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# *SIGMA-EST and DATA SUBMISSION*

## *OPERATIVE MANUAL*

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SIGMA EST Version 2.0.0

Manual Version 2.0

The present technical report aims at providing guidance to the users of the SIGMA EST mapping tool. [SIGMA-EST](#) is a web tool that supports data providers with data preparation. It allows reporting countries to map the data stored in their national databases to the EFSA data models and to generate XML files ready to be uploaded to the Data Collection Framework (DCF).

## Contents

<b>1. INTRODUCTION: the Viewer</b> .....	3
<b>2. ATTRIBUTE MAPPING</b> .....	5
<b>2.1. General instructions</b> .....	5
<b>2.2. Attribute mapping cases</b> .....	11
<b>2.3. Edit</b> .....	13
<b>3. CATALOGUE MAPPING</b> .....	14
<b>3.1. General instructions</b> .....	14
<b>3.2. Catalogue mapping cases</b> .....	15
<b>4. FILE TRANSLATION</b> .....	18
<b>5. DOWNLOAD OF THE TRANSLATED XML FILE</b> .....	20

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## DATA MAPPING

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The **data mapping** is the process through which the users define the relationship between the variables (attributes) and values of their national data model and the respective ones of the EFSA data models. In the SIGMA-EST vocabulary, each data model within a specific data collection is called “**Activity**”. As an example, the ASF data collection has two Activities: the pig population data and the ASF laboratory data.

An Activity is typically composed by one or more Entities. An Entity is a conceptual grouping of a set of **attributes**. Each attribute has individual properties, i.e., the values that are reported for a given attribute. These values can:

- be reported as a primary value (text or number)
- refer and be linked to a predefined list of values (catalogue) created by EFSA.

The data mapping must be performed both at attribute and at catalogue level (when applicable). More in detail:

- each mandatory EFSA attribute must be associated to one or more national variables
- if a mandatory EFSA attribute is associated to a catalogue, each national value must be associated to an EFSA catalogue value

**Outcome:** the result of the data mapping process generates a schema that reflects the matching between the national database and the EFSA data model, taking into account the attributes and terminology used by both sides (reporting country/EFSA).

The steps to be performed for a complete data mapping are the following and in this exact order:

- Attribute mapping
- Catalogue mapping.

### 1. INTRODUCTION: THE VIEWER

The **Viewer** section allows the users to explore the EFSA data model and the relationship among its components, their current mapping (if existent) and to search the list of available catalogues. The users can:

1. Click on the **Viewer** tab (Figure 1, action1)
  - 1.1. Click on **Activities** from the dropdown menu (action 2)
  - 1.2. Select the activity of interest (e.g., Pig-Population) (action 3)

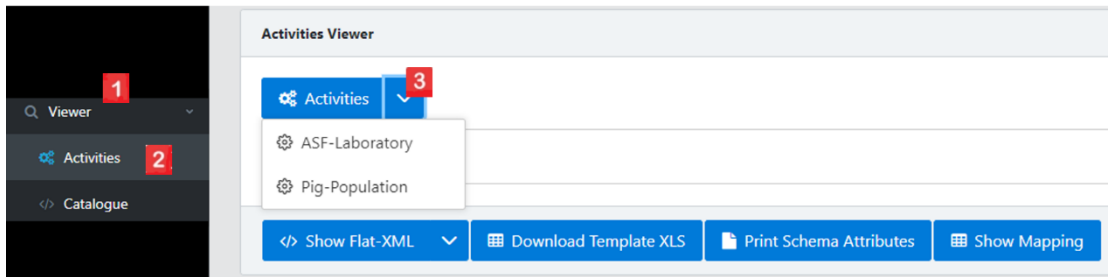


Figure 1

- 1.3. Click on the + / - signs to open/close the sublevels of the data model respectively and to visualise the structure (Figure 2, action 1)
- 1.4. Click on the button 'Print Schema Attributes' to download the list and description of all the attributes related to the activity of interest (Figure 2)
- 1.5. Click on the button 'Show mapping' to have a check on the existing mapping (Figure 2)

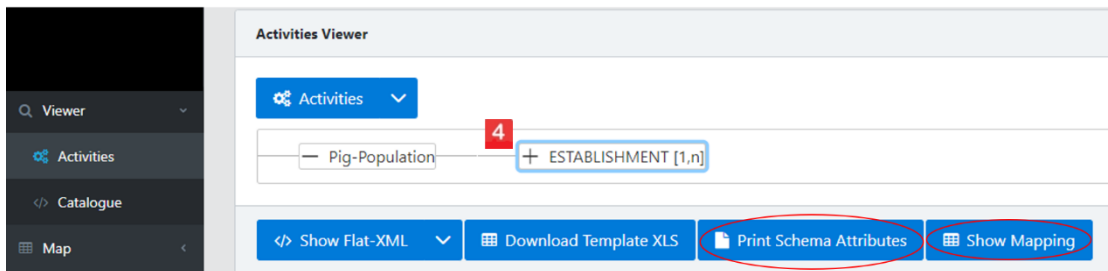


Figure 2

2. Click on the **Viewer** tab (Figure 3, action1)
  - 2.1. Click on the **Catalogue** (action 2)
  - 2.2. Select the catalogue of interest from the drop-down menu and see all the included catalogue values. (action3)
  - 2.3. Click on the 'Download Catalogue' button to download the catalogue in Excel format

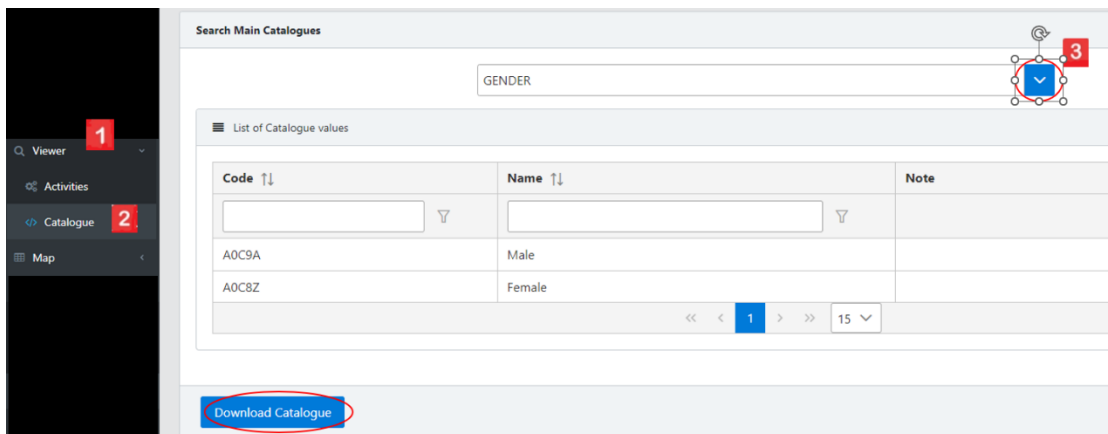


Figure 3

## 2. ATTRIBUTE MAPPING

### 2.1. General instructions

In this section, general instructions are provided to the users in order to complete their attribute mapping successfully. The users can map the attributes from their national database to the respective EFSA data model, thus creating a relationship between national attributes and EFSA attributes.

