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Introduction

Reporting requirement for GHG Inventories under Paris Agreement

Article 13 of the Paris Agreement

National inventory report (NIR) of GHG emissions

7. **Each Party shall** regularly provide the following information:

(a) A **national inventory report** of anthropogenic emissions by sources and removals by sinks of greenhouse gases, prepared using good practice methodologies accepted by the Intergovernmental Panel on Climate Change and agreed upon by the Conference of the Parties serving as the meeting of the Parties to this Agreement;

Decision 18/CMA.1, Annex, Chapter II

National inventory document (NID) and Common reporting tables (CRT)

38.   Pursuant to Article 13, paragraph 7(a), of the Paris Agreement, **each Party shall** provide a **national inventory report** of anthropogenic emissions by sources and removals by sinks of GHGs. The national inventory report consists of a **national inventory document** and the **common reporting tables**. Each Party shall report the information referred to in paragraphs 39–46 below, recognizing the associated flexibilities provided for those developing country Parties that need them in the light of their capacities.
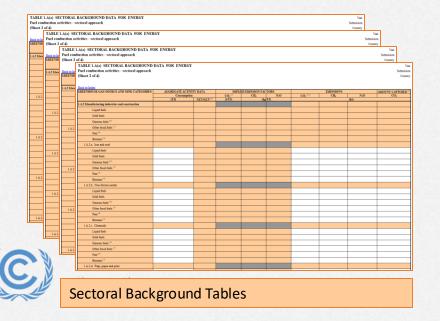
Decision 5/CMA.3

1. **Adopts**:

(a) The **common reporting tables** referred to in chapter II of the annex to decision 18/CMA.1 for the electronic reporting of the information in the national inventory reports of anthropogenic emissions by sources and removals by sinks of greenhouse gases, as contained in annex I;

Common Reporting Tables (CRT)

- Prepared for the electronic reporting of information in the NIR of anthropogenic emissions by sources and removals sinks of GHGs

- Set of MS Excel workbook (containing 60 worksheets) for each reported year

- There are three types of tables for each year

  - Sectoral Background Tables (white/orange cells) – Need to fill data at this layer

  - Sectoral Report Tables (green cells) – Automatically generated

  - Summary/Cross-sectoral/Trend Tables (blue cells) – Automatically generated

Sectoral Background Tables

Sectoral Report Tables

Summary / Cross-sectoral / Trends Tables

CRT structure

1. Energy	2. IPPU	3. Agriculture	4. LULUCF	5. Waste
Sectoral background tables	**Sectoral background tables**	**Sectoral background tables**	**Sectoral background tables**	**Sectoral background tables**
Table1.A(a)s1 Table1.A(a)s2 Table1.A(a)s3 Table1.A(a)s4 Table1.A(b) Table1.A(c) Table1.A(d) Table1.B.1 Table1.B.2 Table1.C Table1.D	Table2(I).A-H Table2(II).B-Hs1 Table2(II).B-Hs2	Table3.A Table3.B(a) Table3.B(b) Table3.C Table3.D Table3.E Table3.F Table3.G-J	Table4.1 Table4.A Table4.B Table4.C Table4.D Table4.E Table4.F Table4(I) Table4(II) Table4(III) Table4(IV) Table4.Gs1 Table4.Gs2	Table5.A Table5.B Table5.C Table5.D

Level 3

Sectoral report table	Sectoral report table	Sectoral report table	Sectoral report table	Sectoral report table
Table1	Table2(I) Table2(II)	Table3	Table4	Table5

