IPCC Software and ETF Tools

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Overview

- Use of IPCC software for Paris Agreement Reporting
- Interoperability with UNFCCC ETF Reporting
- ETF Reporting Tool – CRTs (Common Reporting Tables)
- ETF Reporting Tool – CTFs (Common Tabular Formats)

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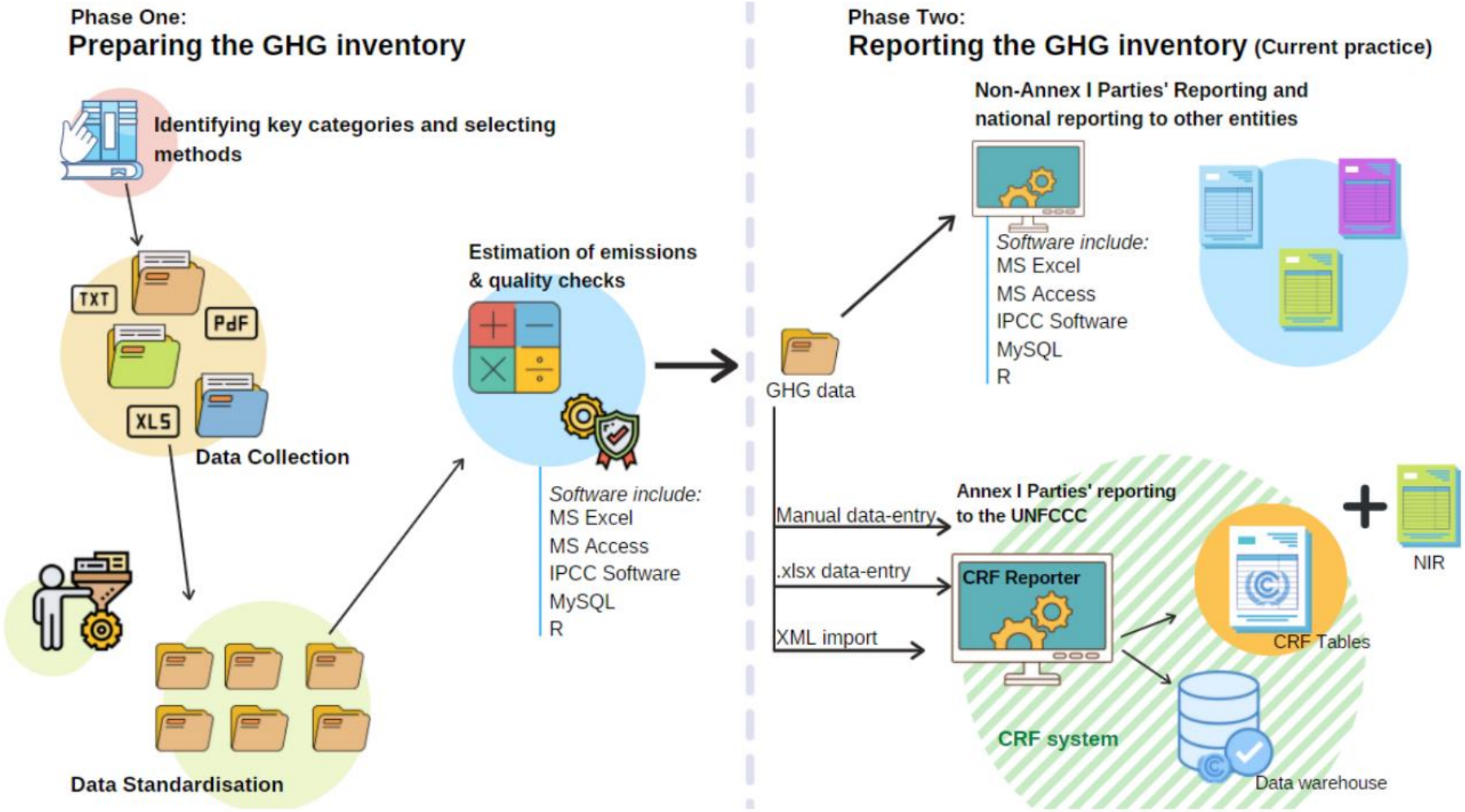
Current GHG inventory and GHG reporting



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IPCC Inventory Software

- IPCC inventory Software is a Tool to Support the Enhanced Transparency Framework Implementation under the Paris Agreement
- The IPCC Task Force on National Greenhouse Gas Inventories (TFI) is responsible for the internationally-agreed methodologies used for the calculation of national anthropogenic GHG emissions and removals by signatories to the UNFCCC and its Paris Agreement TFI — IPCC
- The **IPCC inventory software** can be used to support reporting by countries and Parties to the Paris Agreement.
- XML import/export of data is a fundamental functionality of the software needed for GHG Inventory compilatio
- It is free!

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IPCC Inventory Software

- The IPCC inventory software makes the preparation of national greenhouse gas inventories using IPCC methodologies and default EF (Emission Factor) and parameters easy. The use of country-specific EF and parameters, as well as more complex IPCC tier 2 and tier 3 estimation methods can also be applied using the software.
- The IPCC inventory software also links to the UNFCCC ETF Reporting Tool through an interoperability function. This facilitates the use of the IPCC inventory software for reporting by national governments their national GHG inventory under the Paris Agreement.
- Inventory Software - IPCC-TFI (iges.or.jp)

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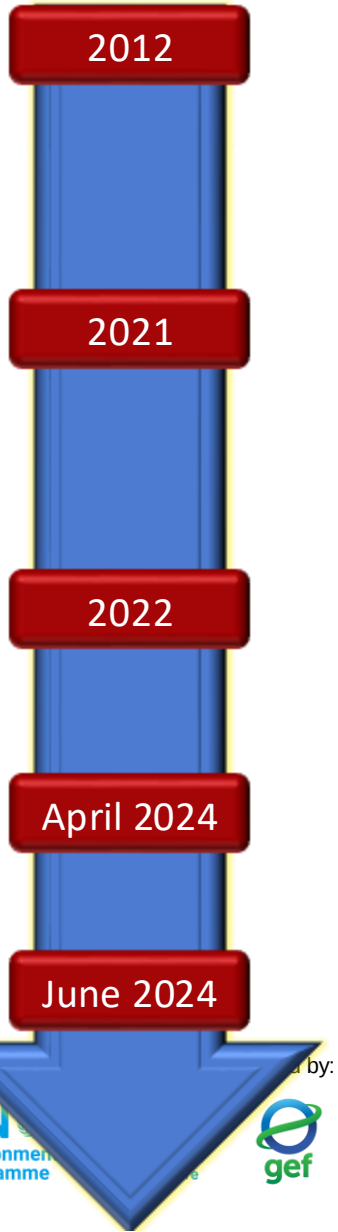
IPCC Inventory Software : from 2012 until today



