

Implementation of the Enhanced Transparency Framework (ETF)
Workshop 21–25 April 2024, Riyadh, Saudi Arabia

INTRODUCTION TO COMMON REPORTING TABLES

Khetsiwe Khumalo
Advisor –Climate Transparency
UNEP-CCC
Khetsiwe.khumalo@un.org

INTRODUCTION TO CRTS

Decision 18/CMA.1

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.**

47. Each Party shall report estimates of emissions and removals for all categories, gases and carbon pools considered in the GHG inventory throughout the reported period on a gas by-gas basis in units of mass at the most disaggregated level, in accordance with the IPCC guidelines referred to in paragraph 20 above, **using the common reporting tables**, including a descriptive summary and figures underlying emission trends, with emissions by sources listed separately from removals by sinks, except in cases where it may be technically impossible to separate information on emissions and removals in the LULUCF sector, and noting that a minimum level of aggregation is needed to protect confidential business and military information.



OVERVIEW 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

OVERVIEW OF CRTs

- 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
- CRTs ensure consistent categories

[Back to index](#)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	HFCs ⁽¹⁾	PFCs ⁽¹⁾	Unspecified mix of HFCs and PFCs ⁽¹⁾	SF ₆	NF ₃	NO _x	CO	NM VOC	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-II and 2(II))													
2.C. Metal industry													
2.C.1. Iron and steel production													
2.C.2. Ferroalloy 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-II 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 ₂ O from product uses													
2.G.4. Other													
2.H. Other (as specified in tables 2(I), A-II and 2(II))⁽⁴⁾													

⁽¹⁾ Emissions of HFCs, PFCs, unspecified mix of HFCs and PFCs, and other F-gases are to be expressed in CO₂ eq. Data on disaggregated emissions of HFCs and PFCs are to be provided in table 2(I).

⁽²⁾ As per decision 18/CMA.1, annex, para. 37, each Party shall use the 100-year time-horizon GWP values from the IPCC Fifth Assessment Report, or 100-year time-horizon GWP values from a subsequent IPCC assessment report as agreed upon by the CMA, to report aggregate emissions and removals of GHGs, expressed in CO₂ eq. Each Party may in addition also use other metrics (e.g. global temperature potential) to report supplemental information on aggregate emissions and removals of GHGs, expressed in CO₂ eq. In such cases, the Party shall provide in the NID information on the values of the metrics used and the IPCC assessment report they were sourced from.

⁽³⁾ Reporting indirect CO₂ from, for example, solvent use may result in the double counting of NMVOC emissions. This should be explained in the NID.

⁽⁴⁾ CO₂ from food and drink production (e.g. gasification of water) can be of biogenic or non-biogenic origin. Only information on CO₂ emissions of non-biogenic origin should be reported.

Note: Minimum level of aggregation is needed to protect confidential business and military information, where it would identify particular entity's/entities' confidential data.