- If the users have already completed their mapping and they wish to proceed with their file translation, they can follow the relevant steps in the section 4: Translation
- If the users have already completed their mapping and they wish to edit it, they can follow the relevant steps in the Edit section 2.3
- If the users are new and want to perform their attribute mapping, they can follow the steps below:
  1. Click on the **Map** tab (Figure 4, action 1) and then on **Entity** (action 2)
  2. Select from the drop-down menu the Activity of interest (e.g., Pig-Population) (action 3)
  3. Click on the 'Upload file' button and select the Excel file containing the national data to be uploaded. The file should contain in the first row the names/variables extracted from the national database and, optionally, the data to translate.

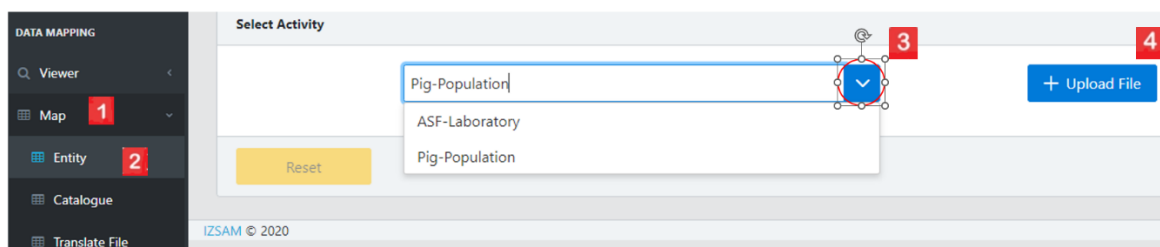


Figure 4

4. Click on the button with the upload icon and the name of the excel file (Figure 5).

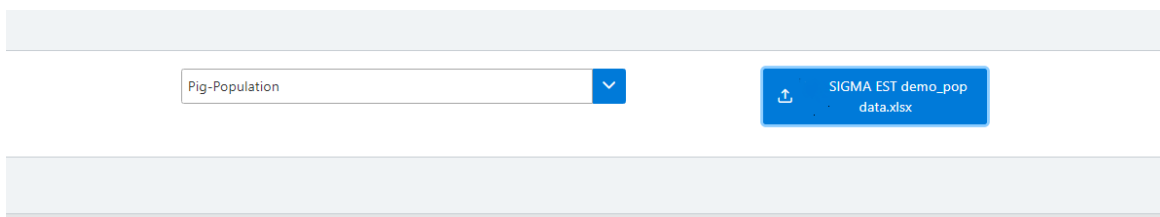


Figure 5

5. A preview table will appear with the national names in the left column and the EFSA entities and attributes in the right column (Figure 6). The users can

have an overview of the attributes in both parts. Click on the 'Next' button to proceed.

The screenshot shows a software interface titled "Select Activity". At the top, there is a dropdown menu with "Pig-Population" selected. Below this is a "Preview" section with the instruction "Click Next to start the mapping". The preview is divided into two columns: "List of attributes from the uploaded file" and "Selected Activity".

List of attributes from the uploaded file	Selected Activity
estab_id	ESTABLISHMENT
type	estabId [VARCHAR]
coord_prec	estabType [ESTABLISHMENT TYPE]
x	estabPers [NUMBER]
y	estabCoordPrecision [COORDINATES PRECISION]
municip	estabXCoord [NUMBER]
area	estabYCoord [NUMBER]
sub_id	estabMunicipality [LOCAL ADMINISTRATIVE UNITS]
species_prod	estabArea [NUTS]
purp	
replevel	

At the bottom of the interface, there are two buttons: a yellow "Cancel" button on the left and a blue "Next" button on the right, which is circled in red.

Figure 6

- The users must map the national names to the EFSA attributes. The link can be created by dragging' n 'dropping the relevant national name to the respective EFSA attribute. **Please note that the attribute mapping is considered completed when all the EFSA attributes have the tick sign in front of them** (Figure 7). In case the users don't have a national name to correspond to an optional EFSA attribute, they should right-click on it and choose the 'Not Available' option. (Figure 14).
- Click on the 'Next' button once the attribute mapping has been completed (Figure 7).

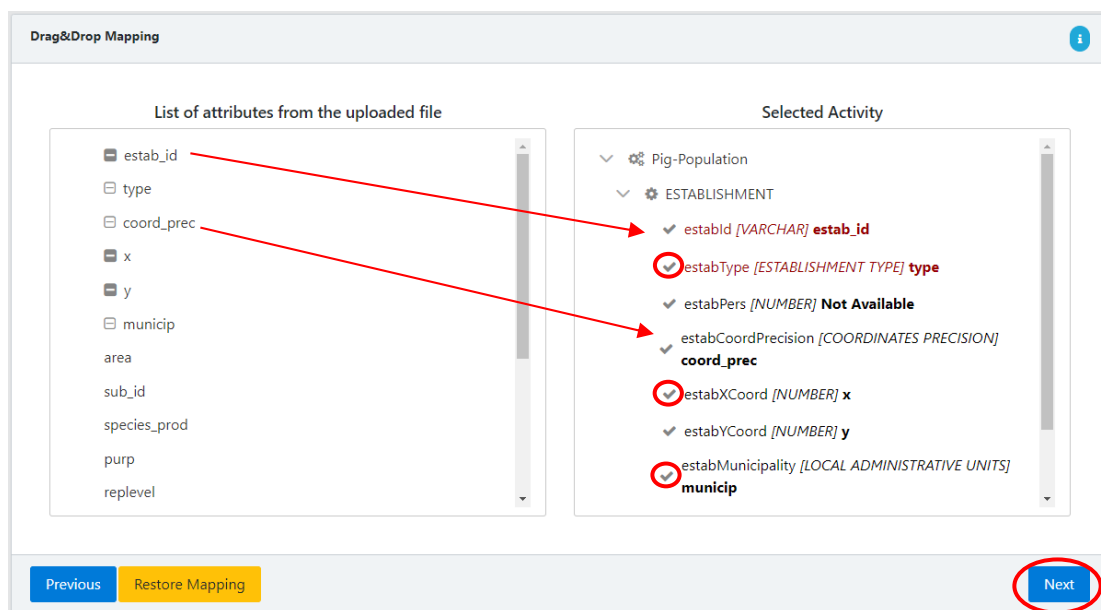


Figure 7

8. A summary table with the implemented attribute mapping will be displayed. In case a mistake is spotted, click on the 'Previous' button to return to the previous stage of the mapping and revert the erroneous mapping. To remove the wrong association, the users simply right-click on the EFSA attribute that you want to disassociate and select 'Revert'. If the mapping is correct, click on the 'Next' button for confirmation (Figure 8).

