs (Human Medicinal Products) or both.

2. Main KPIs: The following measures are available:

- a. Use in YYYY1 Year (UoM): total use in the oldest year of the selected range.
- b. Use in YYYY2 Year (UoM): total use in the most recent year of the selected range.
- c. Change in Use (UoM): change in total use between the first and last years of the selected range.

$$i. \text{ Change in use (UoM)} = \text{Use in YYYY2 (most recent year)} - \text{Use in (YYYY1 oldest year)}$$

- d. % Change in Use: percentage change in total use between the first and last years of the selected range.

$$\% \text{ Change in use} = \frac{\text{Use in YYYY2 (most recent year)} - \text{Use in (YYYY1 oldest year)}}{\text{Use in YYYY1 (oldest year)}} \times 100$$

3. Visuals: The following visuals are available:

¹³ As per Articles 3 and 4 of the Commission Delegated Regulation (EU) 2021/578 and specified in annexes 3 and 4.

- a. Use Trends by Antimicrobial Class: this top left-hand stacked bar graph enables the user to analyse the use trends by antimicrobial class (level 1 or 2) over the last ten years of the selected year range. By selecting the different bars of the graph, the KPIs and the other visuals of the report are automatically updated to show the data corresponding to the antimicrobial class of the selected bar. To remove this selection, click elsewhere on the visual. By default, Antimicrobial Class Level 1 is presented and it is advised to use focus mode (described in section 4.4.2) to visualise the Antimicrobial Class Level 2.
- b. Use Trends by Year: this top right-hand line chart enables the user to analyse the total use trends over the entire selected year range. By selecting the different time points of the line chart, the KPIs and the other visuals of the report are automatically updated to show the data corresponding to the selected year. To remove this selection, click elsewhere on the visual.
- c. Use (UoM) per Substance per Year: this bottom left-hand table enables the user to analyse the use by antimicrobial substance over the entire selected year range. By selecting the different cells of the table, the KPIs and the other visuals of the report are automatically updated to show the data corresponding to the selected substance, year or substance/year combination. To remove this selection, click elsewhere on the visual.
- d. Use Trends by Product Form: this stacked bar graph enables the user to analyse the use trends per product over the last ten years of the selected year range. By selecting the different bars of the graph, the KPIs and the other visuals of the report are automatically updated to show the data corresponding to the product form of the selected bar. To remove this selection, click elsewhere on the visual.

4. Right filter panel (expandable): as described in section 4.3 the following additional types of filters are available for this report:

- a. Filter on this visual: although currently available, this type of filter will be deactivated in this report.
- b. Filters on this page: includes only the *Product with data quality issue* filter which is locked as products with data quality issues are excluded by default from the data displayed in the report and this selection cannot be changed by the user.
- c. Filters on all pages: when applied on this report the selection is automatically applied to all the remaining sales reports. These additional filters include *ASU product form*, *Antimicrobial Class Level 1*, *Antimicrobial Class Level 2*, *Antimicrobial Class Level 3* and *Antimicrobial Substance*.

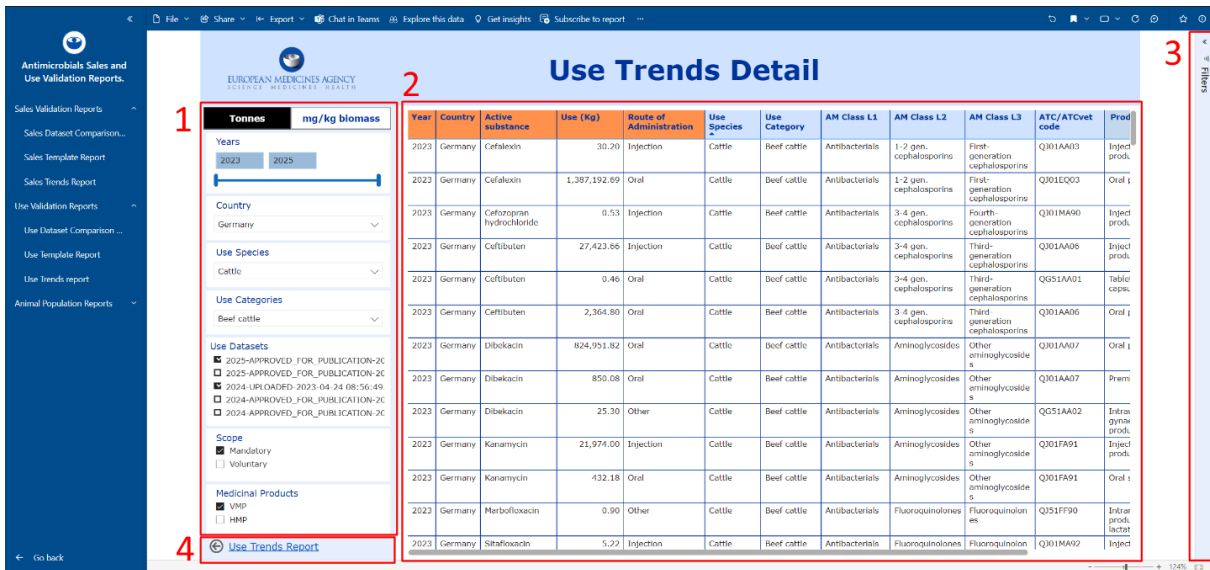
5. Links to sub reports: in the left-hand bottom corner of this report there is one link that redirects the user to the Use Trends Detail Report which is described in the next subsection.