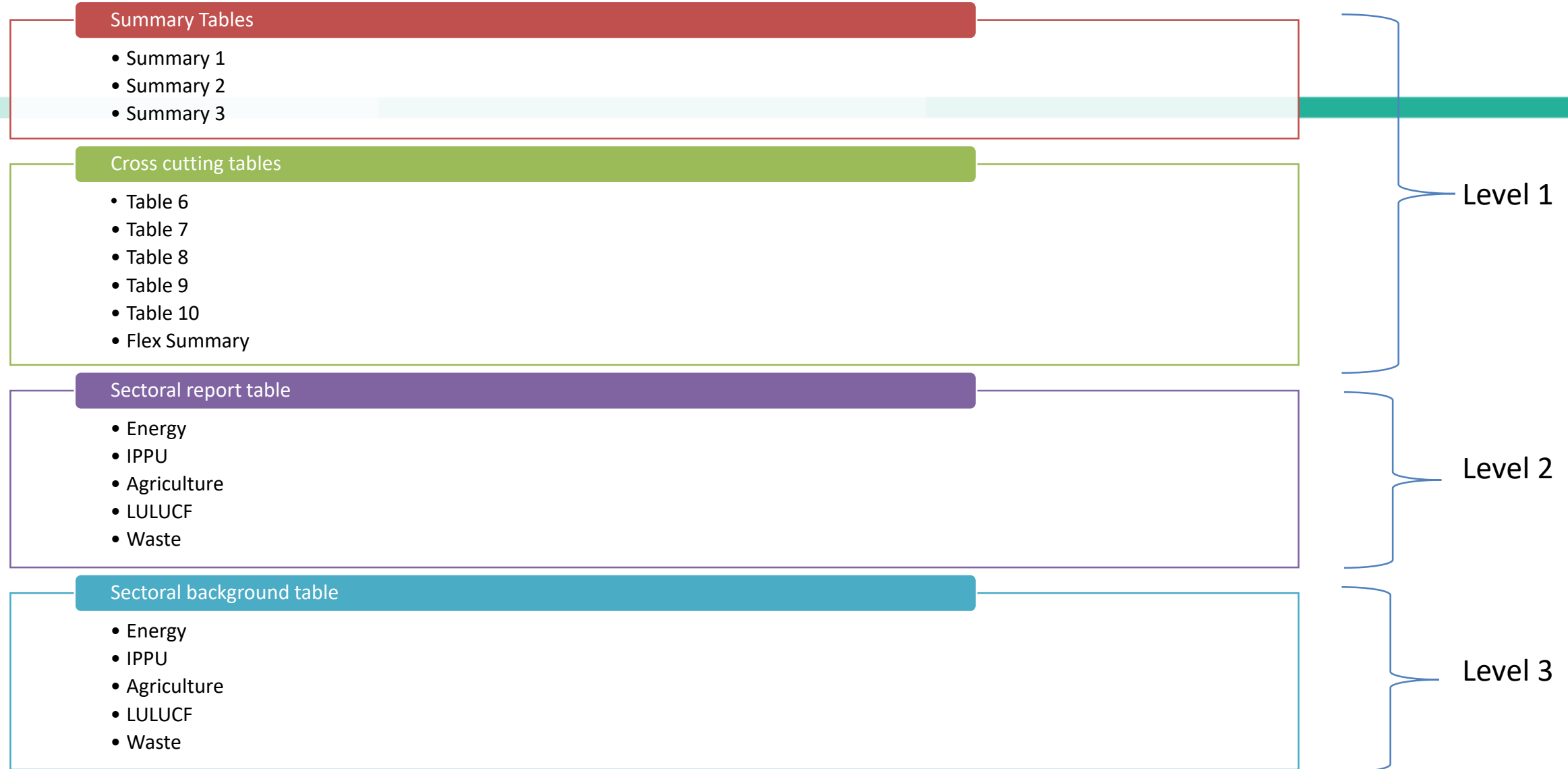
OVERVIEW OF CRTs

- The CRTs contain data for all sectors and categories defined in the MPGs.
- The sources and sink definitions are based on the categorization in the 2006 IPCC guidelines.
- Parties may also add country specific categories to the CRTs



STRUCTURE OF CRT

<https://unfccc.int/documents/311076>



Source: UNFCCC BTR review training: Course B. Technical review of national inventory reports of anthropogenic emissions by sources and removals by sinks of ghg

STRUCTURE OF CRT

This image displays a stack of four 'Sectoral Background Tables for Energy'. Each table is a detailed spreadsheet with multiple columns for various energy-related metrics and categories. The tables are organized into sections, with the top section containing headers and the bottom section containing data rows. The tables are color-coded with orange and white backgrounds.

Sectoral Background Tables

This image displays a stack of four 'Sectoral Report Tables for Energy'. These tables are structured as multi-column spreadsheets, with the top row containing headers for various energy metrics. The data is presented in a grid format with alternating green and white rows. The tables are organized into sections, with the top section containing headers and the bottom section containing data rows.

Sectoral Report Tables

This image displays a stack of four 'Summary / Cross-sectional / Trends Tables for CO2 Equivalent Emissions'. These tables are structured as multi-column spreadsheets, with the top row containing headers for various emission metrics. The data is presented in a grid format with alternating light blue and white rows. The tables are organized into sections, with the top section containing headers and the bottom section containing data rows.