Level 2

Summary tables	Cross-cutting tables	Trend tables
Summary1 Summary2 Summary3	Table6 Table7 Table8s1 Table8s2 Table9 Flex_Summary	Table10s1 Table10s2 Table10s3 Table10s4 Table10s5 Table10s6
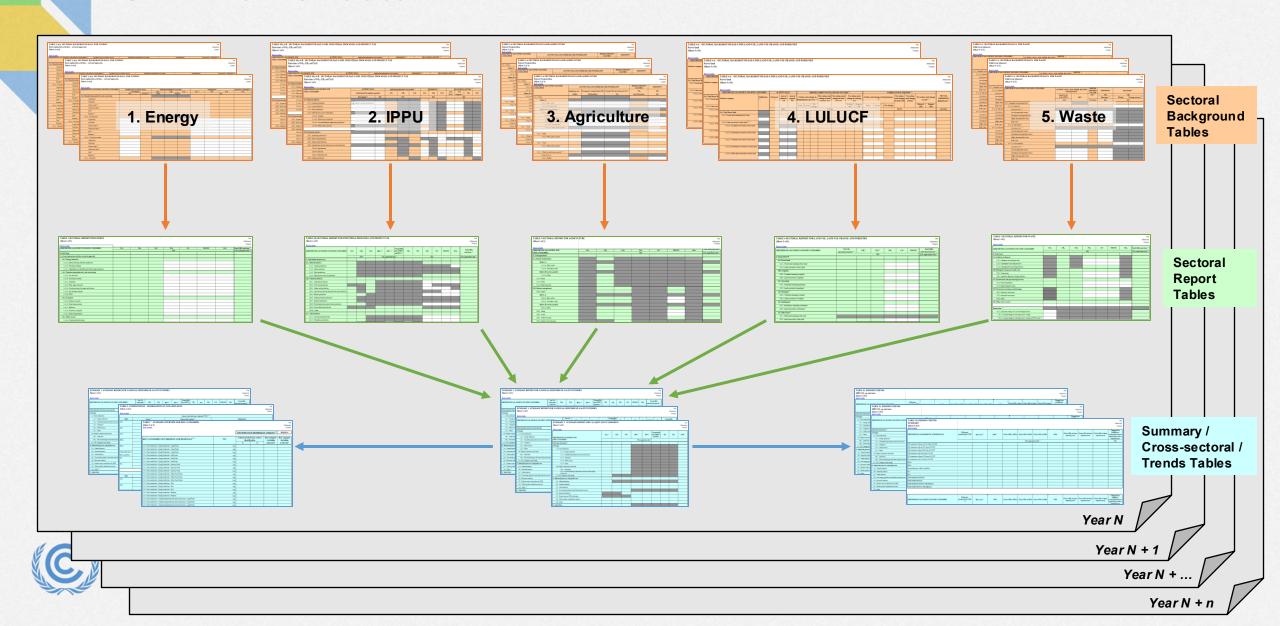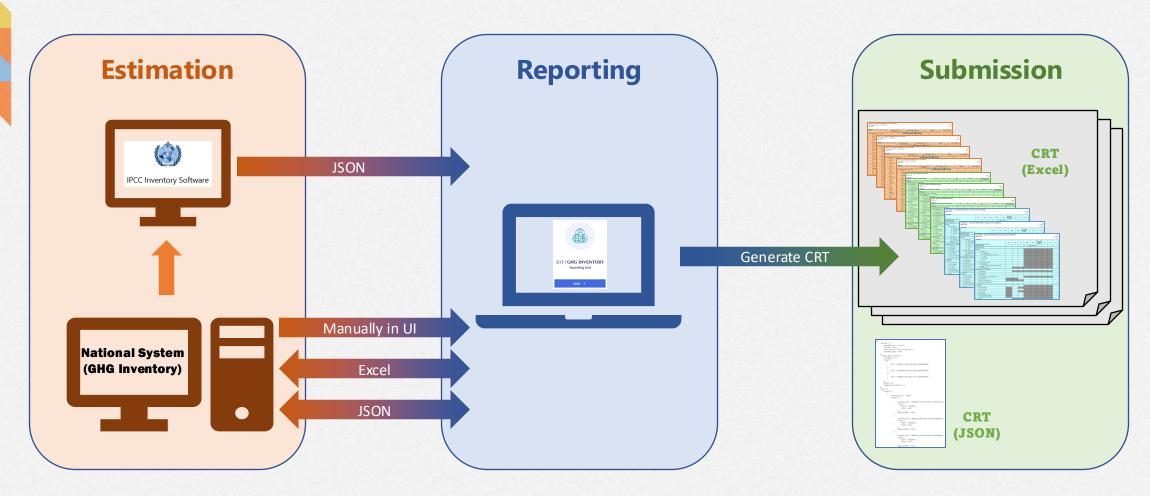
Level 1