Entity Name	Your attribute name	Main Attribute name	Catalogue Type	Mapping Type
ESTABLISHMENT	estabCode	estabId	VARCHAR	VARCHAR
ESTABLISHMENT	type	estabType	CATALOGUE[ESTABLISHMENT TYPE]	SIMPLE
ESTABLISHMENT	employees	estabPers	NUMBER	NUMBER
ESTABLISHMENT	precision	estabCoordPrecision	CATALOGUE[COORDINATES PRECISION]	SIMPLE
ESTABLISHMENT	x	estabXCoord	NUMBER	NUMBER
ESTABLISHMENT	y	estabYCoord	NUMBER	NUMBER
ESTABLISHMENT	municipality	estabMunicipality	CATALOGUE[LOCAL ADMINISTRATIVE UNITS]	SIMPLE
ESTABLISHMENT	area	estabArea	CATALOGUE[NUTS]	SIMPLE
SUB_UNIT	subCode	subUnitId	VARCHAR	VARCHAR
SUB_UNIT	species	subUnitSpecies	CATALOGUE[SPECIES]	SIMPLE
SUB_UNIT	purpose	subUnitPurpType	CATALOGUE[SUBUNIT PURPOSE TYPE]	SIMPLE
SUB_UNIT	Not Available	subUnitReplLevel	CATALOGUE[REPRODUCTIVE LEVEL]	NOTUSED
SUB_UNIT	Not Available	subUnitCapacity	NUMBER	NOTUSED
SUB_UNIT	animals	subUnitActualNumber	NUMBER	NUMBER
SUB_UNIT	prod	subUnitProdType	CATALOGUE[SUBUNIT LOCATION]	SIMPLE
SUB_UNIT	inherit(precision)	subUnitCoordPrecision	INHERIT	INHERIT
SUB_UNIT	inherit(x)	subUnitXCoord	INHERIT	INHERIT
SUB_UNIT	inherit(y)	subUnitYCoord	INHERIT	INHERIT
SUB_UNIT	inherit(municipality)	subUnitMunicipality	INHERIT	INHERIT
SUB_UNIT	inherit(area)	subUnitArea	INHERIT	INHERIT
SUB_UNIT	day	recordCensusD	NUMBER	NUMBER
SUB_UNIT	month	recordCensusM	NUMBER	NUMBER
SUB_UNIT	year	recordCensusY	NUMBER	NUMBER
SUB_UNIT	record	recordId	VARCHAR	VARCHAR
SUB_UNIT	Not Available	amType	VARCHAR	NOTUSED

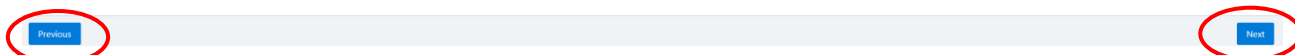


Figure 8

9. Click on the 'Yes' button to activate the upload of the values contained in the national file. The values will be available for catalogue mapping automatically (Figure 9, action 1).
10. Click on the 'Finish' button to generate the schema and complete the attribute mapping (action 2). A pop-up success message will appear, and a confirmation email will be sent to the user stating the completion of the mapping.

Figure 9

### **Important tips and key points of attention**

Every national attribute name that is dragged and dropped on the correspondent EFSA attribute on the right side, is considered mapped. In detail:

- All mandatory EFSA attributes must be mapped to a name from the national file. In case that a mandatory attribute has not been mapped, an error message will appear warning the user.
- All the mandatory EFSA attributes are indicated with red letters and the optional ones with black (Figure 10, point 1)
- All attribute types are described in square brackets next to the EFSA attribute name (e.g., CATALOGUE NAME, NUMBER, VARCHAR) (Figure 10, point 2)
- If a name from the national file has been mapped to an EFSA attribute of primitive type (text or numerical value), then the name is no longer draggable, and a fully coloured square will appear next to it (Figure 10, point 3)
- If a name from the national file has been mapped to an EFSA attribute of catalogue type, then the name is still available to be used for complex or multiple mapping (please see section 2.2) and an empty coloured square will appear next to it (Figure 10, point 3)



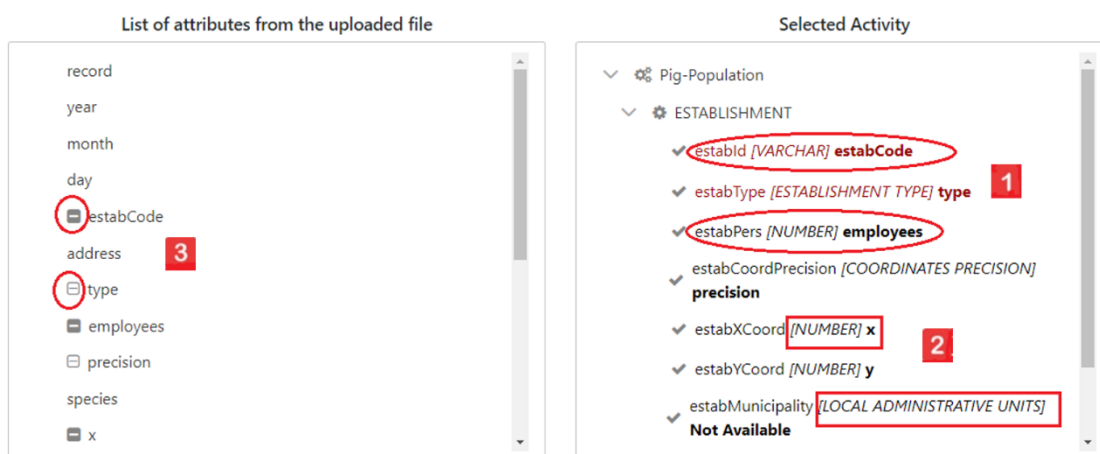


Figure 10

- it is not mandatory to link all the elements from the national database to the EFSA attributes. Irrelevant attributes from the national file can be left unmapped. A pop-up message will ask the user for confirmation at the end of the mapping (Figure 11)

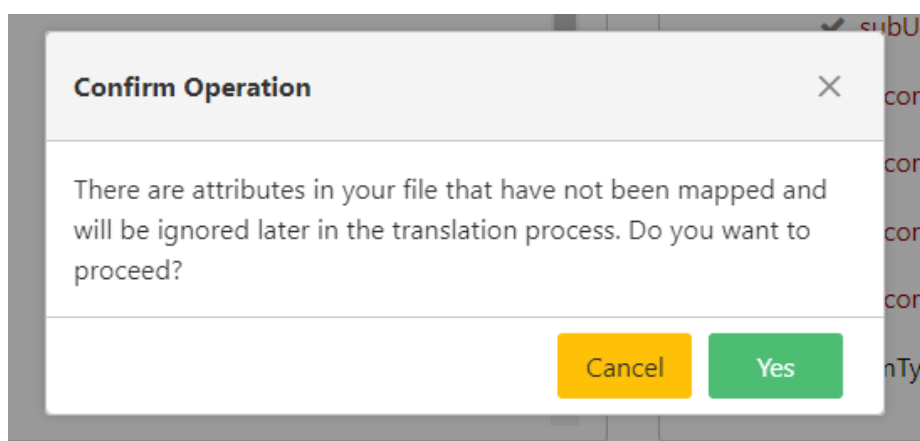


Figure 11

- In case of accidental erroneous mapping, the user can right-click on the EFSA attribute and click on 'Revert' to undo the linking (Figure 12)