Summary / Cross-sectional / Trends Tables

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

STRUCTURE OF CRT TABLES

All Unshaded cells must be filled by Parties; they should contain either a figure or standard notation keys

Grey shaded cells should not be filled as information is expected not to be applicable

Colored shaded cells are automatically completed by software

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	NO _x	CO	NM VOC	SO _x	Total GHG emissions ⁽¹⁾
	(kt)							CO ₂ equivalents (kt) ⁽²⁾
5. Total waste								
5.A. Solid waste disposal								
5.A.1. Managed waste disposal sites								
5.A.2. Unmanaged waste disposal sites								
5.A.3. Uncategorized waste disposal sites								

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS		N ₂ O EMISSIONS		
	Area ⁽³⁾ (kha)	N mineralised in mineral soils associated with loss of soil C from soil organic matter ⁽⁴⁾ (t N/year)	N ₂ O-N emissions per area ⁽⁵⁾ (kg N ₂ O-N/ha)	N ₂ O-N emissions per unit of N lost through leaching and run-off (kg N ₂ O-N/kg N)	Direct Emissions	Indirect Emissions ^(4,6)	Total Emissions
					(kt)		
4(III). Total for all land-use categories							
4(III).A. Forest land ⁽⁷⁾							
4(III).A.1. Forest land remaining forest land							
4(III).A.2. Lands converted to forest land ⁽⁸⁾							
Drop down list:							

Structure of CRT

Summary Tables

Summary 1
Summary 2
Summary 3

Other Tables

Table 6 Table 9
Table 7 Table 10
Table 8 Flex Summary

Level 1

Energy

IPPU

Agriculture

LULUCF

Waste

Level 2

SRT
Table 1

SRT
Table 2 (I)
Table 2 (II)

SRT
Table 3

SRT
Table 4

SRT
Table 5

Level 3

SBDT

Table 1.A(a)
Table 1.A(b)
Table 1.A(c)
Table 1.A(d)
Table 1.B.1
Table 1.B.2
Table 1.C
Table 1.D

SBDT

Table 2 (I) A-H
Table 2 (II) B-H₁
Table 2 (II) B-H₂

SBDT

Table 3.A
Table 3.B(a)
Table 3.B(b)
Table 3.C
Table 3.D
Table 3.E
Table 3.F
Table 3.G-J

SBDT

Table 4.1
Table 4.B
Table 4.C
Table 4.D
Table 4.E
Table 4.F
Table 4. (I)
Table 4. (II)
Table 4. (III)
Table 4. (IV)
Table 4.G

SBDT

Table 5.A
Table 5.B(a)
Table 5.B(b)
Table 5.C

Level 3 - Sectoral background data tables

- 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 is filled in by the inventory compiler.
 - The exceptions are the cells in which emissions are summed at the category level, along with IEFs or implied carbon stock change factors

TABLE 2(I).A-H SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES AND PRODUCT USE
Emissions of CO₂, CH₄ and N₂O
(Sheet 1 of 1)

Year
Submission
Country

[Back to Index](#)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽¹⁾			EMISSIONS ⁽²⁾			RECOVERY/CAPTURE ^(3,4)			
	Production/Consumption quantity		CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O	CO ₂ fossil	CO ₂ biogenic ⁽⁵⁾	CH ₄	N ₂ O
	Description ⁽⁵⁾	(kt)	(t/t)			(kt)			(kt)			
2.A. Mineral industry												
2.A.1. Cement production	(e.g. cement or clinker production)											
2.A.2. Lime production												
2.A.3. Glass production												
2.A.4. Other process uses of carbonates												
2.A.4.a. Ceramics												
2.A.4.b. Other uses of soda ash												
2.A.4.c. Non-metallurgical magnesium production												
2.A.4.d. Other (please specify)												
2.B. Chemical industry												
2.B.1. Ammonia production ⁽⁷⁾												
2.B.2. Nitric acid production												
2.B.3. Adipic acid production												
2.B.4. Caprolactam, glyoxal and glyoxylic acid production												
2.B.4.a. Caprolactam												
2.B.4.b. Glyoxal												
2.B.4.c. Glyoxylic acid												
2.B.5. Carbide production												
2.B.5.a. Silicon carbide												
2.B.5.b. Calcium carbide												
2.B.6. Titanium dioxide production												
2.B.7. Soda ash production												
2.B.8. Petrochemical and carbon black production												
2.B.8.a. Methanol												
2.B.8.b. Ethylene												
2.B.8.c. Ethylene dichloride and vinyl chloride monomer												
2.B.8.d. Ethylene oxide												
2.B.8.e. Acrylonitrile												
2.B.8.f. Carbon black												