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CRT worksheets

1. Energy

2. IPPU

3. Agriculture

4. LULUCF

5. Waste

Sectoral Background Tables

Sectoral Report Tables

Summary / Cross-sectoral / Trends Tables

Year N

Year N + 1

Year N + ...

Year N + n
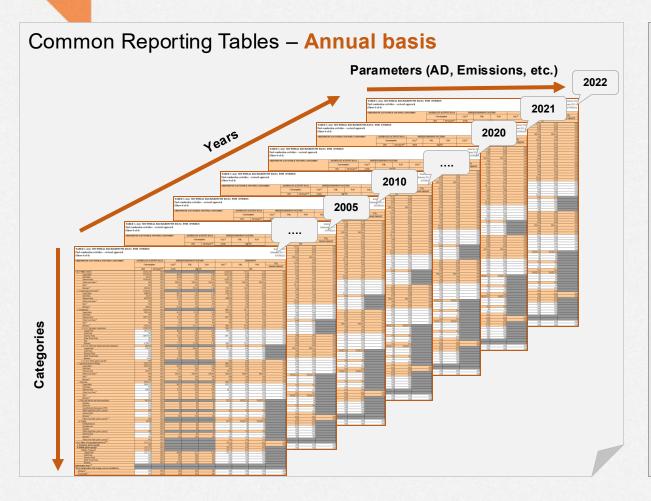
GHG inventory workflow

Common Reporting Tables and Data entry grids

ℹ️ Data entry grids have categories for all sectors arranged in navigation tree and allows to enter data for the whole time series for a selected category. The data from the data entry grids are mapped to the CRTs on an annual basis when you generate/download the reporting tables.

Common Reporting Tables – **Annual basis**

Data entry grids – **Category basis**

Flexibility provisions

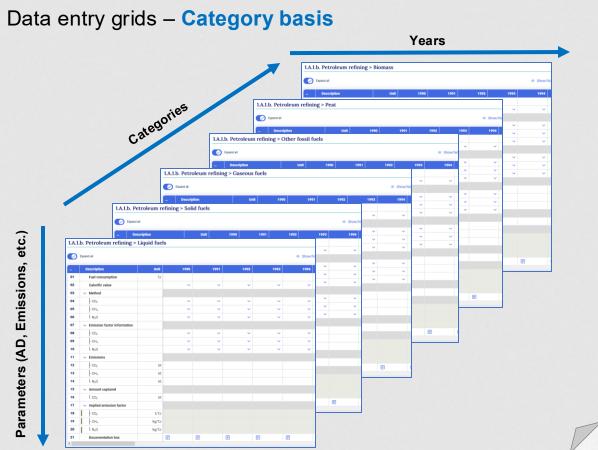| Flexibility provisions (Annex to decision 18/CMA.1)	Flexibility provisions for those developing country Parties that need it in the light of their capacities
Para. 25 (Key category analysis)	Identify key categories using a threshold no lower than 85 per cent (instead of 95 per cent).
Para. 29 (Uncertainty assessment)	Provide qualitative discussion of uncertainty for key categories both latest inventory year/ trend, instead of quantitatively estimating and qualitatively discussing uncertainty for all categories for at least the starting year and the latest reporting year and the trend.
Para. 32 (Insignificance threshold)	Consider emissions insignificant if the likely level of emissions is below 0.1 per cent of total GHG emissions, excluding LULUCF, or 1,000 kt CO_2 eq, whichever lower (as opposed to 0.05 per cent or 500 kt CO_2 eq). Total emissions for all gases from categories considered insignificant shall remain below 0.2 % total GHG emissions, excluding LULUCF, as opposed to 0.1 per cent.
Para. 34 (QA/QC plan)	Encouraged to elaborate an inventory QA/QC plan including information on the inventory agency responsible for implementing QA/QC (as opposed to a requirement to develop a QA/QC plan).
Para. 35 (QC procedures)	Encouraged to implement and provide information on general inventory QC procedures in accordance with their QA/QC plan (as opposed to required to implement and provide information).
Para. 48 (Reporting F-gases)	Report at least 3 gases (CO_2, CH_4, and N_2O). Also, any of the 4 gases (HFCs, PFCs, SF_6, and NF_3) included in NDC under Art. 4 or that are covered by activity under Article 6 or have been previously reported (as opposed to reporting all 7 gases).
Para. 57 (Annual time series years)	Report data covering the reference year/period for the NDC and, in addition, a consistent annual time series from at least 2020 onward (as opposed to reporting a continuous time series from 1990 onwards).
Para. 58 (Last year in time series)	The latest reporting year shall be no more than 3 years prior to submission of the inventory (as opposed to no more than 2 years for all other Parties).