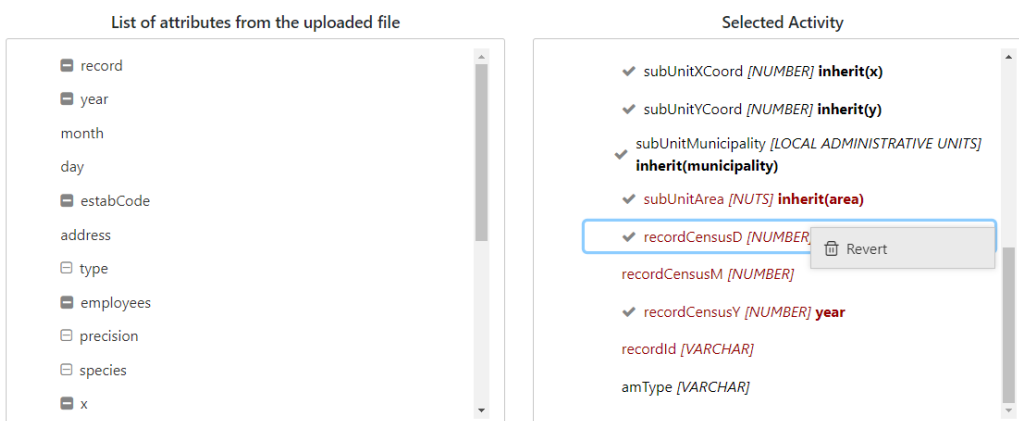


Figure 12

- The user can use the ‘**Inherit**’ functionality when exactly the same information from the national database has to be repeated in two different EFSA attributes that belong to different hierarchically entities of the same activity.

**Example:** in the animal population activity, the same information about the unique identifier of the establishment and its geo-location from the ESTABLISHMENT entity can be inherited in the subunit and its geo-location in the SUBUNIT entity. The users can right-click on the EFSA attribute, choose the ‘Inherit’ option and select the relevant attribute from which they want to inherit the information.

**Please note:** the ‘Inherit’ option **cannot be used** when:

- two attributes belong in the same entity
- the information to be inherited belongs hierarchically in the lower-level entity than the attribute of interest (Figure 13)

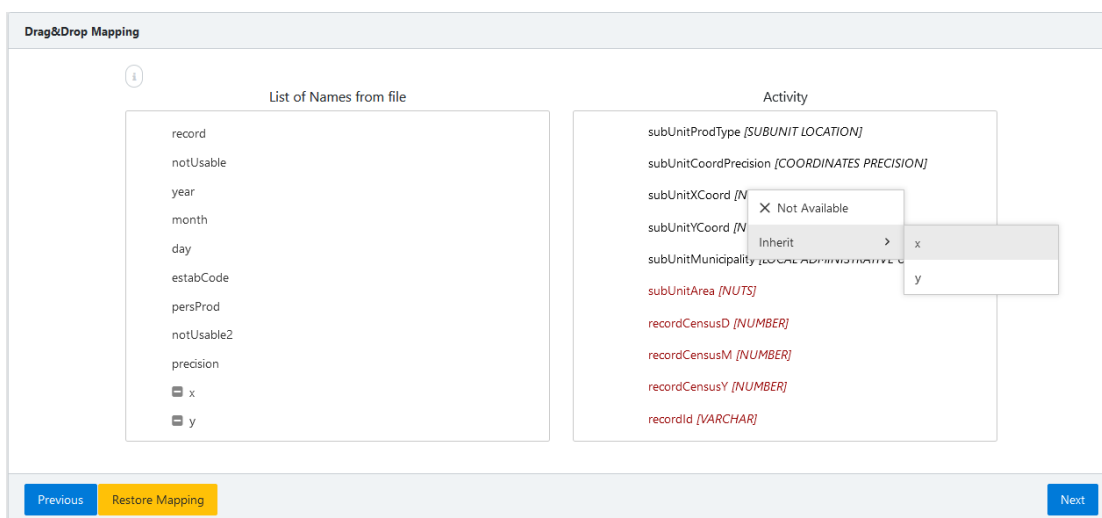


Figure 13

- In case that optional EFSA attributes do not match with names in the national database, the user can right-click on the EFSA attribute and select the choice 'Not available'. The attribute will be excluded from the mapping (Figure 14)

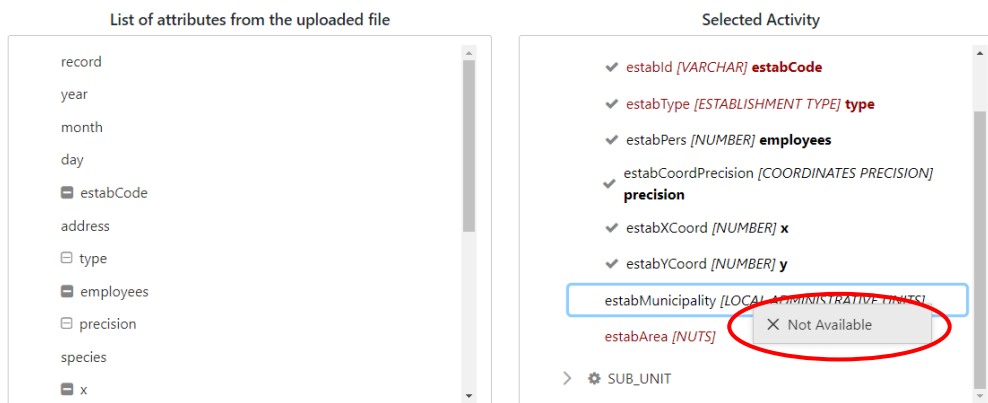


Figure 14

## 2.2. Attribute mapping cases

There are three types of attribute mapping the users can perform: (1) simple match, (2) complex match and (3) multiple match:

1. **[simple match]:** When an EFSA attribute perfectly corresponds to one attribute present in the national database ("1 to 1" relationship between the national names and the EFSA attributes).

**Example:** The attribute [subUnitId] from the EFSA pig population data model can be linked to a single attribute in the national database ("subCode"). In this case, the user simply drags the national name from the left side and drops it on the EFSA attribute on the right below (Figure 15).

**Please note:** This is the **only** type of mapping applicable to attributes with no catalogues associated.

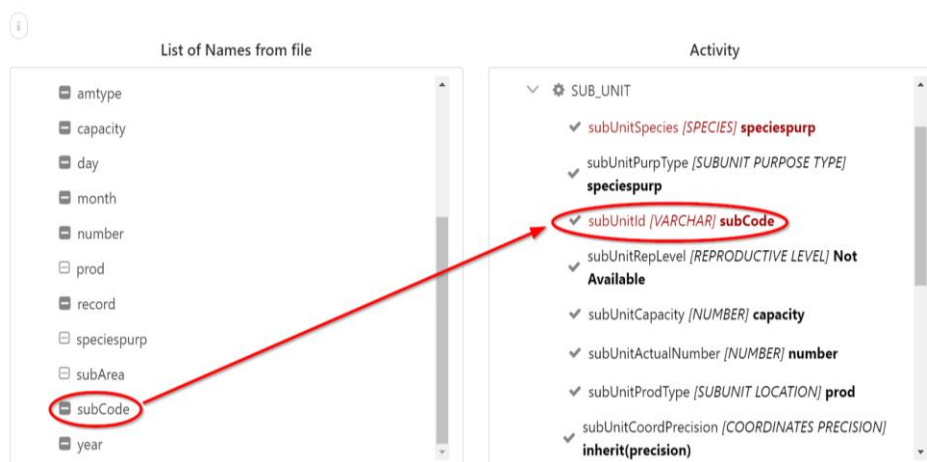


Figure 15

2. **[complex match]:** When the national data are characterised by a **higher degree of aggregation** than the EFSA SIGMA data model (“1 to many” relationship between the national names and the EFSA attributes).

