IPCC GHG Inventory Software - Energy sector

Key category analysis, uncertainty analysis, and reporting tables

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Organized by the Capacity Building Initiative for Transparency Global Support Programme (CBIT-GSP)

Outline

- Key category analysis
- Uncertainty Analysis
- Reporting tables

Activity Data

Activity data for stationary combustion activities from OEB Sheet in Philippine – 2000 (Values are converted to TJ)

Source : Page 154/155 , GHG Manual Rev3: https://climate.emb.gov.ph/wp-content/uploads/2016/06/GHG-Manual.pdf

Emission sorces categories	Coal	NatGas	Kero	Diesel	Fuel Oil	LPG	Biomass	Rice hull	Charcoal	Fuel wood	Agri Waste
Electricity Generation (TJ)	60000.5	61.1		3471.4	29602.1						
Iron and Steel	339.1		148.2	3487.8	6699.2	536.4					
Chemical	289.7		1027.5	1533.7	7081.9	356.7					
Paper Prod/Printing			59.5	97.1	8016.8	12.1					
Food Processing, Beverages and Tobacco			60.7	4438.6	17137.0	490.3					
Non-Metalic Minerals	28709.0		328.7	896.0	10411.8	701.7					
Machinery			30.2	38.9	119.3	23.4					
Mining				1956.6	1341.5	3.4					
Wood production/Furniture			0.8	381.0	229.9						
Construction			67.8	6263.8	347.5	0.8					
Textile and Apparel			32.6	166.7	6587.0	23.4					
Non-specified Industry			2.1	78.7	1150.6						
Commercial/Institutional				4536.2	8044.5	7992.6	8044.5	12124.7	904.4	5422.2	
Residential				22466.0	0.0	37288.2	216405.0	0.0	20997.8	170997.1	32784.2

Activity Data

Activity data for mobile combustion activities from OEB Sheet in Philippine – 2000 (Values are converted to TJ)

Source : Page 154/155 , GHG Manual Rev3: https://climate.emb.gov.ph/wp-content/uploads/2016/06/GHG-Manual.pdf

Emission source categories	Jet	Aviation gasoline	Diesel	Regular gasoline	Premium gasoline	Fuel oil	LPG	Kerosene
International civic aviation	21434.0904							
Domestic air transport	14141.1738	144.4515						
Road Transporatation			170994.5678	25099.8089	90022.5935		0.4187	
Railways			53.5936					
Water transport			16031.6043	3272.5592		38384.3225		
Agriculture								
Agri crop products			498.6717	8.7927				10.4675
Agri services			157.0125	0.4187		54.431		6.6992
Livestock/poultry			48.1505	0.8374		177.5288		
Fishery			10096.5318	62.3863		651.0785		52.7562

Activity Data

Activity data for Fugitive Emissions from Inventory Manual in Philippine – 2000

Source : Page 34 , GHG Manual Rev3: https://climate.emb.gov.ph/wp-content/uploads/2016/06/GHG-Manual.pdf

Emission sources categories	Coal – Underground	Coal- Surface	Crude oil
Mining _Underground	0.046 million tonnes		
Post-mining seam gas emissions _Underground	0.046 million tonnes		
Mining _Surface		1.175 million tonnes	
Post-mining seam gas emissions _Surface		1.175 million tonnes	
Venting _Oil production			2.34 PJ (61578 m3)
Flaring _Oil production			2.34 PJ (61578 m3)

Database Credential

Below, you'll find the username and password for the superuser of the database.

User Name	Password
Superuser_PHL	Philippines

Key category analysis

Key Categories: Approach 1, 2

Approach 1 – Level and Trend Assessment:	• **Key categories - 95% cumulative effect**
Approach 2 – Level/Trend + Uncertainty Assessment:	• **Key categories - 90% cumulative effect**
***Removals:* expressed as positive numbers**	• **(inclusion/exclusion)**

Reference: UNFCCC CGE Training material

Proceed key category analysis using IPCC software

These steps outline the process of utilizing the IPCC software for analyzing energy sector activity data according to the sectoral approach and employing the key category analysis tool for assessment

Input all energy sector activity data into the IPCC software using the sectoral approach.