Practical exercises

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Use of icons in the presentation

This icon denotes that the box contains useful information.

This icon signifies that there will be a hands-on exercise on a particular feature of the GHG Inventory Reporting Tool. Each exercise is associated with a number. e.g., **E1**

The slide with this icon is for information. The feature will be demonstrated during the training, but there will not be any corresponding exercise.
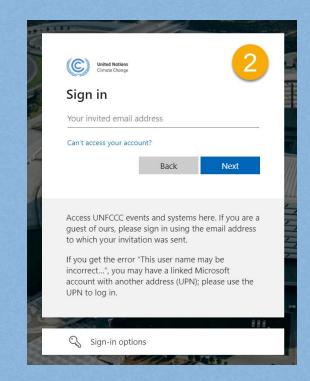
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List of exercise for the training
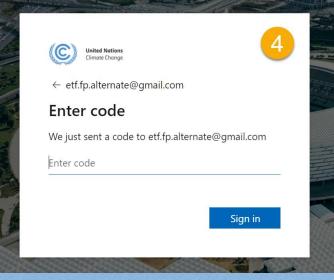
- **Exercise 1**: Creating an inventory version and application of flexibility provision

- **Exercise 2**: Data entry (Excel export/import)

- **Exercise 3**: Working with JSON and interoperability with IPCC Software

- **Exercise 4**: Generation/download of reporting tables

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1. Go to the web link **https://etf-ghg.unfccc.int** (Production environment)

2. Enter the registered email address in the login page and click on **Next**

3. Check the registered **email** for the **verification code**

4. **Enter the code** in the login page and click on **Sign in**

Creating an inventory and version settings (1/2)

1. Click **"+ Create version"** on the **"Inventories"** tab.
2. Click on "**Start**" in the **"Create blank inventory"** tile.
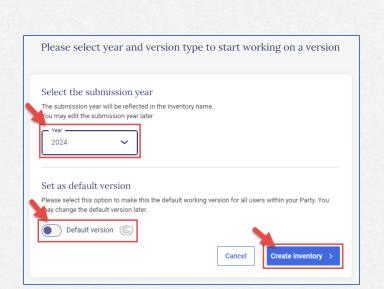
*If you are in the **"Data entry"** tab*

1. *Click on the **"Inventories"** tab.*
2. *Click on **"+ Create version"** and follow the steps above.*

3. Select **"Year"** for which you want to submit the inventory.
4. Toggle on "**Default version**" to make this the default working version for all users within your Party.
5. Click **"Create Inventory >"**.