- ✓ First released in 2012. Initially, designed to be limited to implementing Tier 1 methods of the *2006 IPCC Guidelines*
- ✓ UNFCCC COP26/CMA.3 (Glasgow, 2021), Parties formally recognize value of the IPCC Inventory Software as a tool to help countries report under the Paris Agreement
- ✓ By mid-2022 the *Software* implemented in the **AFOLU & ENERGY** sectors all IPCC Tiers and Approaches in the *2006 IPCC Guidelines* and its *Wetlands Supplement*
- ✓ The latest version (2.93) implements **ALL** IPCC Tiers and Approaches for **ALL SECTORS**
- ✓ **June 2024**, Interoperability between the *Software* and the UNFCCC ETF Reporting Tool to be working for the entire NGHGI

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IPCC Inventory Software

- Latest version, 2.93, has been released on 14 August 2024
- Version 2.91 implements the following:
  - all Methodological Tiers & Approaches according to the *2006 IPCC Guidelines*, and its
    - ✓ *Wetlands Supplement* (in lilac colour)
    - ✓ in addition, some elements of the *2019 Refinement* (in magenta colour) to facilitate Interoperability with the UNFCCC ETF Reporting Tool
  - Interoperability functionality with the UNFCCC ETF Reporting tool (Energy sector, IPPU sector (tables of non-F-gases), Agriculture categories, LULUCF sector, Waste sector)

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Pivotal for National GHG Inventory (NGHGI) Preparation

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Adaptable to national circumstances

- Allows subnational level of reporting
- Use multiple tiers across inventory, even within a category
- Apply your own country-specific values wherever available

Organizing framework for data collection among national entities

Multiple experts in your country can work on different categories/ sectors simultaneously

Establishes a single archive, in-country, to help you build for the future

Confidence that your inventory is consistent with the *2006 IPCC Guidelines* & UNFCCC requirements

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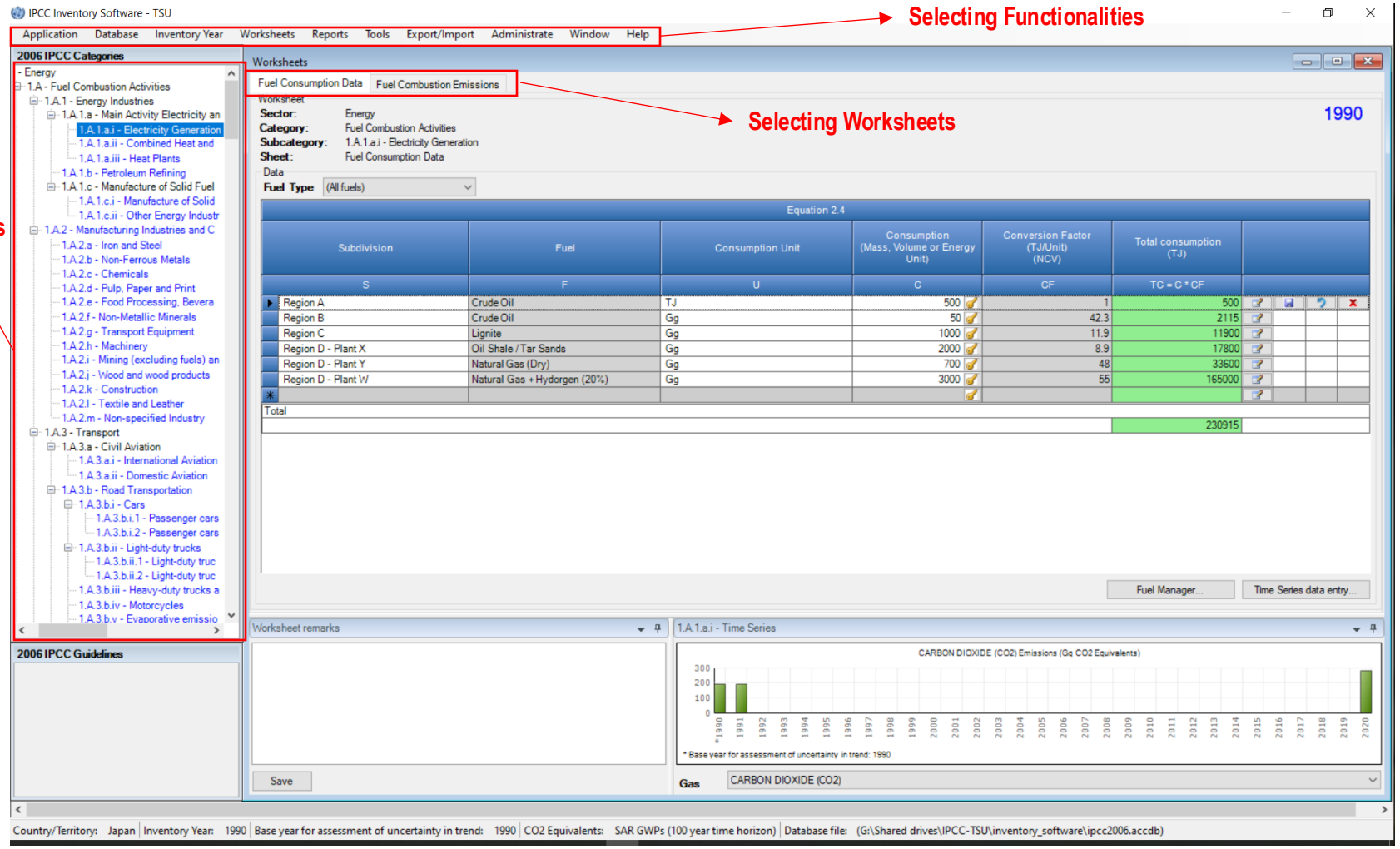
The Software