**Example:** The attributes [subUnitSpecies] and [subUnitPurpType] from the EFSA pig population data model might be covered by **one single name in the national database**. In this case, the user needs to drop the national name (e.g., “species\_purp”) in all the EFSA attributes that are covered by that single attribute (Figure 16).

**Please note:** This type of mapping is only applicable to attributes linked to catalogues.

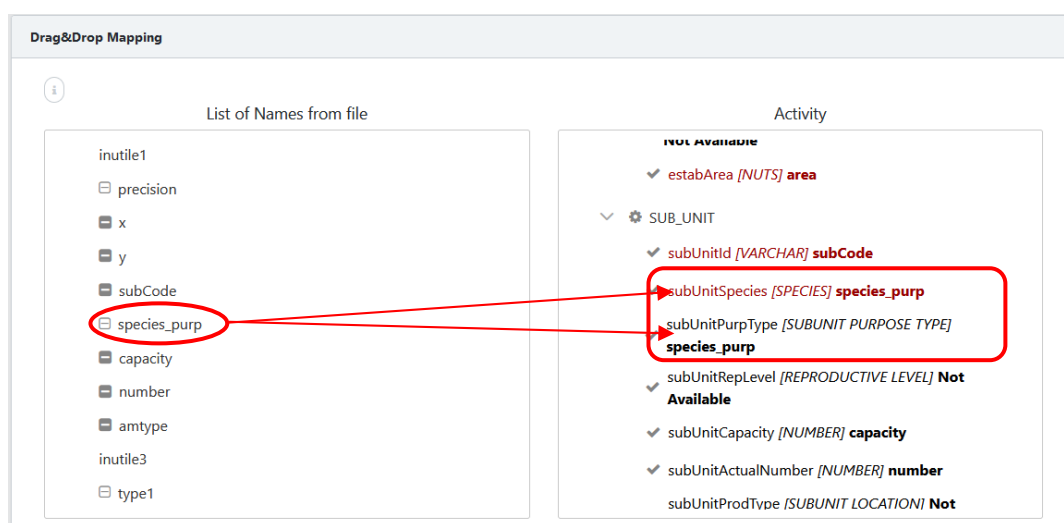


Figure 16

3. **[multiple match]:** When the national data are characterised by a **lower degree of aggregation** than the EFSA data model (“many to 1” relationship between the national names and the EFSA attributes).

**Example:** The attribute “estabType” from the EFSA pig population data model might be described by more than one names in the national database. In this case the users must drop all the relevant attributes (e.g., “type1, type2”), on the corresponding EFSA attribute, e.g., “estabType” (Figure 17).

**Please note:** This type of mapping is only applicable to attributes linked to catalogues.

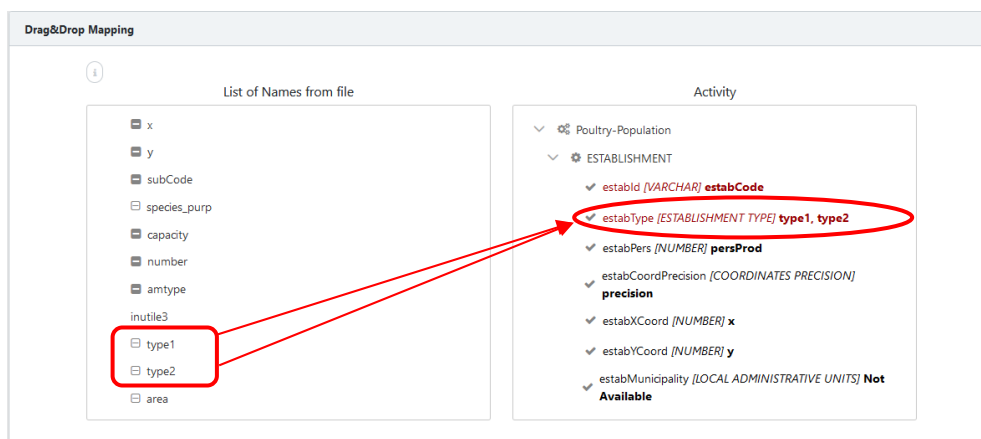


Figure 17

### 2.3. Edit

In the case that the users want to edit their existing mapping, they should follow the steps below:

1. Click on the **Map** tab and then on **Entity**
2. Select from the drop-down menu the activity of interest (e.g., Pig-Population).
3. A pop-up message box will appear asking the users if they want to edit the existing mapping or to delete the current one and start from scratch
4. Click on the “Edit Mapping” button to modify the current mapping (Figure 18).
- 5.

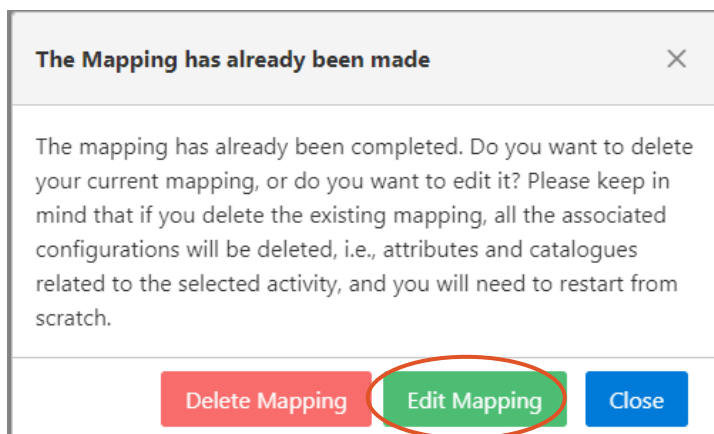


Figure 18

6. The tool will transfer the users in the drag and drop stage of the attribute mapping, in the initial overview table.
7. Click on the ‘Next’ button to access the existing mapping,
8. Right-click on any attribute is necessary to be corrected in order to revert the current mapping any and implement any corrections.
9. Click on the ‘Next’ button to confirm the mapping. The summary mapping table will be displayed (you can always revert back to the previous stage by clicking on the

‘Previous’ button). Click on the ‘Next’ button at the bottom of the summary table to confirm the mapping

**Please note:** In the case the users modify the mapping of attributes associated with catalogues, the existing catalogue mapping will be deleted and should be performed again to map the new associated values (see section 3). The tool will ask for confirmation in order to proceed and the user will have to click ‘Yes’ on the ‘Force the mapping’ button on the bottom of the summary table (Figure 19).