5.2.3.1. Use Trends Detail Report

The purpose of Use Trends Detail Report is for the NCA user to be able to visualise and analyse the use trends at substance level for their country, over the time range and for the Use Species of their choice.

The structure and the different functionalities of the Use Trends Detail Report are shown in Figure 17 and described below.

Figure 17. Components of the ASU Use Trends Detail Report.



1. **Left filter panel:** The left filter panel includes the exact same filters as in the main Use Trends Report. Any filter selections made in the main report are maintained when the user goes to the Use Trends Detail Report and vice versa.
2. **Table:** the table that constitutes the main body of the report and contains two types of columns:
 - a. **Orange columns** that provide information that follows the same layout as in the equivalent sales report, i.e. aligned with WOA template. Currently, for WOA ANIMUSE reporting purposes, only sales data is requested. These columns are Year, Country, Active Substance, Use in Kg, Route of administration.
 - b. **Light blue columns** that provide additional information: Use species, Use category, Antimicrobial Class L1, Antimicrobial Class L2, Antimicrobial Class L3, ATC/ATCvet Code, Product Form.
3. **Right filter panel (expandable):** The right filter panel includes the exact same filters as in the main Use Trends Report with the exception that the 'Filters on this visual' option will not be disabled in this report so that users can filter the data by the different variables displayed in the column headers of the table. The 'Filters on this visual' option becomes available when the user clicks on the table in the main body of the report.
4. **Link to main report:** in the left-hand bottom corner of this report there is a link that redirects the user to the main Use Trends Report.

5.3. Animal Population Validation Reports

The ASU Animal Population Validation Reports enable NCA users to validate and analyse the data on animal population uploaded to the ASU Platform.

5.3.1. Animal Population Template Report

The purpose of the Animal Population Template Report is for the NCA user to visualise the data contained in an uploaded animal population template of their choice in addition to the standard weights

applied to each row and the corresponding calculated PCU (as per ESVAC methodology) and animal biomass. Each row corresponds to an animal population category.

The structure and the different functionalities of the Animal Population Template Report are shown in Figure 18 and described below.

Figure 18. Components of the ASU Animal Population Template Report.

Country	Year	Animal Species	Population Category	Population Measurement	Reference Value	Value Submitted	Source	Source URL	Justification	ESVAC Denominator	ESVAC Weight (Kg)	ASU Denominator	ASU Weight (kg)
Germany	2023	Finfish	Biomass of farmed fish produced	tonne		197,268.00	National statistics		No eurostat data	Y	0.00	N	
			Atlantic salmon	tonne		142,721.00	National statistics		No eurostat data	N		Y	
			Common carp	tonne		64,149.00	National statistics		No eurostat data	N		Y	
			European seabass	tonne		123,513.00	National statistics		No eurostat data	N		Y	
			Gilthead seabream	tonne		74,751.00	National statistics		No eurostat data	N		Y	
			Rainbow trout	tonne		124,480.00	National statistics		No eurostat data	N		Y	
		Cattle	Slaughtered Bullocks and Bulls (B1210_1220)	head(s)		193,131.00	National statistics		No eurostat data	Y	425.00	N	
			Slaughtered Cow (B1230)	head(s)		119,716.00	National statistics		No eurostat data	Y	425.00	N	
			Slaughtered Heifer (B1240)	head(s)		165,708.00	National statistics		No eurostat data	Y	200.00	N	
			Slaughtered Calves and Young Cattle (B1100)	head(s)		157,405.00	National statistics		No eurostat data	Y	140.00	Y	3
			Dairy Cow (A2300F)	head(s)		21,350.00	National statistics		No eurostat data	Y	425.00	Y	5
			Bovine for Slaughter - IN	head(s)	734.00	734.00	National statistics		No eurostat data	Y	425.00	N	
			Bovine for Fattening - IN	head(s)	890.00	890.00	National statistics		No eurostat data	Y	140.00	N	