➢ **Free to use**

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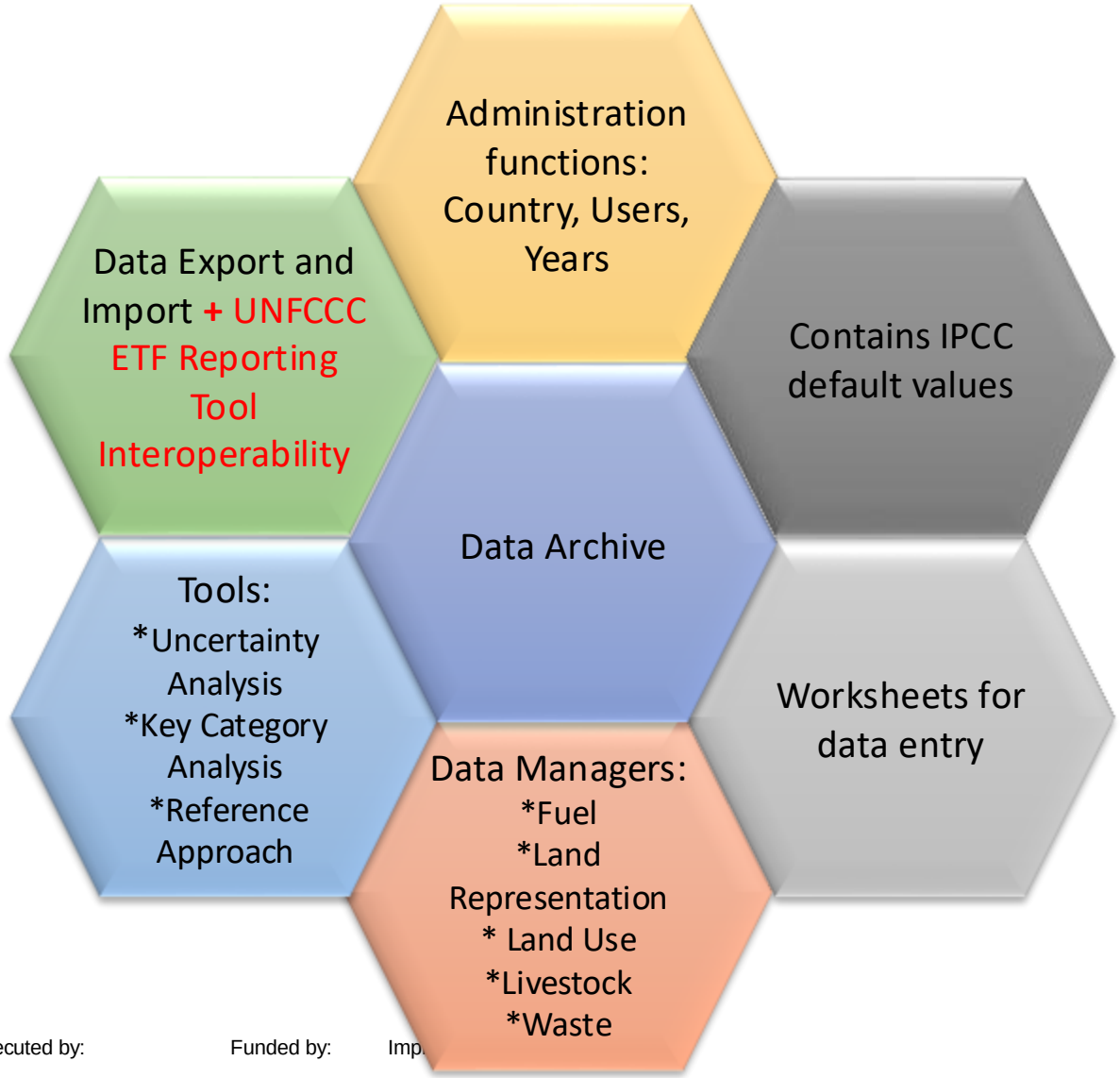
Architecture and system requirement



- MSAccess (ACE OLEDB 12) for WindowsOS
- ACCDB file, *backup function*
- Microsoft .NET Framework 4.6.2
- Password protected

NEVER FORGET PASSWORD!

Deep dive – entering data

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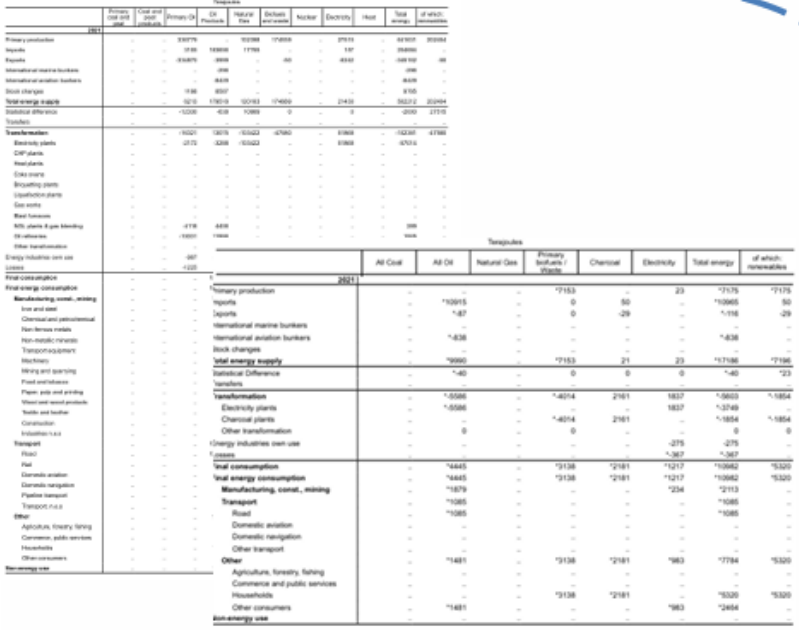
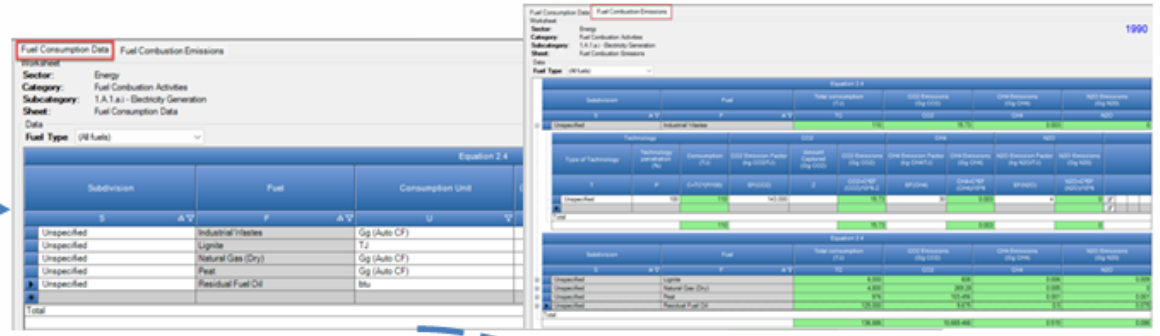
Using national data or readily available international data sets



Source: 2021 Energy Balances
(https://unstats.un.org/unsd/energystats/pubs/balance/)

…and filling in relevant data for each category in the two worksheets below





…for most countries captures majority of emissions:

- *fuel combustion responsible for ~70% of total emissions, excl. LULUCF*
- *Same worksheets allow countries to report Tier 2/3 methods for stationary combustion (~55% of total national emissions, excl LULUCF)*

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IPCC Inventory Software & Paris Agreement Reporting

International reporting requirements

- ✓ Countries to submit a biennial transparency report (BTR), including a national GHG inventory, and its common reporting tables (CRTs).
- ✓ Reporting must follow the Modalities, Procedures and Guidelines (MPGs) (decision 18/CMA.1), and so be based on the *2006 IPCC Guidelines.*

IPCC Inventory Software as a Tool

- ✓ Decision 5/CMA.3 mandates the UNFCCC to develop reporting tools, including for CRTs for GHG inventory.
- ✓ Decision 5/CMA.3 requests the UNFCCC secretariat to facilitate interoperability between the reporting tool and the IPCC Inventory Software and invites the IPCC to cooperate.