SUB_UNIT	<b>inherit(x)</b>	subUnitXCoord	INHERIT	INHERIT
SUB_UNIT	<b>inherit(y)</b>	subUnitYCoord	INHERIT	INHERIT
SUB_UNIT	<i>Not Available</i>	subUnitMunicipality	CATALOGUE[LOCAL ADMINISTRATIVE UNITS]	NOTUSED
SUB_UNIT	<b>inherit(type)</b>	subUnitArea	INHERIT	INHERIT
SUB_UNIT	<b>day</b>	recordCensusD	NUMBER	NUMBER
SUB_UNIT	<b>month</b>	recordCensusM	NUMBER	NUMBER
SUB_UNIT	<b>year</b>	recordCensusY	NUMBER	NUMBER
SUB_UNIT	<b>record</b>	recordId	VARCHAR	VARCHAR
SUB_UNIT	<i>Not Available</i>	amType	VARCHAR	VARCHAR

**Warning**

Attention! The modifications you implemented will produce the following inconsistencies in the catalogues mapping. Keep in mind that for the attributes using catalogue values you will have to perform again the catalogue mapping.

- The catalogue for attribute **subUnitArea** is changing from NUTS to ESTABLISHMENT TYPE, the current mapping will be removed.
- The catalogue for attribute **type** is changing from ESTABLISHMENT TYPE to NUTS, the current mapping will be removed.

If you want to apply your changes, please switch on the "Force Mapping" button.

Previous
Would you like to force the mapping?
Yes
Next

Figure 19

10. Click on ‘Finish’ to generate the new schema. A pop-up message will appear reminding the users to remap the new associated catalogue values.

## 3. CATALOGUE MAPPING

### 3.1. General instructions

Once the users have completed their attribute mapping, they should proceed with the catalogue mapping of their values. In the case the users have chosen the automatic upload of their data from the national file at the final stage of the attribute mapping (default option of the tool), the values will be available and visible for catalogue mapping effective immediately (Figure 9).

If the users choose not to upload their national data, a manual typing of each national value must be implemented. Other than that, the process remains the same.

**Please note:** The users cannot proceed to the catalogue mapping if the attribute mapping has not been completed (see Section 2).

The users should follow the steps below to complete their catalogue mapping:

1. Click on the **Map** tab and then on **Catalogue** (Figure 20, action 1)
2. Choose the activity of interest (e.g., Pig-Population) (action 2)
3. Choose the entity from the drop-down list. The associated catalogues of the attributes that need to be mapped will appear (action 3)
4. The user can open each catalogue by clicking on the green ‘Edit’ button

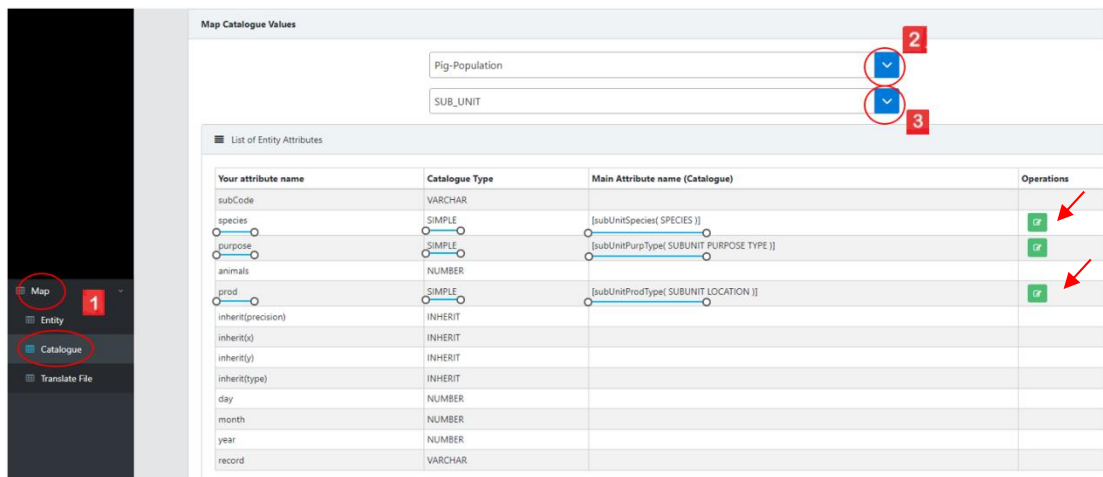


Figure 20

### 3.2. Catalogue mapping cases

Based on the type of relationship between attributes (see section 2.2), the users need to perform the catalogue mapping in a slightly different way.

1. **[simple match]:** “1 to 1” relationship between the national names and the EFSA attributes
  - Open the EFSA SIGMA catalogue of interest by clicking on the green ‘Show catalogues’ button, next to the attribute (Figure 20, action 3)
  - The uploaded values associated with the catalogue will appear in a table in the bottom and will be visible in the left column, titled with the respective name from the national file (Figure 21, point 1). In case the user has chosen not to upload the values automatically, each value has to be typed in the left column of the table.
  - Click on the ‘Edit’ button for the first combination of national and EFSA values (action 2)
  - Choose from the drop-down list the relevant value to be mapped from the EFSA catalogue and click on the ‘Save’ button (action 3)
  - Repeat the process for each national value, and then for each catalogue.

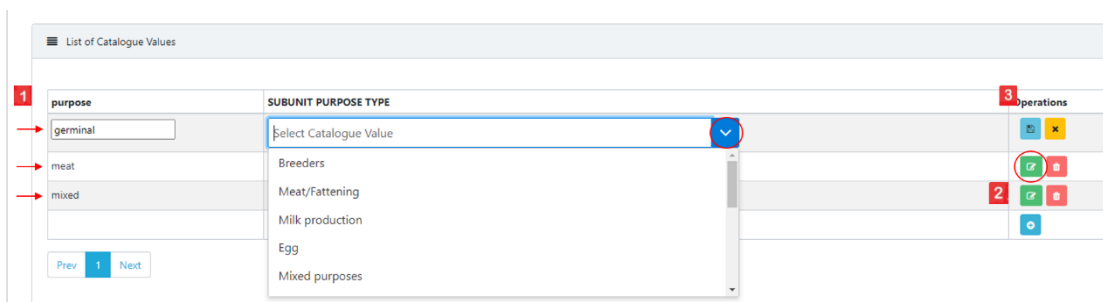







Figure 21

**Please note:** in case of manual typing for the catalogue values, if two (or more) national values of the same attribute correspond to one EFSA catalogue value, one separate line must be inserted in the catalogue mapping for each one of the catalogue terms and all of them should be mapped to the same EFSA value.

**Example:** if there are two different ways to indicate a farm in the national database (e.g., **FARMA** and **farm**), when mapping the values for the attribute Type of establishment [estabType], the user should

insert one line for **FARMA** and one separate line for **farm** and select for both the EFSA catalogue value **Farm** from the drop-down menu (Figure 22).

estabType	ESTABLISHMENT TYPE	Operations
FARMA	Farm	 
farm	Farm	 
		

Prev **1** Next

Figure 22

2. **[complex match]:** “1 to many” relationship between the national names and the EFSA attributes. The users need to combine a single piece of information to match with two values of the EFSA catalogue.

**Example:** The national name ‘speciespurp’ covers two EFSA SIGMA attributes [subunit species and subunit purpose type].