Level 3 - Example of sectoral background data

TABLE 2(I).A-H SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES AND PRODUCT USE
Emissions of CO₂, CH₄ and N₂O
 (Sheet 1 of 1)

Year
 Submission
 Country

[Back to Index](#)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽¹⁾			EMISSIONS ⁽²⁾			RECOVERY/CAPTURE ^(3,4)			
	Production/Consumption quantity		CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O	CO ₂ fossil	CO ₂ biogenic ⁽⁶⁾	CH ₄	N ₂ O
	Description ⁽⁵⁾	(kt)	(t/t)			(kt)			(kt)			
2.A. Mineral industry												
2.A.1. Cement production	(e.g. cement or clinker production)											
2.A.2. Lime production												
2.A.3. Glass production												
2.A.4. Other process uses of carbonates												
2.A.4.a. Ceramics												
2.A.4.b. Other uses of soda ash												
2.A.4.c. Non-metallurgical magnesium production												
2.A.4.d. Other (please specify)												
2.B. Chemical industry												
2.B.1. Ammonia production ⁽⁷⁾												
2.B.2. Nitric acid production												
2.B.3. Adipic acid production												
2.B.4. Caprolactam, glyoxal and glyoxylic acid production												
2.B.4.a. Caprolactam												
2.B.4.b. Glyoxal												
2.B.4.c. Glyoxylic acid												
2.B.5. Carbide production												
2.B.5.a. Silicon carbide												
2.B.5.b. Calcium carbide												
2.B.6. Titanium dioxide production												
2.B.7. Soda ash production												
2.B.8. Petrochemical and carbon black production												
2.B.8.a. Methanol												
2.B.8.b. Ethylene												
2.B.8.c. Ethylene dichloride and vinyl chloride monomer												
2.B.8.d. Ethylene oxide												
2.B.8.e. Acrylonitrile												
2.B.8.f. Carbon black												