1. Top filter panel – includes the following filters:

- a. **Country:** in this dropdown, single-select filter, the NCA user will only be able to see their own country.
- b. **Year:** dropdown, single-select filter in which the reporting year is preselected. The selected Year determines which Animal Population Datasets are available for selection in the next filter.
- c. **Animal Population Dataset:** dropdown, single-select filter in which all the available datasets of the selected Country and Year appear. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time).

2. Main KPIs: The following measures are available:

- a. **PCU (1000 Tonnes):** total PCU expressed in 1000 Tonnes calculated for the entire dataset (only including those animal population categories that are considered for the PCU denominator, as per ESVAC methodology).
- b. **Biomass (1000 Tonnes):** total animal biomass expressed in 1000 Tonnes calculated for the entire dataset (only including those animal population categories that are considered for the Biomass denominator, as described in the Guideline on the reporting of antimicrobial sales and use in animals at the EU level – denominators and indicators linked in section 2).

3. Table: the table that constitutes the main body of the report and contains two types of columns:

- a. Light blue columns that correspond to fields originally included in the ASU Animal Population Template. These fields are Animal Species, Population category, Reference Value, Submitted Value, Source, Source URL and Justification. For more information about these fields please refer to the ASU protocol linked in section 2.
- b. Dark blue columns that represent fields that have been included specifically for the purpose of this report. For more information about these fields please refer to the Guideline on the reporting of antimicrobial sales and use in animals at the EU level – denominators and indicators linked in section 2. These fields are:
 - i. %Variation Submitted Value vs Reference Value: column used to indicate the percentage of the variation between the Submitted Value and Reference Value.
 - ii. Biomass denominator: column used to indicate whether the population category is included in the Biomass denominator calculation (if it is then the field is filled with a 'Y').
 - iii. Biomass weight (Kg): standard weight expressed in kilograms attributed to the animal population category for the calculation of the corresponding biomass.
 - iv. Biomass (Tonnes): biomass expressed in tonnes calculated for that specific animal population category.
 - v. PCU denominator: column used to indicate whether the population category is included in the PCU denominator calculation (if it is then the field is filled with a 'Y').
 - vi. PCU weight (Kg): standard weight expressed in kilograms attributed to the animal population category for the calculation of the corresponding PCU.
 - vii. PCU (Tonnes): PCU expressed in tonnes calculated for that specific animal population category.

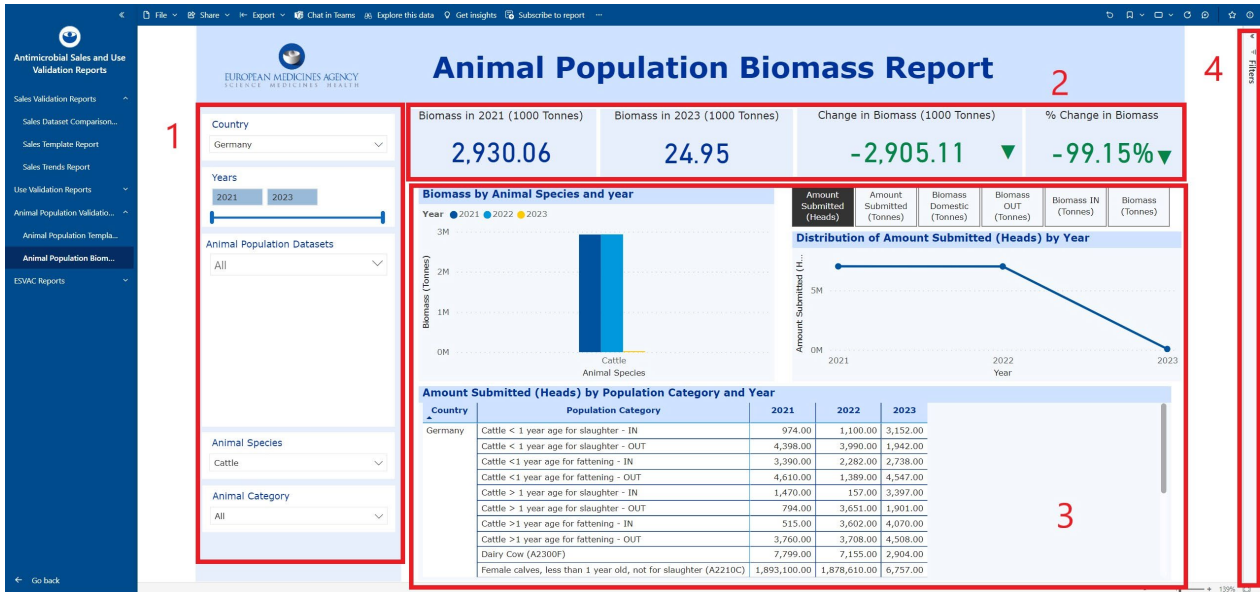
5. Right filter panel (expandable): of the additional filters described in section 4.3, in this report only the 'Filter on this visual' will be available when the user clicks on the table in the report. These filters enable the user to filter the data by the different variables displayed in the column headers of said table.