- Open the associated EFSA catalogues by clicking on the green ‘Show catalogues’ button, next to the complex mapped attribute.
- The uploaded values associated with each catalogue will appear in a table in the bottom and will be visible in the left column, titled with the respective name from the national file (Figure 23, point 1)
- Click on the ‘Edit’ button for the first combination of national and EFSA values (action 2)
- Click on the first EFSA catalogue (action 3) and select the value of interest (e.g., **Pig (as animal)**)

List of Catalogue Values





1	speciespurp	SPECIES	SUBUNIT PURPOSE TYPE	Operations
	<input type="text" value="pig meat"/>	Select Catalogue Value	Select Catalogue Value	 
	<input type="text" value="pig mixed"/>	Wild boar (as animal) Pig (as animal) Boar;pig hybrid (as animal)		 <b>2</b> 

Figure 23

- Click on the second EFSA catalogue (Figure 24, action 1) and select the value of interest (e.g., **Meat/Fattening**)
- Click on the ‘Save’ button (action 2)
- Repeat the process for each national value, and then for each catalogue.



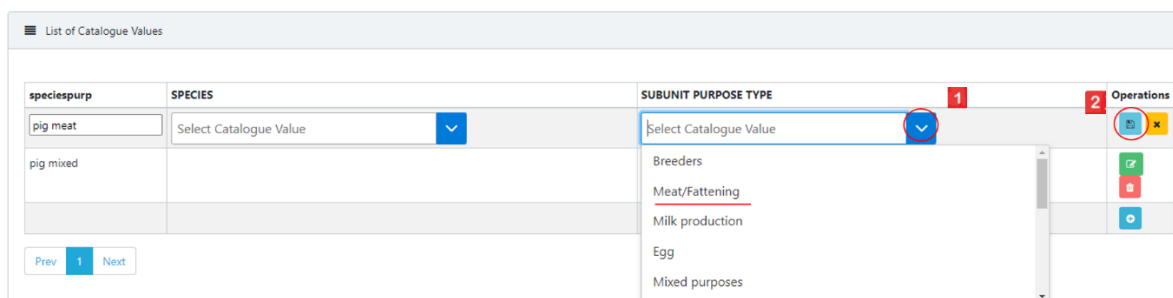


Figure 24

3. **[multiple match]:** “many to 1” relationship between the national names and the EFSA attributes. The users need to combine two pieces of information to match with a single value of the EFSA catalogue.

**Example:** The two national names ‘type1’ and ‘type2’ cover one EFSA attribute ‘type of establishment’ (estabType).

- Open the associated EFSA catalogue by clicking on the green ‘Show catalogues’ button, next to the multiple mapped attribute.
- The uploaded values associated with the catalogue will appear in a table in the bottom and will be visible in the left column, titled with the respective name from the national file (e.g., **farma** for ‘type’ and **centre** for ‘type2’) (Figure 25)
- Click on the ‘Edit’ button for the first combination of national and EFSA values (Figure 25, action 1)
- Click on the EFSA catalogue (action 2) and select the one value of interest from the drop-down list, associated with the two values (e.g., **Farm**)
- Click on the ‘Save’ button (action 3)
- Repeat the process for each national value with multiple mapping, , and then for each catalogue.

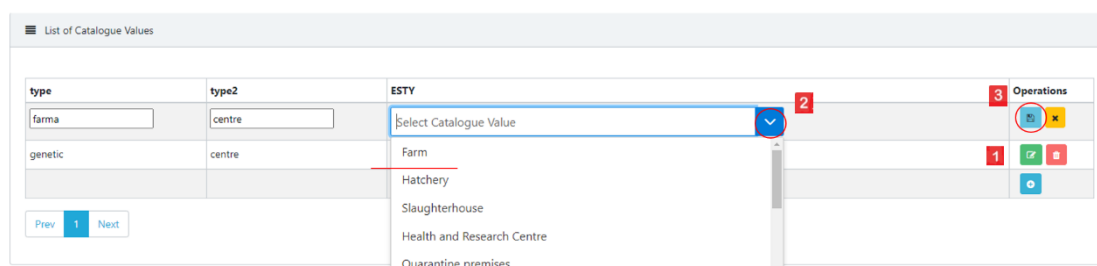


Figure 25

**Important tips**

- The users can edit an existing or a new value by clicking on the ‘Edit’ blue button under **Operations** column (Figure 26, action 1)
- The users can delete a value by clicking on the red button under **Operations** column (action 2)

- The users can add a new value by clicking on the (+) blue button on the bottom of **Operations** column (action 3)
- In case of multiple catalogue values to be mapped (e.g., NUTS3 area of the establishment, from the pig population EFSA data model), the users can download the EFSA catalogue in an Excel format (action 4-5):
  - Click on the ‘Download File’ button, provide their own values in the first column of the file and save it.
  - Click on ‘Upload File’ button and select the configured file, click on the upload icon with the name of the file, and click on the ‘Confirm’ button.
  - A message should pop-up confirming the successful insertion and all the values should appear mapped to the correspondent EFSA catalogue values

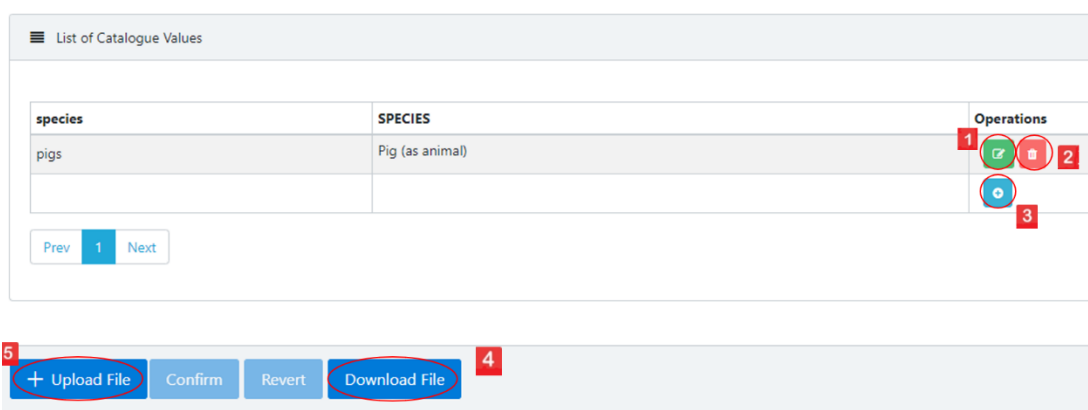


Figure 26

## 4. FILE TRANSLATION

Once the users have performed the attribute mapping and the catalogue mapping, the SIGMA EST mapping tool is configured and ready to translate the national files. In this section, guidelines are provided to the users, on how to translate their national files into XML files, fit to the EFSA standards. The users should follow the steps below:

1. Click on the **Map** tab and then click on **Translate file** (Figure 27, action 1-2)
2. Click on the ‘XLS’ button (or ‘XML’, depending on the format of the extracted file from the national database) and select the activity of interest from the drop-down menu. The ‘Upload file’ button will be activated (action 3-4)
3. Click on the ‘Upload file’ button and select the file containing the national data to be translated (action 5)