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Use NGHGI Software for Paris Agreement Reporting

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IPCC Inventory Software

1. Prepare GHG Inventory in IPCC

- ✓ Estimate GHG emissions consistent with IPCC Guidelines
- ✓ Reduce errors
- ✓ Supports national institutional arrangements

2. Review Visualized CRTs

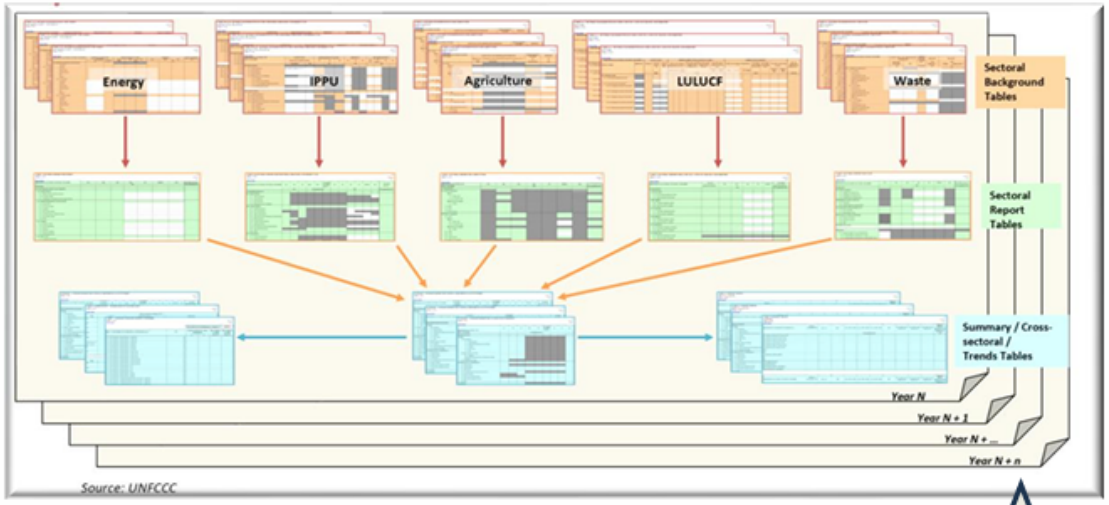
- ✓ Review results; if necessary, go back to calculation worksheets
- ✓ Finalize notation keys for reporting
- ✓ Incorporate information needed for reporting in the CRT, including flexibility, as applicable.

3. Produce JSON file

- ✓ Save file on your computer

4. Upload file to UNFCCC ETF Reporting Tool

UNFCCC ETF Reporting Tool



Complete, Easy to Use, Fundamental

IPCC Inventory Software used to complete 60 tables of the CRT for each year of the time series!

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ipcc INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

Introducing “Interoperability” with the UNFCCC ETF Reporting Tool

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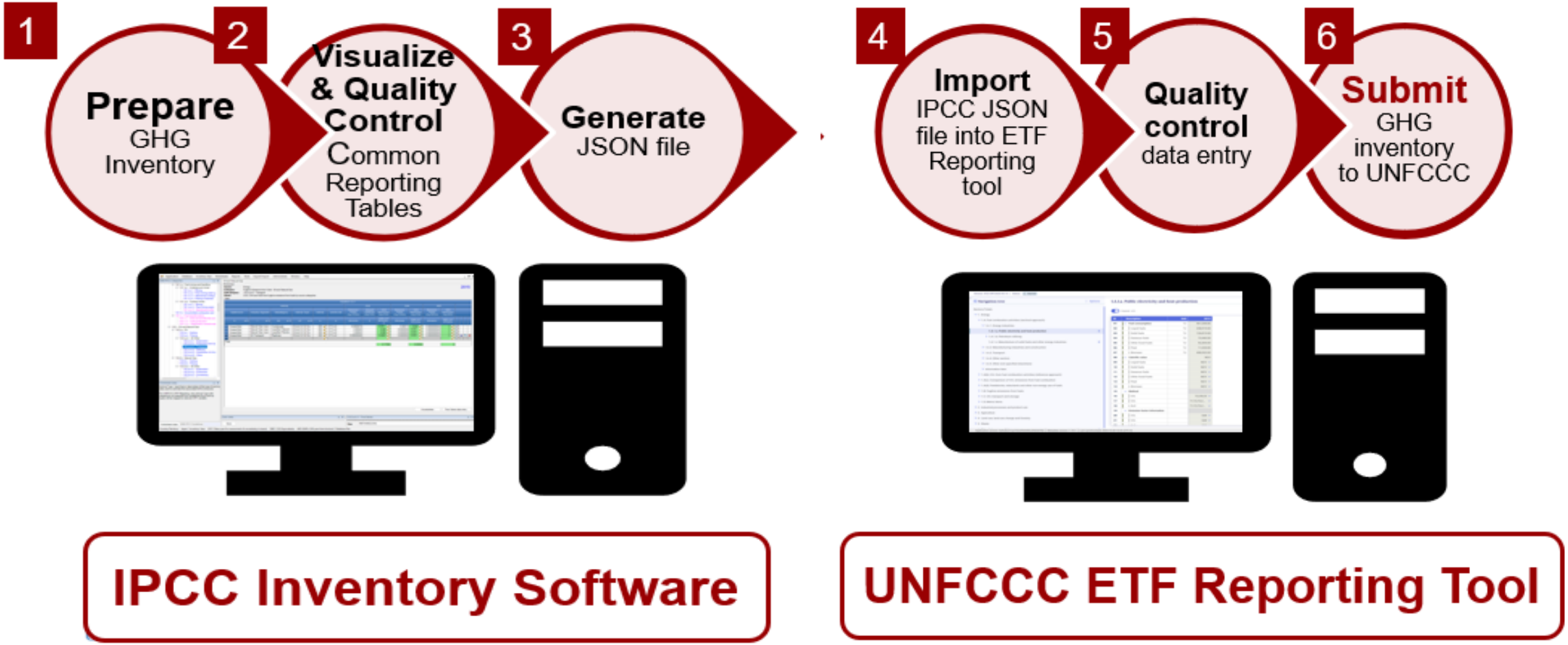