Activity data, kt

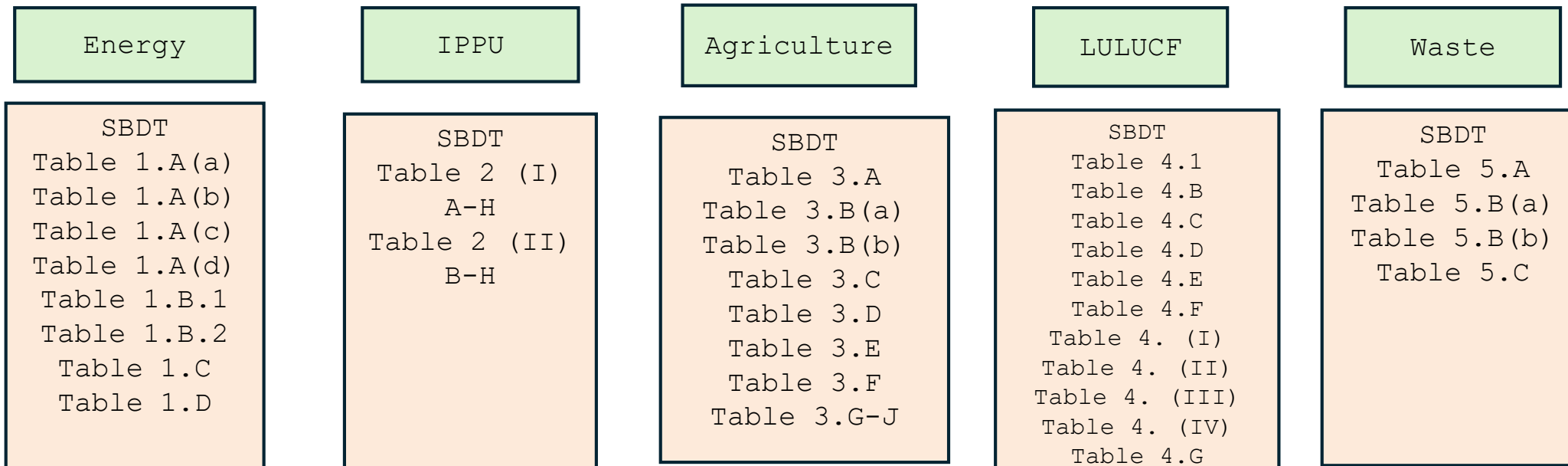
Implied Emission Factor, t/t

Emissions, kt

Recovery/capture, kt

Level 2 - Sectoral reporting tables

- **Level 2 aggregate the data from the sectoral background data tables at the sectoral level.**
- One level 2 table for each sector.
- Emissions are reported on a mass basis (kt) and a total CO2 eq basis.



Level 2 – Example of sectoral report table

TABLE 5 SECTORAL REPORT FOR WASTE
(Sheet 1 of 1)

Year
Submission
Country

[Back to Index](#)

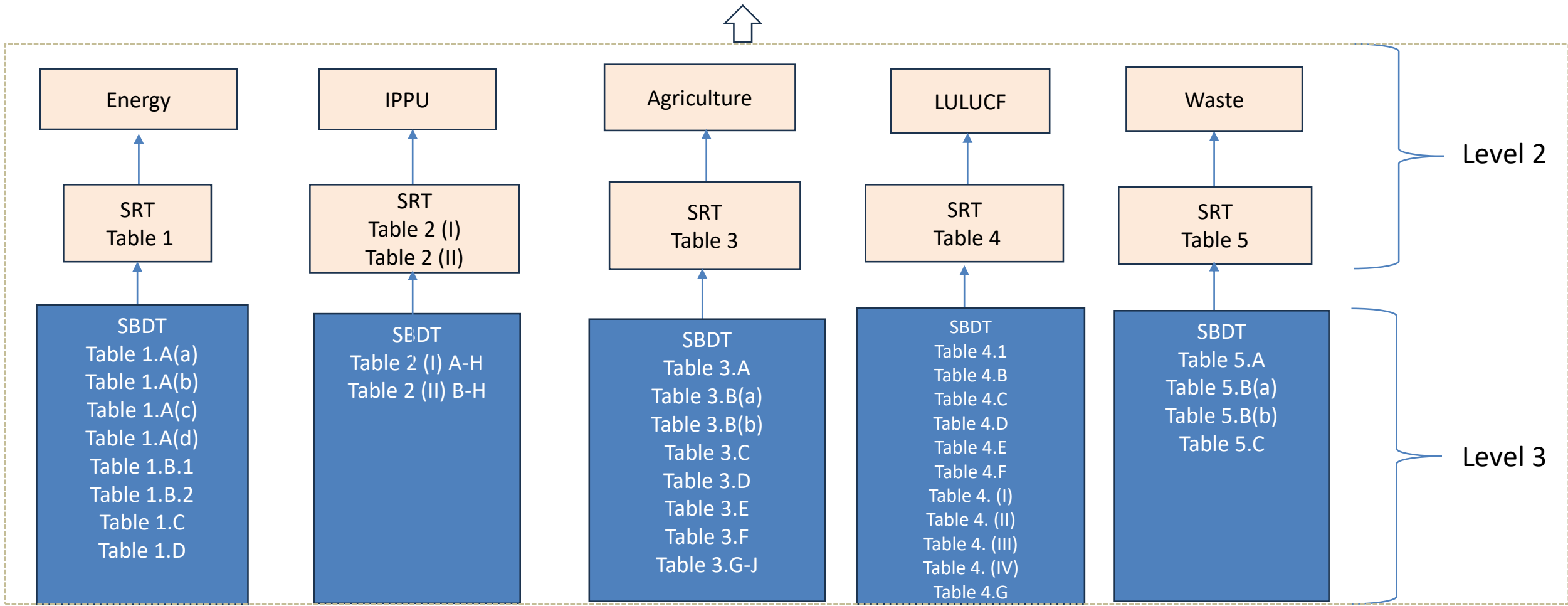
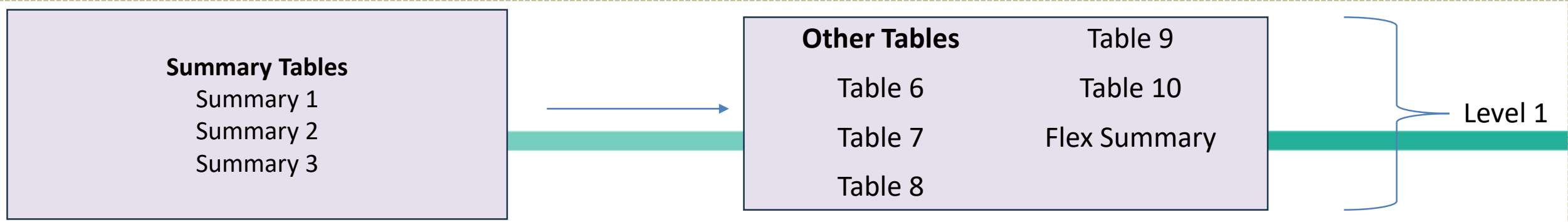
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	NO _x	CO	NM VOC	SO _x	Total GHG emissions ⁽¹⁾
	(kt)							CO ₂ equivalents (kt) ⁽²⁾
5. Total waste								
5.A. Solid waste disposal								
5.A.1. Managed waste disposal sites								
5.A.2. Unmanaged waste disposal sites								
5.A.3. Uncategorized waste disposal sites								
5.B. Biological treatment of solid waste								
5.B.1. Composting								
5.B.2. Anaerobic digestion at biogas facilities								
5.C. Incineration and open burning of waste								
5.C.1. Waste incineration								
5.C.2. Open burning of waste								
5.D. Wastewater treatment and discharge								
5.D.1. Domestic wastewater								
5.D.2. Industrial wastewater								
5.D.3. Other								
5.E. Other (please specify)								
Memo item: ⁽³⁾								
5.F.1. Long-term storage of C in waste disposal sites								
5.F.1.a. Annual change in total long-term C storage								
5.F.1.b. Annual change in total long-term C storage in HWP waste ⁽⁴⁾								