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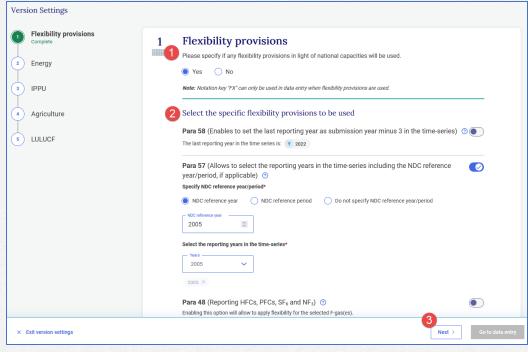# Creating an inventory and version settings (2/2)

1. Select **"Yes"** if your Party wants to apply flexibility provisions, and you can select the specific flexibility provisions. Select **"No"** if your Party does not want to apply flexibility provisions.

2. Click on **"Next"** until you complete all version settings

3. At the end of version settings, you can enter the **"Data entry"** page

Exercise: Creating version and specifying version settings

Exercise 1a:

- Login to the application using the weblink: https://etf-ghg.unfccc.int
- Create a new inventory version for the submission year 2024
- Select "Yes" to apply flexibility provisions
- Select para 58 flexibility provision (Toggle On)
- Select para 57 flexibility provision and select "Do not specify NDC reference year" and select 1994, 2000, 2005 and 2010-2019
- Select para 25 flexibility provision and apply 85 per cent threshold
- Do not select any other flexibility provisions, Click Next
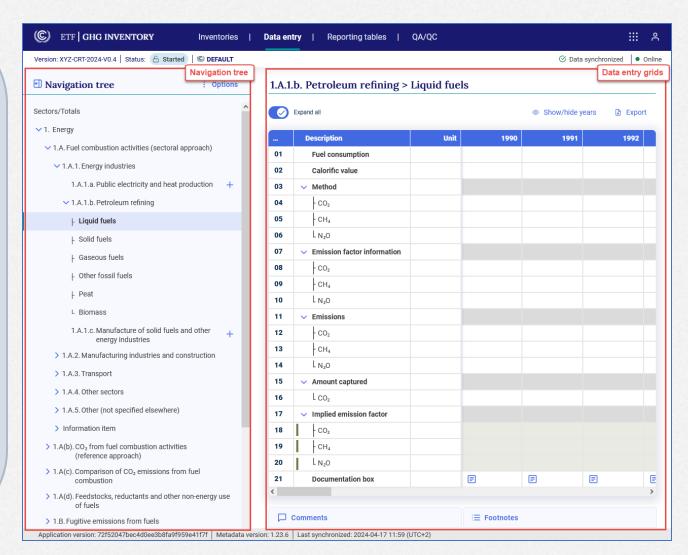
Exercise 1b:

- Go through other sectoral version settings
- For Energy, specify NCV for the calorific value
- For IPPU, do not select any settings (Toggle Off)
- For Agriculture, Select "Option B (country-specific)" for the cattle categorization
- For LULUCF, do not change default settings, Approach B->B1 in selected by default
- Click on "Go to data entry"

User Interface of GHG Inventory Reporting Tool

- ❑ **Inventories** – To start a new inventory and to configure the properties relating to the inventory
- ❑ **Data entry** – For entering and/or editing data in the data entry grids
- ❑ **Reporting tables** – For generating reporting tables in Excel, in the format of the agreed CRT
- ❑ **QA/QC** – For viewing the results of the calculations for the key category analysis

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- ➢ **Version name** – Unique name of the inventory version (ISO code, Tool, Submission year, version number)
- ➢ **Status** – Status of the inventory version (e.g., Initiated, Started, QA/QC, Awaiting approval, Approved, Submitted)
- ➢ **Default** – Flag to indicate the common version that all users within a Party are working
- ➢ Data synchronized – Shows the status of data synchronization
- ➢ **Online** – Indication if the user is Online or Offline

- ❖ **Navigation tree** – CRT category tree as agreed in Annex I to decision 5/CMA.3
- ❖ **Data entry grids** – Grids for entering data

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Data entry in GHG Inventory Reporting Tool

❑ Three ways of data entry
  ✓ Manual input into the data entry grids
  ✓ Partial or full import of data using MS Excel
  ✓ Bulk import of data using JSON
    ▪ For connecting with the national system
    ▪ For importing data from IPCC Inventory Software