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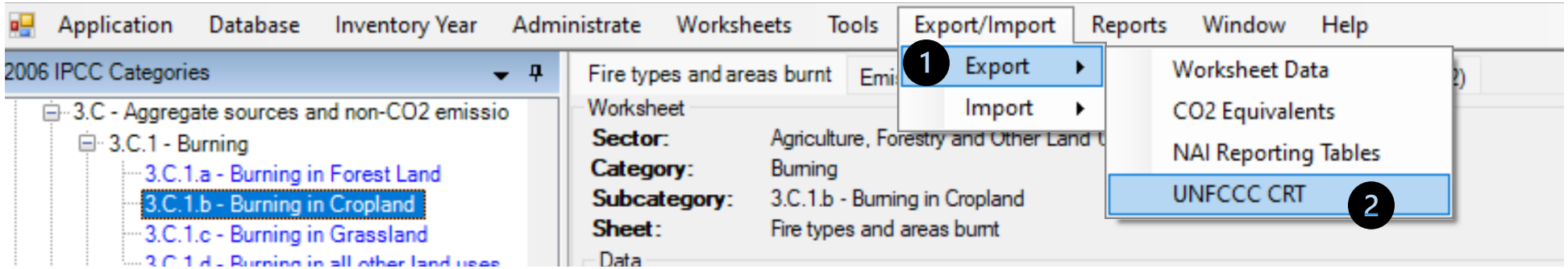
ETF Reporting Tools – CRTs

- Generates the common reporting tables (CRTs) for the electronic reporting of the information in the national inventory reports (NIRs) of anthropogenic emissions by sources and removals by sinks of GHG as contained in annex I to decision 5/CMA.3

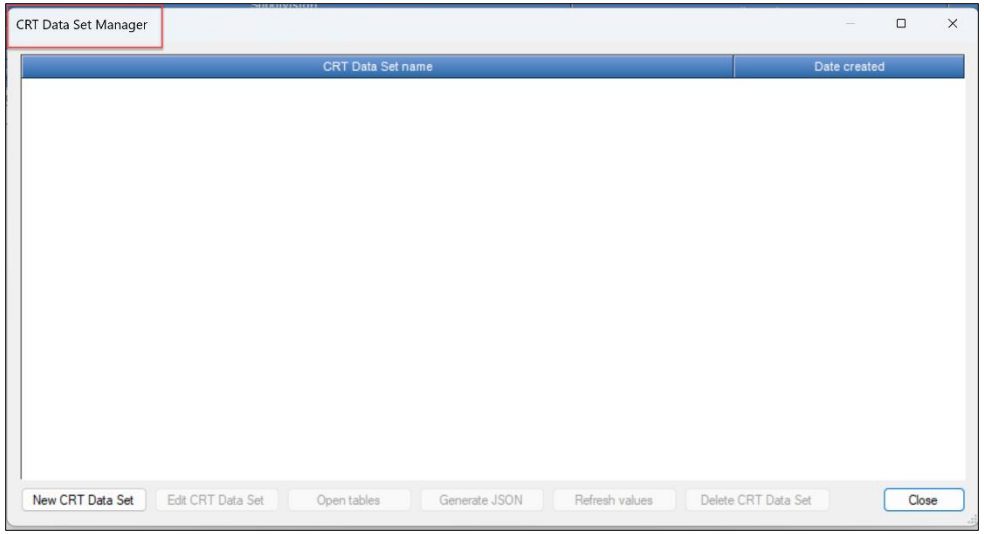
@CRT_2.80.xlsx (live.com)

Access CRT Interface in IPCC Software

1. **Navigate to** Main Menu and select **“Export/Import”**
2. **Select** “Export” and “UNFCCC CRT”



- This opens the **CRT Data Set Manager** interface



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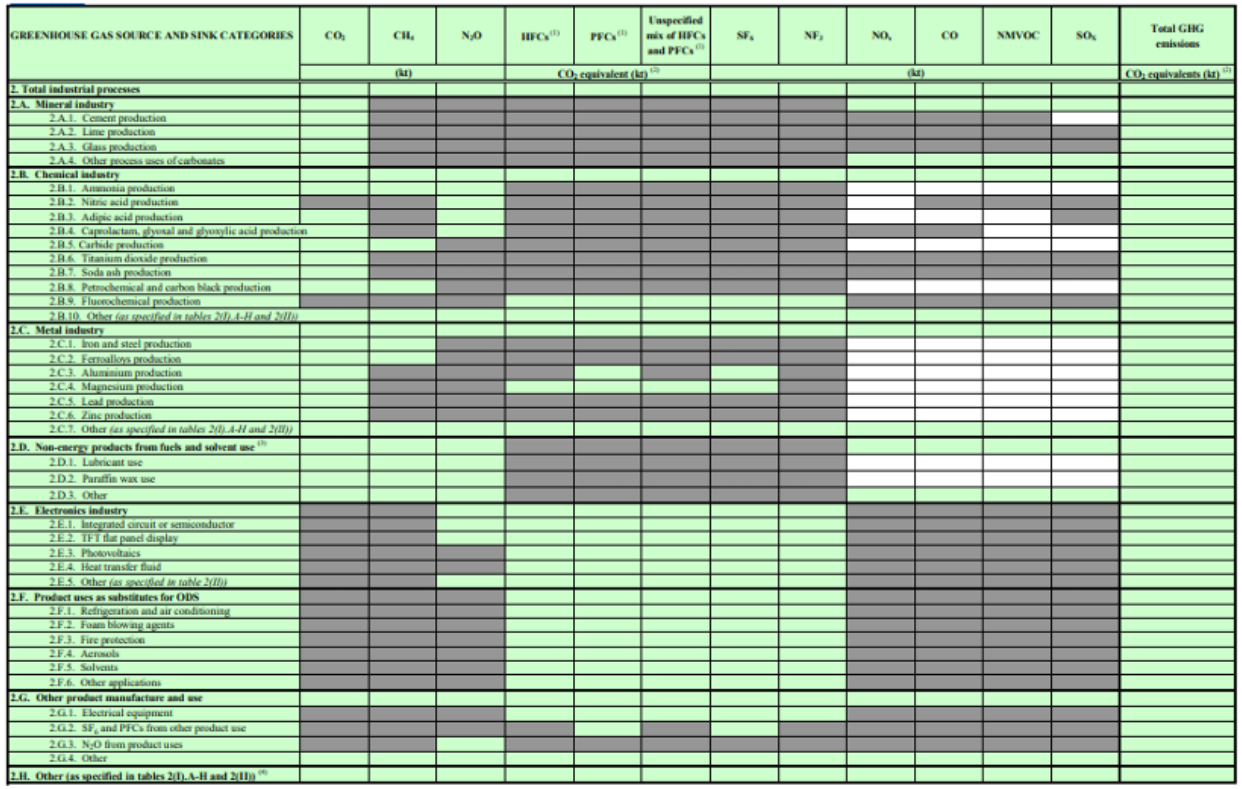
Objectives of CRTs