GHG emissions, kt

NO_x, CO,
NMVOC and
SO_x, kt

Total GHG
CO₂ eq.

Structure of CRT



Level 1: Summary tables

Summary 1:

- Summary report of total emissions by sector and category on a mass basis (CO₂, CH₄ and N₂O) and a CO₂ eq basis (fluorinated gases, indirect emissions and total emissions)

Summary 2

- Summary report for CO₂ eq emissions

Summary 3

- Summary report for methods and EFs that the Party used for its estimates (e.g. IPCC tier 1 or tier 2 methods)

Summary Tables

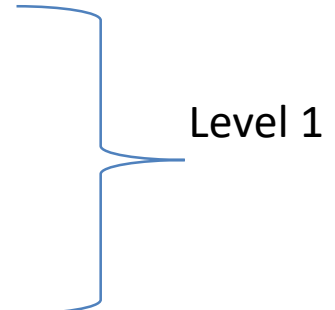
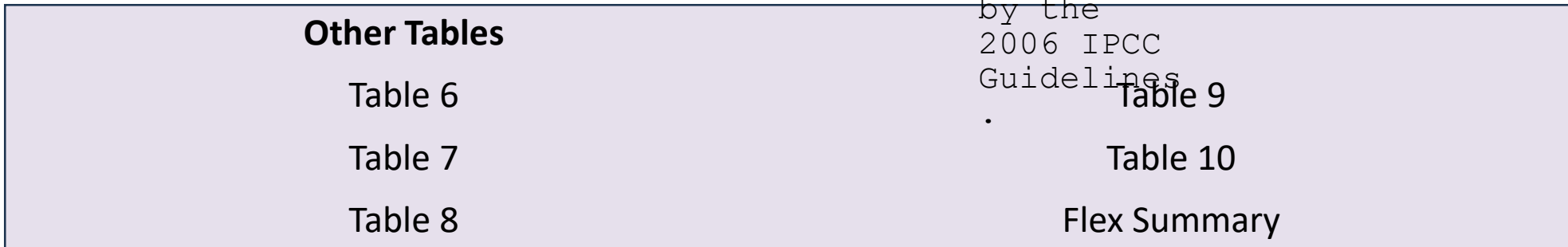
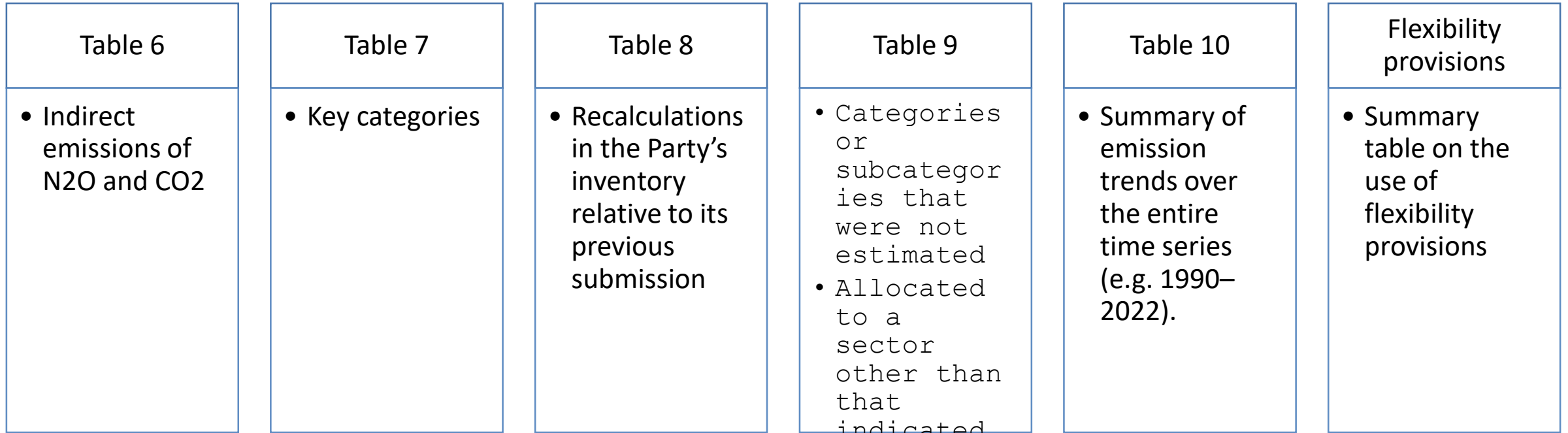
Summary 1

Summary 2

Summary 3

Level 1

Level 1: Cross-Cutting Tables



Level 1: Cross-Cutting Tables

Table 6 Cross-sectoral report: Indirect emissions of N₂O and CO₂

TABLE 6 CROSS-SECTORAL REPORT: Indirect emissions of N₂O and CO₂
(Sheet 1 of 1)

Year
Submission
Country

[Back to Index](#)

GREENHOUSE GAS EMISSIONS AND REMOVALS	SOURCE EMISSIONS					INDIRECT EMISSIONS	
	CH ₄	CO	NMVOC	NO _x	NH ₃	CO ₂ ⁽¹⁾	N ₂ O ⁽²⁾
	(kt)					(kt)	
Total							
1. Energy							
2. Industrial processes and product use							
3. Agriculture⁽³⁾							
4. LULUCF⁽³⁾							
5. Waste							
6. Other (as specified in summary1)							

Level 1: Cross-Cutting Tables

Table 7 Summary overview for key categories

TABLE 7 SUMMARY OVERVIEW FOR KEY CATEGORIES

(Sheet 1 of 1)

[Back to Index](#)

Year
Submission
Country

Threshold used in identifying key categories ⁽¹⁾: [85][95]%

KEY CATEGORIES OF EMISSIONS AND REMOVALS ⁽²⁾	Gas	Criteria used for key source identification		Key category excluding LULUCF	Key category including LULUCF
		L	T		
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂				
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄				
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O				
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂				
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄				
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O				
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂				
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄				
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O				
1.A.1 Fuel combustion - Energy Industries - Other Fossil Fuels	CO ₂				
1.A.1 Fuel combustion - Energy Industries - Other Fossil Fuels	CH ₄				
1.A.1 Fuel combustion - Energy Industries - Other Fossil Fuels	N ₂ O				