❑ Data are saved automatically in the database in real-time

❑ Copy and paste including drag and drop of data in data entry grids

❑ Automatic data entry validation
  ✓ Either a number or a notation key (NO, NA, IE, NE, C, FX)
  ✓ The notation keys entered in a year propagate to the subsequent years
  ✓ Number to be separated by a dot (".") to signify a decimal point
  ✓ Number should be between 0 and 1 where fractions are required
  ✓ Number should be between 0 and 100 where the information required is in %
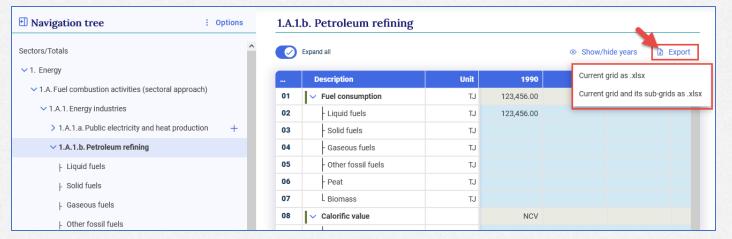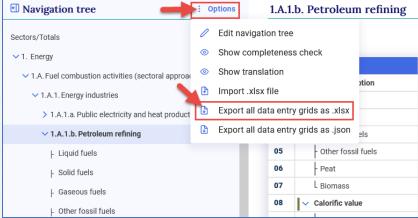 ✓ Text can be entered as needed to report e.g., AD description (in 1.B.2)

Excel data input – Exporting Excel tables for data entry

E2

ℹ This method allows downloading data entry grids in Excel format and work offline. It assists users to either check data entered in the software, or to enter/edit data and re-import it into the application. Export of data entry grids can be done for a sub-category, sector, or for the entire inventory.
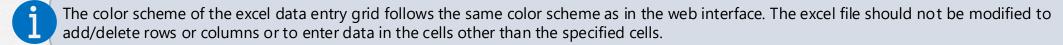
Exporting excel data entry grids

1. Click on category that you want to export.

2. Click on "**Export**" and then on **"Current grid as .xlsx"** to export the single selected grid or **"Current sector/subsector as .xlsx"** to export the selected category and all sub-categories below the selected category.

3. The file will be exported to your local computer.

4. You can also export all data entry grids in excel. Click **"Options"** then **"Export all data entry grids as .xlsx"**.

Excel data input – Entering data in Excel table(s)

> ℹ️ The color scheme of the excel data entry grid follows the same color scheme as in the web interface. The excel file should not be modified to add/delete rows or columns or to enter data in the cells other than the specified cells.

Entering data in Excel data entry grids

1. Open the Excel data entry grid file exported from the GHG Inventory reporting tool.

2. Enter the data in the white cells for activity data and emissions.

3. The implied emission factor (green cells) is not calculated in the Excel file, but it will be calculated upon importing it into the GHG Inventory reporting tool.

4. Save the Excel file after entering the data for importing to the GHG Inventory reporting tool.

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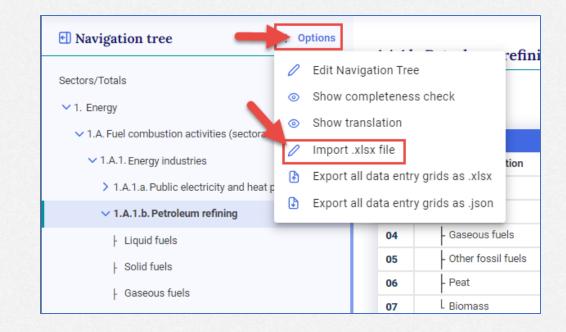# Excel data input – Importing Excel tables into the tool

ℹ The Excel data import function will only work with Excel files for data entry grids exported from the GHG Inventory Reporting Tool. The user should first export the file from the software in order to import an Excel file with the data. It is imperative that the format and structure of the Excel file exported are not changed.