- The CRTs are a standardized set of reporting tables that all Parties must submit under the reporting requirements of the MPGs.
- Building on CRF tables used by Annex I Parties to report their annual GHG inventories
- The key characteristic is commonality.
- Consistent categories and definitions by all Parties.
- All sectors, categories, gases and pools defined in the MPGs.
- The source and sink definitions are based on 2006 IPCC Guidelines.

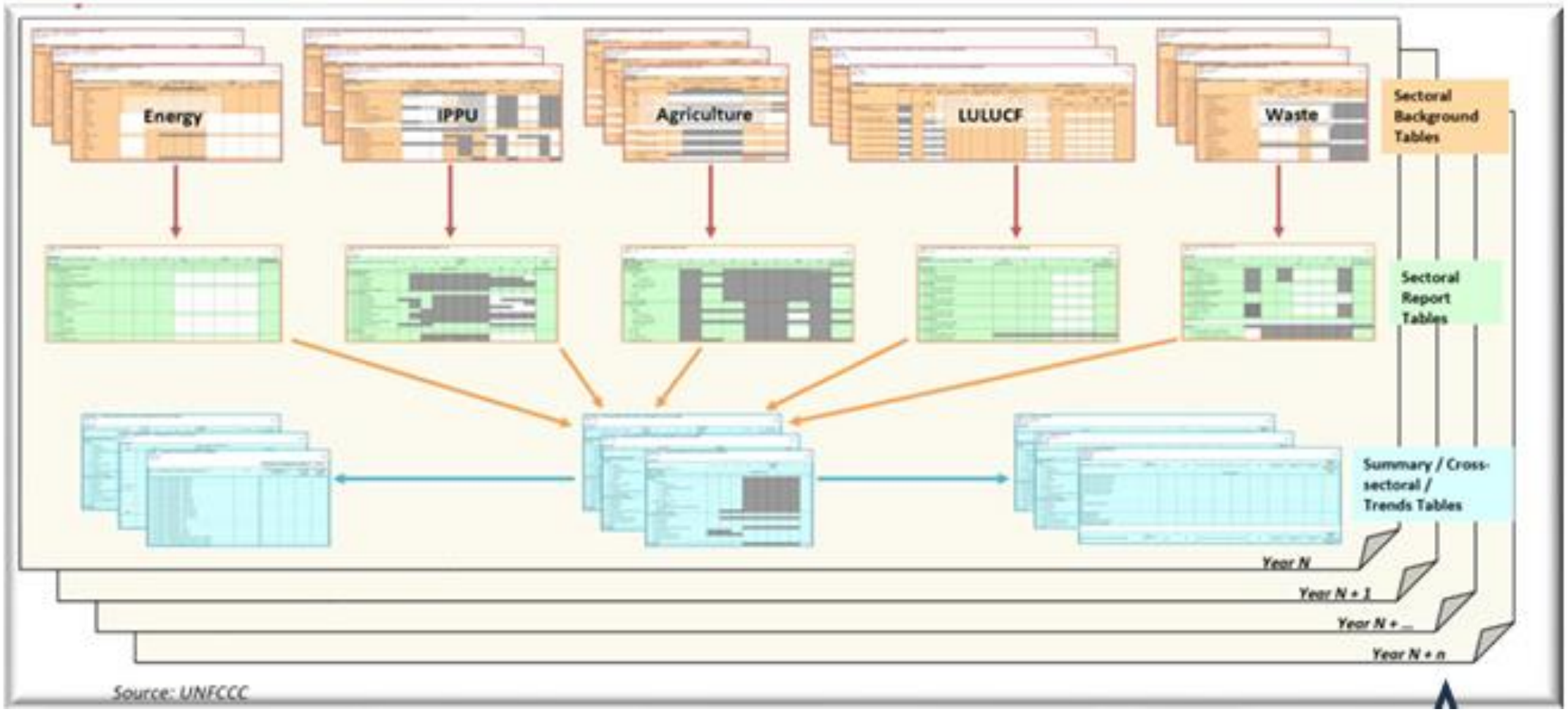
CRTs



GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	$HFCs$ [1]	$PFCs$ [1]	Unspecified mix of HFCs and PFCs [1]	SF_6	NF_3	NO_x	CO	NMVOC	SO_x	Total GHG emissions
	(kt)			CO_2 equivalent (kt) [2]			(kt)						CO_2 equivalents (kt) [2]
2. Total industrial processes													
2.A. Mineral industry													
2.A.1. Cement production													
2.A.2. Lime production													
2.A.3. Glass production													
2.A.4. Other process uses of carbonates													
2.B. Chemical industry													
2.B.1. Ammonia production													
2.B.2. Nitric acid production													
2.B.3. Adipic acid production													
2.B.4. Caprolactam, glyoxal and glyoxylic acid production													
2.B.5. Carbide production													
2.B.6. Titanium dioxide production													
2.B.7. Soda ash production													
2.B.8. Petrochemical and carbon black production													
2.B.9. Fluorochemical production													
2.B.10. Other *(as specified in tables 2(I).A-H and 2(II))*													
2.C. Metal industry													
2.C.1. Iron and steel production													
2.C.2. Ferroalloys production													
2.C.3. Aluminium production													
2.C.4. Magnesium production													
2.C.5. Lead production													
2.C.6. Zinc production													
2.C.7. Other *(as specified in tables 2(I).A-H and 2(II))*													
2.D. Non-energy products from fuels and solvent use [3]													
2.D.1. Lubricant use													
2.D.2. Paraffin wax use													
2.D.3. Other													
2.E. Electronics industry													
2.E.1. Integrated circuit or semiconductor													
2.E.2. TFT flat panel display													
2.E.3. Photovoltaics													
2.E.4. Heat transfer fluid													
2.E.5. Other *(as specified in table 2(II))*													
2.F. Product uses as substitutes for ODS													
2.F.1. Refrigeration and air conditioning													
2.F.2. Foam blowing agents													
2.F.3. Fire protection													
2.F.4. Aerosols													
2.F.5. Solvents													
2.F.6. Other applications													
2.G. Other product manufacture and use													
2.G.1. Electrical equipment													
2.G.2. SF_6 and PFCs from other product use													
2.G.3. N_2O from product uses													
2.G.4. Other													
2.H. Other (as specified in tables 2(I).A-H and 2(II)) [4]													