Level 1: Cross-Cutting Tables

Table 8 Recalculation- Recalculated data

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂					
	Previous submission	Latest submission	Difference	Difference ⁽¹⁾	Impact of recalculation on total emissions without LULUCF ⁽²⁾	Impact of recalculation on total emissions with LULUCF ⁽³⁾
	CO ₂ equivalents (kt) ⁽⁴⁾			(%)		
Total national emissions and removals						
1. Energy						
1.A. Fuel combustion						
1.A.1. Energy industries						
1.A.2. Manufacturing industries and construction						
1.A.3. Transport						
1.A.4. Other sectors						
1.A.5. Other						
1.B. Fugitive emissions from fuels						
1.B.1. Solid fuels						
1.B.2. Oil and natural gas and other emissions from energy production						
1.C. CO ₂ transport and storage						

Level 1: Cross-Cutting Tables

Table 8 Recalculation- Recalculated data

Estimate the percentage change due to recalculation with respect to the previous submission:

$$\bullet \text{ Percentage change} = 100 \times (\text{latest submission} - \text{previous submission}) / \text{previous submission}$$

			Previous submission	Latest submission	Difference	Difference (1)
			CO ₂ equivalents (kt)			(%)
Total CO ₂ equivalent emissions with LULUCF						
Total CO ₂ equivalent emissions without LULUCF						

Level 1: Cross-Cutting Tables

Table 9 Completeness - information on notation keys

Sources and sinks not estimated ("NE") ^(1,2)			
GHG	Sector ⁽³⁾	Source/sink category ⁽³⁾	Explanation
CO ₂			
CH ₄			
N ₂ O			
HFCs			
PFCs			
Unspecified mix of HFCs and PFCs			
SF ₆			
NF ₃			

Explanation of the reason for each source/sink category for which "NE" is entered in the sectoral tables.

Explanation of the reason for each source/sink for which the notation key "IE" (included elsewhere) is used in the sectoral tables.

Level 1: Cross-Cutting Tables

Table 10 Emission trends

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Reference year/period for NDC ⁽¹⁾	Base year ⁽²⁾	1990 ⁽¹⁾	(Years 1991 to 2019)	(Years 1991 to 2019)	(Years 1991 to 2019)	2020	(Years 2021 to latest reported year)	(Years 2021 to latest reported year)	(Years 2021 to latest reported year)	Change from [1990][base year][reference year][period] to latest reported year
	kt CO ₂ equivalents (kt) ⁽³⁾										%
Total (net emissions) ⁽⁴⁾											
1. Energy											
1.A. Fuel combustion											
1.A.1. Energy industries											
1.A.2. Manufacturing industries and construction											
1.A.3. Transport											
1.A.4. Other sectors											
1.A.5. Other											
1.B. Fugitive emissions from fuels											
1.B.1. Solid fuels											
1.B.2. Oil and natural gas and other emissions from energy production											
1.C. CO ₂ Transport and storage											

Parties shall report a consistent annual time series starting from 1990.

Those developing country Parties that need flexibility in the light of their capacities with respect to this provision have the flexibility to instead report data covering, at a minimum, the reference year/period for its NDC under Article 4 of the Paris Agreement and, in addition, a consistent annual time series from at least 2020 onwards.

Flexibility

- Developing country Parties that need flexibility in the light of their capacities may collapse relevant rows, columns and tables in cases where they have applied flexibility (e.g. if they do not have capacity to report *on HFCs, PFCs, SF6 or NF3).
- The Party should explain in any corresponding documentation boxes their application of flexibility



Summary

- The CRTs essentially contains the emissions and removals numerical data used in the calculations, whereas the NID describes how those emissions and removals estimates were obtained.
- 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
- In the CRTs unshaded cells should be completed with either data (numbers) or notation keys to meet the completeness requirements.
- The CRTs can be split into three distinct levels of aggregation:
 1. sectoral background data tables (level 3)
 2. Sectoral reporting tables (level 2)
 3. Summary and cross-cutting tables (Level 1)
- The CRTs are generated by the UNFCCC GHG inventory reporting tool

Thank you for you attention!

Khetsiwe Khumalo
Advisor - Climate Transparency
UNEP CCC
Khetsiwe.khumalo@un.org