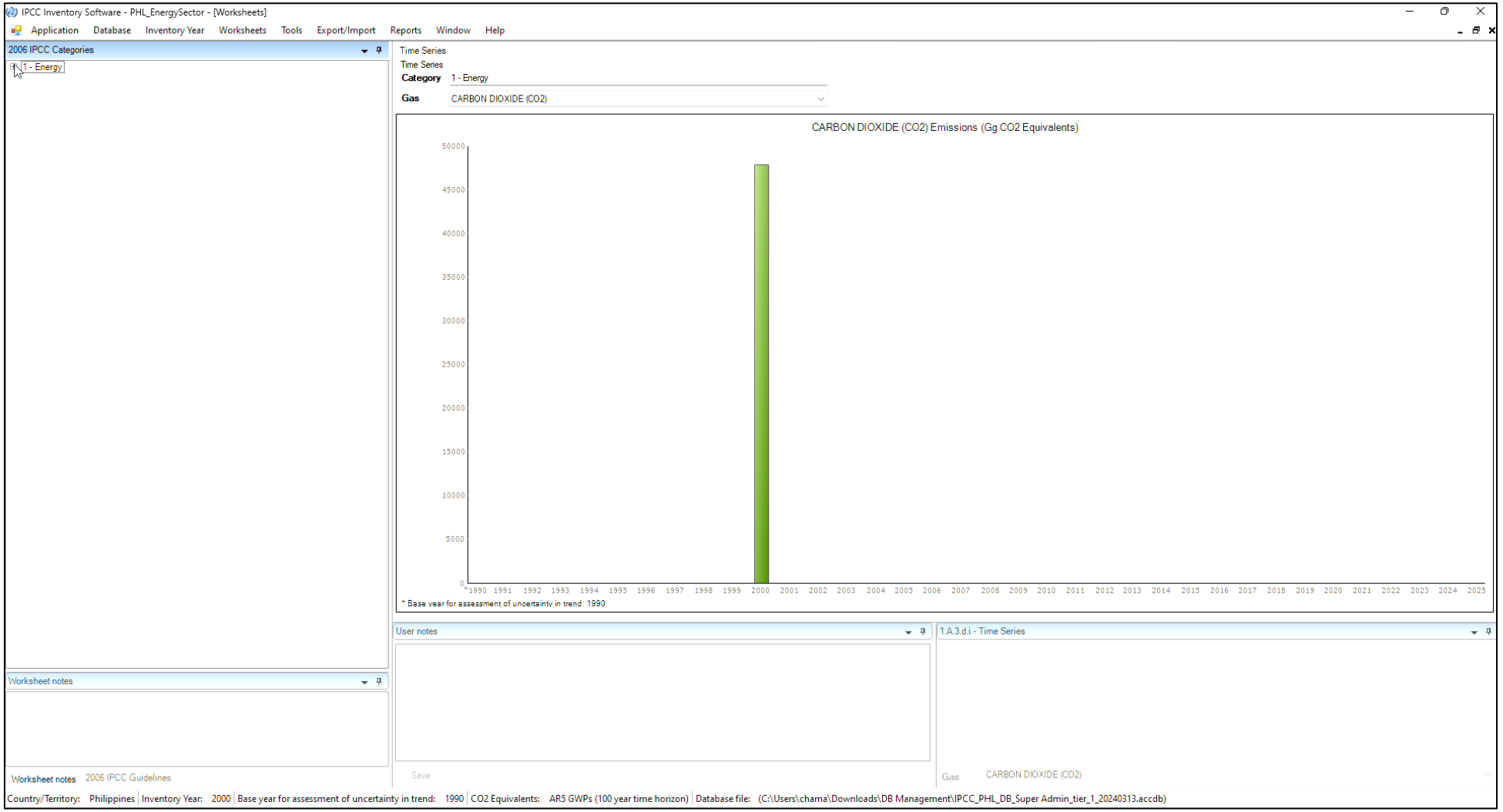
Navigate to the "Tool" option and select the "Key Category Analysis Tool" for assessment.

In the "Key Category Analysis" window, you'll find two tabs: one for "Level Assessment" and the other for "Trend Assessment".