- CRTs contain the reported figures and NID contains the full description of data, methods and assumptions, source of information etc.
- Some CRTs contain documentation boxes with background information and relevant references to the NID
- Some CRTs leave space for reporting memo items
- Parties may also add country specific categories to the CRTs

Structure of CRTs



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Structure of CRTs



Sectoral Background Tables



Sectoral Report Tables



Summary / Cross-sectoral / Trends Tables

- Set of MS Excel workbook (60 worksheets) for each year
- Sectoral background tables (Level 3)
- Sectoral report tables (Level 2)
- Summary/cross-cutting/trends table (Level 1)

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CRTs – operation

- The sectoral background data tables require detailed information on emissions, removals activity data and other relevant information at the category and subcategory level
- Most of the data in filled in by the inventory compiler.
- In the CRTs, unshaded cells show data completed by Parties, in the grey shaded cells information is not expected to exist or be provided; and colored shaded cells are automatically completed by the software when Parties submit their data
- The CRTs are generated by the UNFCCC GHG inventory reporting tool
- Flexibility provision – collapse relevant rows

ETF Reporting Tool – CTFs

- Generates the common tabular formats (CTFs) for the electronic reporting of the information necessary to track progress made in implementing and achieving nationally determined contributions (NDCs) under Article 4 of the Paris Agreement, as contained in Annex II to decision 5.CMA.3.
- CTF tables facilitate the tracking and reporting of countries' efforts to reduce GHG emissions and achieve their NDCs
- CTF tables provide a structured and consistent format for reporting emission reduced, emissions projection and other relevant data

CTFs – details

- In total, the Common Tabular Formats (CTF) for tracking NDC comprise 12 Tables and one Appendix, covering the parts of Section III of the MPG:
- Section III: Information necessary to track progress made in implementing and achieving NDC
- Appendix: Description of a Party´s NDC
- Table 1: Description of selected indicators
- Table 2: Definitions needed to understand the NDC
- Table 3: Methodologies and accounting approaches
- Table 4: Tracking progress
- Table 5: Mitigation policies, measures, actions and plans (Achieved)
- Table 6: Inventory summary

CTFs – details

- Table 5: Mitigation policies, measures, actions and plans (expected)
- Table 7: Projections “with measures” scenario
- Table 8: Projections “with additional measures” scenario
- Table 9: Projections “without measure” scenario
- Table 10: Projections of key indicators
- Table 11: Key underlying assumptions and parameters of projections
- Table 12. Information necessary to track progress on the implementation and achievement of the domestic policies and measures implemented to address the social and economic consequences of response measures

Understanding CTFs

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Progress of what?	What is the Target?	Description of NDC	Appendix
How will I track Progress?	Definitions	Definition necessary to understand the NDC	Table 1
	Indicators	Description of the indicator	Table 2
	Methodologies	Methodologies and accounting approaches	Table 3
How will I achieve the Target?	Policies, Measures, Actions & Plans	Mitigation policies, measures, action and plans	Table 5
	Projections	Projections of GHG emissions and Removals	Table 7,8&9
		Projections of indicators	Table10
		Assumptions and parameters for projections	Table 11
Am I on Track?/ Did I achieve the target?	GHG Emissions and Removals	Summary of GHG inventory	Table 6
	Make Assessment	Structured summary	Table 4

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CTF

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Annex II*

Common tabular formats for the electronic reporting of the information necessary to track progress made in implementing and achieving nationally determined contributions under Article 4 of the Paris Agreement

1. Structured summary: Description of selected indicators

Indicator(s) selected to track progress[a]	*Description*
{Indicator}	
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate[b]	
Updates in accordance with any recalculation of the GHG inventory, as appropriate[b]	
Relation to NDC[c]	

Notes: (1) Pursuant to para. 79 of the MPGs, each Party shall report the information referred to in paras. 65–78 of the MPGs in a narrative and common tabular format, as applicable. (2) A Party may amend the reporting format (e.g. Excel file) to remove specific rows in this table if the information to be provided in those rows is not applicable to the Party's NDC under Article 4 of the Paris Agreement, in accordance with the MPGs. (3) The Party could add rows for each additional selected indicator and related information.

[a] Each Party shall identify the indicator(s) that it has selected to track progress of its NDC (para. 65 of the MPGs).

[b] Each Party shall provide the information for each selected indicator for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), and shall update the information in accordance with any recalculation of the GHG inventory, as appropriate (para. 67 of the MPGs).

[c] Each Party shall describe for each indicator identified how it is related to its NDC (para. 76(a) of the MPGs).

Custom footnotes:

Documentation box:

PNG's NDC targets

PNG is committing to a headline target of carbon neutrality within the energy industries sub-sector.

- Increasing levels of renewables in the energy mix for on-grid connection – through increasing the share of installed capacity of renewable energy from 30 percent in 2015 to 78 percent in 2030.
- Reducing energy demand - through adoption and implementation of Minimum Energy Performance Standards and Labelling (MEPSL) Regulations.
- Establishing a framework for fossil fuel emission offsetting – PNG remains committed to an energy transition but also recognizes that a full transition will take time given PNG's complex geographies and dispersed population as well as a growing economy.
- PNG will continue to review appropriate options and approaches to reduce emissions from the transport sub-sector.

PNG's NDC targets

LULUCF:

By 2030, the annual emission from deforestation and forest degradation due to agriculture expansion and commercial logging will be reduced by 10,000 Gg CO2 eq comparing to 2015 level. This will result in the LULUCF sub-sector moving from a net GHG source (1, 176 Gg CO2 eq) in 2015 to net GHG sink (-8,284 Gg CO2 eq) by 2030 to mitigate emissions from other sector

Adaptation:

The enhanced NDC will focus on four (4) development sectors impacted by the nine (9) priority areas. The development sectors include agriculture, health, infrastructure, and transport which are in line with the development of the PNG National Adaptation Plan.