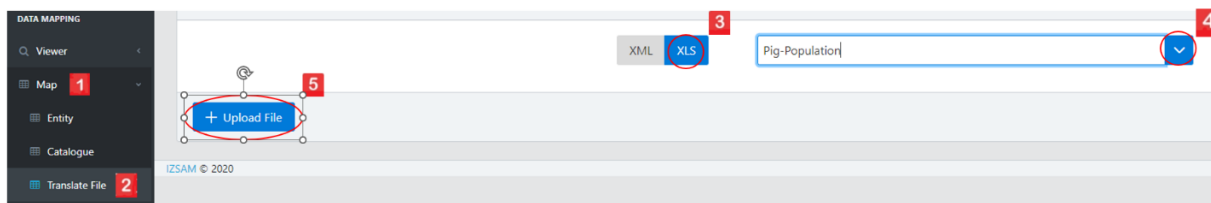


Figure 27

4. Click on the button with the upload icon and the name of the national file to complete the upload (Figure 28). A message will appear confirming the successful upload

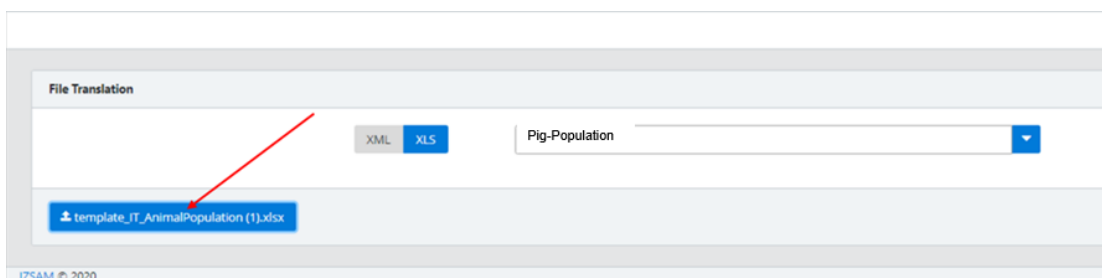


Figure 28

5. Click on the 'Check' button. A pop-up message will appear, confirming the successful checks for the file structure (Figure 29, action 1)

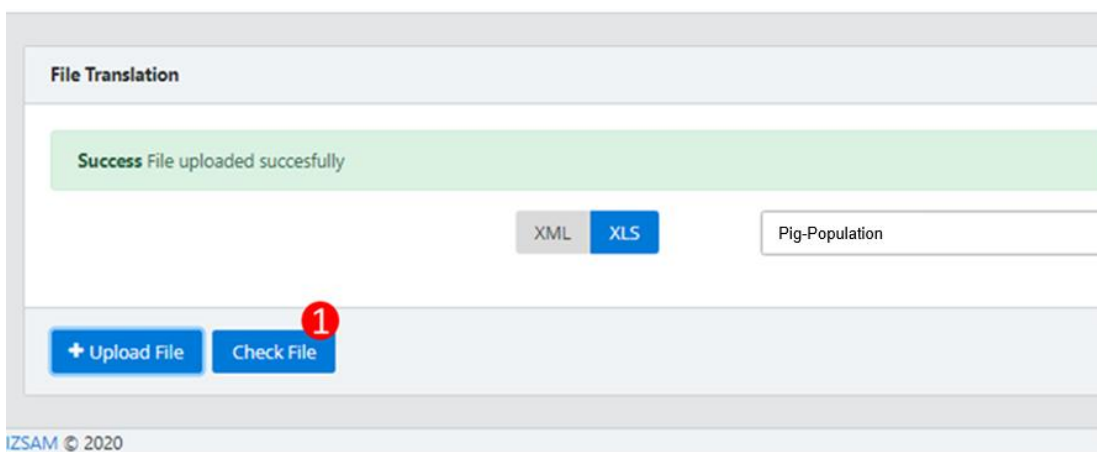


Figure 29

6. Click on the 'Convert file' button (Figure 30, action 1). A pop-up message will appear, confirming the scheduling of the translation. The user will be notified with an email at the end of the translation process.

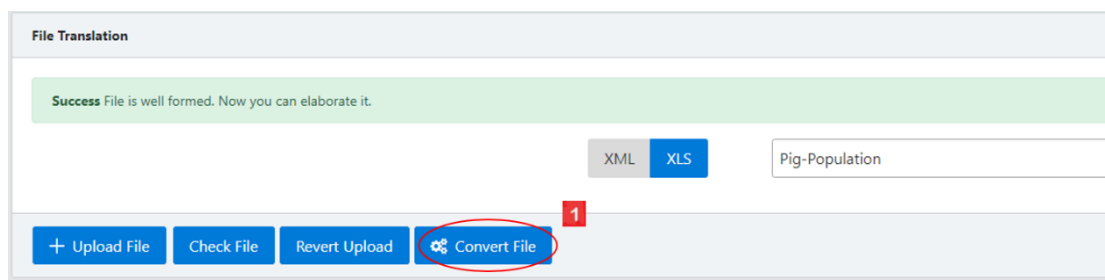






Figure 30

## 5. DOWNLOAD OF THE TRANSLATED XML FILE

Once the translation of the national file has been completed, the users should receive a notification email. In order to download their translated XML file and/or check for necessary corrections, the users should follow the steps below:

1. Click on the bell icon on the top right corner, there should be a notification.
2. A table will appear with your national file sent for translation and information regarding the status of the process, the stakeholder, the activity, the identification number, the filename, the uploaded date, the output format, the elaboration date and a last column with buttons (Figure 31):
  -  Green button: containing the original national uploaded file
  -  Yellow button: containing the XML translated file
  -  Blue button: if existing, containing the log file with errors that need to be checked and corrected. **Please note, in this case the users must implement their corrections and repeat the national file translation process** (Figure 31, case 1)
  -  Red button: indicating the possibility for the users to delete their files
3. Provided that there is no blue button indicating errors that should be fixed, click on the yellow button to download the translated XML file (Figure 31, case 2)
4. Proceed with uploading the XML file in the relevant data collection's folder in EFSA's Data Collection Framework (DCF)



Status	Stakeholder	Activity name	Id	Filename	Uploaded Date	Output Format	Elaboration Date	
▲	EFSA	Pig-Population	967	SIGMA EST_EFSA_pig population data translation.xlsx	12/10/2023, 12:52 PM	XML	12/10/2023, 12:52 PM (< 1 minutes)	
▶	EFSA	Pig-Population	955	SIGMA EST_demo_pig population data.xlsx	04/10/2023, 12:07 PM	XML	04/10/2023, 12:07 PM (< 1 minutes)	

Figure 31

**Please note:** in case that after two hours the users haven't received any notification email for the translation completion, they should:

- Check their Spam folder
- Send an email to the [sigma-est.support@izs.it](mailto:sigma-est.support@izs.it) functional mailbox

# Glossary

SIGMA EST	EFSA
<b>Activity</b>	A specific data model (e.g., the Pig Population data model in the context of the ASF data collection)
<b>Entity</b>	Conceptual group of attributes
<b>Attribute</b>	Variable in a dataset
<b>Catalogue</b>	List of predefined values created by EFSA. It can be associated to one or more attributes.