Importing excel data entry grids

1. Click **"Options"** and then click **"Import .xlsx file"**.

2. Click on the **"Select"** and select the appropriate Excel file to be imported. You can also drag and drop the file in import window.

3. Click on **"Import"** button. This will initiate the data import process, which includes automatic input of data, and recalculation of values in cells with formulas.

4. You can check the generated log file for the detail of the import.

Exercise: Data entry with Excel export / import

Exercise 2:

- For the category "1.A.1.a.i Electricity generation", export "Current grid and its sub-grids as .xlsx"
- Open the exported Excel file (from your download folder)
- Copy the data from *<UtopiaData_Energy_1994,2000,2005,2010-2021>* workbook for each fuels in the exported data entry grids
- Save the exported data entry grid Excel file
- Import the Excel file to the GHG inventory reporting tool
- Check that the data that you have entered in the Excel are imported into the tool.
- Continue the same exercise for other sub-categories

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Comments, NK explanation, Documentation box, Footnotes

| Type		Definition
Cell comments	**Official comment**	Official comment at the cell level of data entry. This will be reflected in the respective reporting tables of the official GHG inventory submission.
	Party comment	A comment entered by a user that they would like to share with the other users within their Party. This will NOT be reflected in the official submission.
	User comment	A comment entered by a user is visible only to that user. Users can put reminders for themselves here. This will NOT be reflected in the official submission.
Notation key Explanation	**NK category**	Navigation tree path for the cell where the notation keys "IE" and "NE" are entered. Auto-populated by the application. This will be reflected in Table9.
	Allocation by Party	Textual information provided by the user explaining the rationale for using the notation key "IE" . This will be reflected in Table9.
	Allocation by IPCC	Textual information provided by the user explaining the rationale for using the notation key "IE" . This will be reflected in Table9.
	NK Explanation	Textual information provided by the user explaining the rationale for using the notation key "IE" or "NE". This will be reflected in Table9.
Documentation Box		The last line in each data entry grid. This type of comment is year-specific and will, therefore, be reflected only in the documentation box section of the reporting table for the year where the comment was entered. Used for providing reference in the NID.
Footnotes		Static text based on the footnotes in the agreed reporting tables. The footnotes appear in the relevant applicable data entry grid.

Interoperability with IPCC Software (1/2)
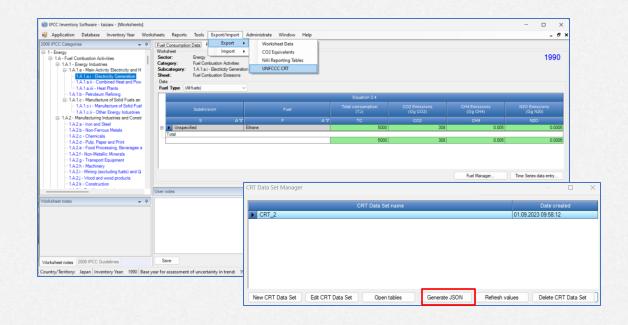
> ℹ️ The interoperability with the IPCC Software allows the transfer of the data from the IPCC software to the GHG Inventory Reporting Tool. After estimating the national GHG inventory Parties can export the JSON data exchange file from IPCC software and import it to GHG inventory reporting tool. Please note the following for the interoperability:
> ❑ Generation and Export of JSON file is available in the IPCC software version 2.871 or later.
> ❑ JSON file generation has been implemented for all sectors and can be done by sector, by years