5.3.2. Animal Population Biomass Report

The purpose of the Animal Population Biomass Report is for the NCA user to be able to visualise and analyse the animal population trends for their country and over the time range of their choice for those animal population categories used to calculate the Biomass denominator.

The structure and the different functionalities of the Animal Population Biomass Report are shown in Figure 19 and described below.

Figure 19. Components of the ASU Animal Population Biomass Report.



1. Left filter panel: The following filters are available:

- a. **Country:** in this dropdown, single-select filter, the NCA user will only be able to see their own country.
- b. **Years:** range filter with which the user can select a specific range of years by using the slider (with all years available for the existing animal population datasets) or typing the first and the last year in the corresponding boxes. The selected range of years will determine the animal population datasets available for selection in the corresponding filter.
- c. **Animal Population Datasets:** dropdown, multiselect filter in which all the available animal population datasets of the selected country and year range appear, sorted from the most recent to the oldest year in the selected range. The most recent dataset is preselected based on the dataset status (priority order: Published > Approved for Publication > Submitted > Uploaded > Cancelled or Superseded) and the upload timestamp (date and time). The user can change this default selection to that of their preference by using the checkboxes that appear next to each dataset.
- d. **Animal Species:** dropdown, single-select filter that allows the user to determine for which Animal Species data is shown in the report and which Animal Categories are available for selection in the next filter. The Animal Species correspond to the Use Species and by default the first Animal Species is selected as per the defined order (Cattle).
- e. **Animal Categories:** dropdown, multiselect filter that allows the user to choose which Animal Category data is shown in the report. The Animal Categories correspond to the Use Categories and by default all the Animal Categories belonging to the selected Animal Species are preselected.

2. Main KPIs: The following measures are available:

- a. **Biomass in YYYY1 Year (1000 Tonnes):** total biomass in the oldest year of the selected range.

- b. Biomass in YYYY2 Year (1000 Tonnes): total biomass in the most recent year of the selected range.
- c. Change in Biomass (1000 Tonnes): change in total biomass between the first and last years of the selected range.

Change in biomass (1000 tonnes) = Biomass in YYYY2 (most recent year) – Biomass in (YYYY1 oldest year)

- d. % Change in Biomass: percentage change in total biomass between the first and last years of the selected range.

$$\% \text{ Change in biomass} = \frac{\text{Biomass in YYYY2 (most recent year)} - \text{Biomass in (YYYY1 oldest year)}}{\text{Biomass in YYYY1 (oldest year)}} \times 100$$

3. Visuals: The following visuals are available

- a. Biomass by Animal Species and year: this top left-hand bar graph enables the user to analyse the animal population biomass trends expressed in tonnes by animal species over the last five years of the selected year range.
- b. Distribution of (UoM) by year: this top right-hand line chart enables the user to analyse the animal population biomass trends over the entire selected year range. Above the line chart are six tile filters that enable the user to select what type of biomass data is displayed in the line chart and in the table below. The title and the units of measurement of this visual are automatically updated depending on the selected tile filter.
- c. (UoM) by Population category per Year: this bottom left-hand table enables the user to analyse the animal population biomass trends over the entire selected year range. The title and the units of measurement of this visual are automatically updated depending on which of the tile filters displayed above the previous visual is selected.

4. Right filter panel (expandable): for this report no additional filters are available to be applied at visual or page level.

5.4. ESVAC Validation Reports

Currently the ASU team is developing a new set of validation reports in which it will be possible to compare ESVAC and ASU sales data. This user guide will be updated once these reports are finalised and made available.