Tracking progress – steps

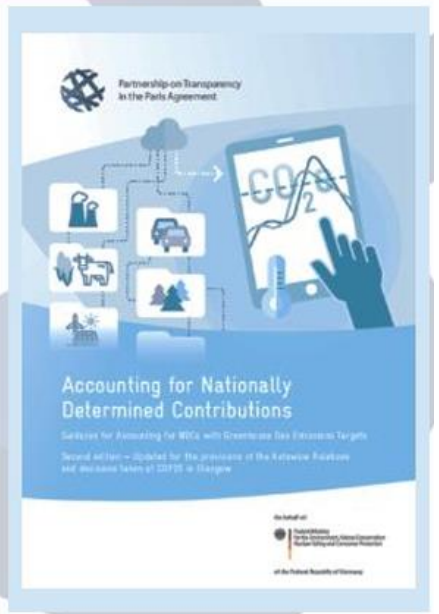
1

- **Identify and assess NDC targets (GHG, non-GHG, adaptation)**

✓List targets in a tabular format with relevant details (Decision 5/CMA.3 – voluntary Appendix table useful)

✓Quantitative, qualitative, scope, timeframe, unit, baseline

	Description
Target(s) and description, including target type(s), as applicable	• Economy-wide net greenhouse gas emission reduction of 20% by 2030 compared to the base year 2005 • Target Type: economy-wide emission reduction target
Target year(s) or period(s), and whether they are single-year or multi-year target(s), as applicable	• Target year: 2030 • Single-year target
Reference point(s), level(s), baseline(s), base year(s) or starting point(s), and their respective value(s), as applicable	• Reference level: Economy-wide net greenhouse gas emissions and removals in 2005 • Value: 100 Mt CO_2e
Time frame(s) and/or periods for implementation, as applicable	• Period for implementation: 2021–2030
Scope and coverage, including, as relevant, sectors, categories, activities, sources and sinks, pools and gases, as applicable	• Sectors: Energy, industrial processes and product use, agriculture, land use, land use change and forestry, waste • Coverage: All emissions and removals on the national territory • Gases: CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NF_3
Intention to use cooperative approaches that involve the use of ITMOs under Article 6 towards NDCs under Article 4 of the Paris Agreement, as applicable	The Party does not intend to use cooperative approaches
Any updates or clarifications of previously reported information, as applicable	The reference level has been updated due to recalculations in the national greenhouse gas inventory. The value communicated in the NDC was 101 Mt CO_2e. The updated reference level (emissions level in the base year) is 100 Mt CO_2e.



Useful PATPA resources:

Accounting for NDCs: https://transparency-partnership.net/system/files/document/Guidance_Accounting%20for%20NDCs_engl_2022.pdf

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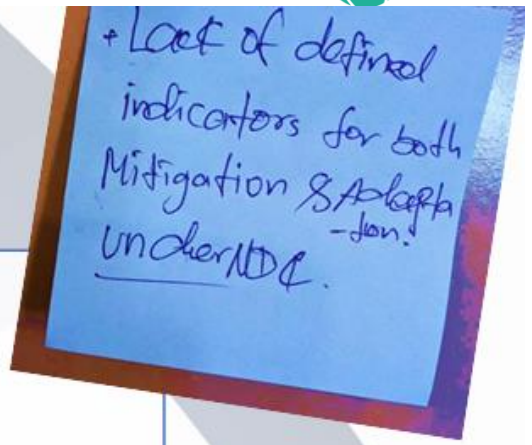
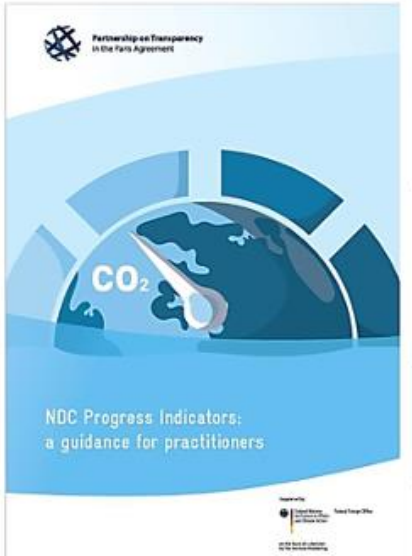
Tracking of progress - overview of steps



2

- Identify type of indicator suitable to track the target
  - ✓SMART: Specific + Measurable + Achievable + Relevant + Time-bound
  - ✓ Clarify scope, units, reference/baseline levels.
  - ✓Involve stakeholders responsible for implementing measures

S	M	A	R	T
Specific	Measurable	Ambitious	Relevant	Time-bound
The indicator is clearly defined, so there cannot be different interpretations on what it is about or whether a target has been achieved or not.	The indicator value can be measured either quantitatively or qualitatively.	Achieving the target requires ambitious action.	The indicator relates to a relevant impact of a climate action.	The indicator relates to a point in time or timeframe when or during which the target value must be reached.



Useful PATPA resources:

NDC Progress Indicators: a guidance for practitioners: https://transparency-partnership.net/publications-tools/ndc-progress-indicators-guidance-practitioners

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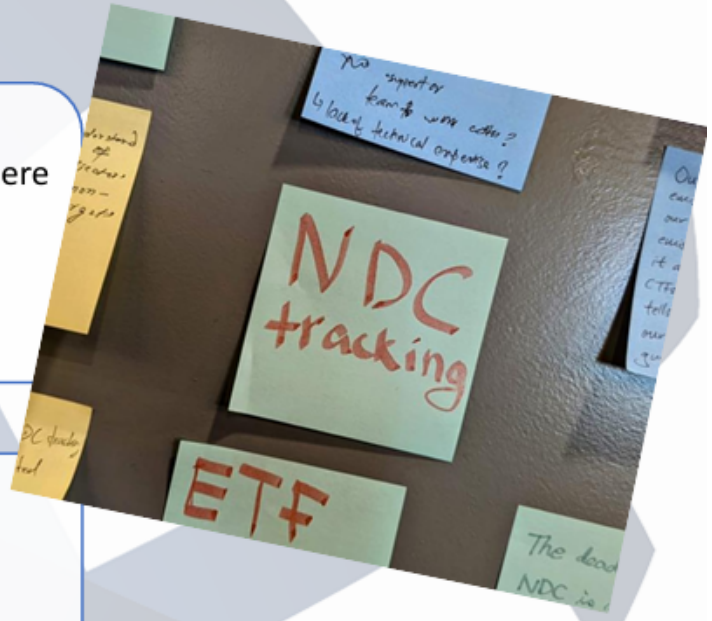
Tracking of progress - overview of steps

3

- **Identify data and methodology required**
  - ✓Data collection: determine what information is required, who collects the data, where data is available, when data has to be collected.
  - ✓Check if adjustments to scope or units are necessary. Identify if calculations are needed and what methodologies to use

4

- **Compile, report, document, archive**
  - ✓Assess integration of data collection with existing processes. Plan long-term improvements for data quality and availability.
  - ✓Document all relevant information for future compilation. Learn from national GHG inventory and statistical offices' processes.



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Thank you for your attention

For more information

https://climate-transparency-platform.org

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