In the IPCC Software

1. After compiling your GHG inventory, Click **"Export/Import"** > **"Export"** > **"UNFCCC CRT"**

2. Click **"Generate JSON"** and a JSON file is generated.

3. Save the JSON file to your computer and it can now be imported to the GHG Inventory reporting tool.

Interoperability with IPCC Software (2/2)
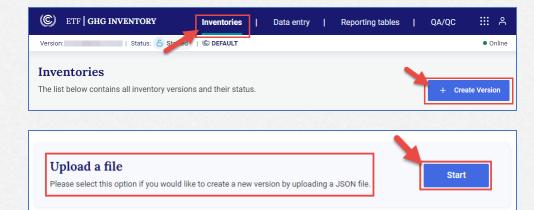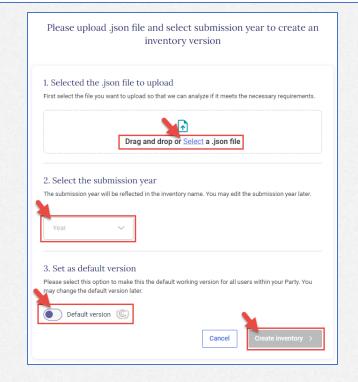
In the GHG Inventory reporting tool

1. In the **"Inventories"** tab, click **"+ Create version"**

2. Click **"Select"** in the **"Upload a file"** tile

3. Click **"Select"** and select the JSON file exported from the IPCC software. You can also drag and drop the file in drag and drop area.

4. Specify **"Submission year"**, **"Default version"** and click **"Create inventory".** The inventory will be created.

5. Specify applicable version settings and click **"Go to data entry"** to start working on your inventory.

6. The data imported from the IPCC software will already be populated in the data entry grids.

7. You can modify the data, if needed.

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Exercise: Interoperability with IPCC Software
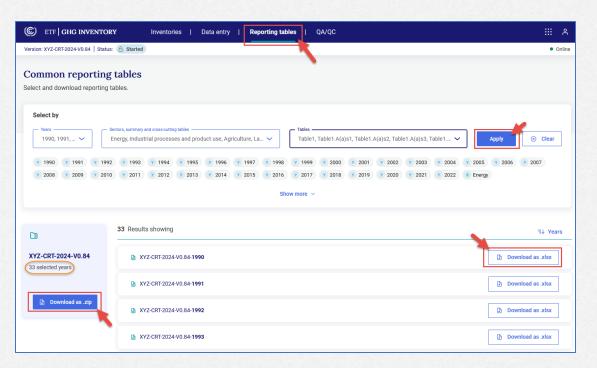
Exercise 3:

- Compile your GHG inventory in the IPCC Software
- Click "Export/Import" > "Export" > "UNFCCC CRT" in the IPCC Software
- Click "New CRT Data Set" to create your data set, provide name and select years to transfer
- Click "Generate JSON," and a JSON file is generated and save the JSON file to your computer
- Enter the GHG Inventory Reporting Tool
- In the "Inventories" tab, click "+ Create version"
- Click "Select" in the "Upload a file" tile and select the JSON file downloaded to your computer (from yesterday's exercise)
- Specify "Submission year" and click "Create inventory"
- Select para 57 flexibility provision and select "Do not specify NDC reference year" and select 2000-2004
- Select para 32 flexibility provision (Toggle On)
- Do not enable version settings for Energy and IPPU
- Specify remaining version settings and click "Go to data entry" to start working on your inventory
- Data imported from the IPCC software will already be populated in the data entry grids and you can edit/modify the data if needed

Viewing/download common reporting tables (CRT)

1. Click on the **"Reporting tables"** tab.

2. Select **"Years"**, **"Sectors"** and **"Tables"** to view/download the reporting tables.

3. Click **"Apply"**. The reporting tables based on the selection above will be available for download.

Exercise: Downloading common reporting tables (CRT)

Exercise 4:

- Select a few years from the years dropdown or Select "All Years"

- Select the "All sectors, summary and cross-cutting tables" or Select "All Tables"

- Click "Apply"

- You will see the list of common reporting tables (CRT) for each year

- Download individual Excel files from the list or download them as .zip file

- Open the Excel file (e.g. 2000)

- Check if the data you entered in the reporting tool is reflected in the reporting tables

Resources for ETF GHG Inventory Tool

- ETF GHG Inventory reporting tool manual
- Tutorial videos

**ETF tools
Tutorial videos**

**ETF tools
User manuals**

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