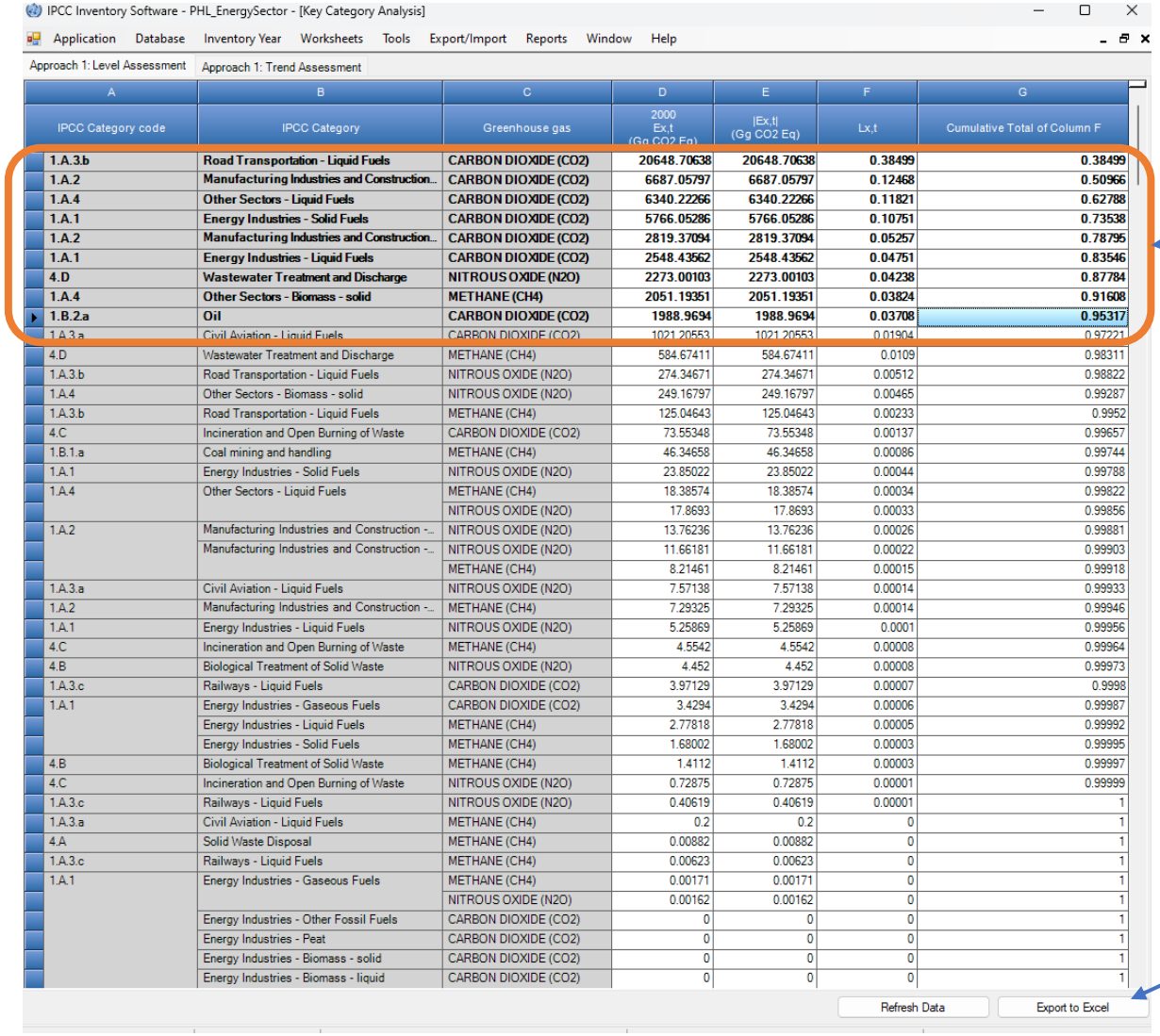
Note that the IPCC software utilizes Approach 1 for key category analysis.

Proceed key category analysis using IPCC software

This video demonstrates how to conduct key category analysis using IPCC software.



Result - key category analysis

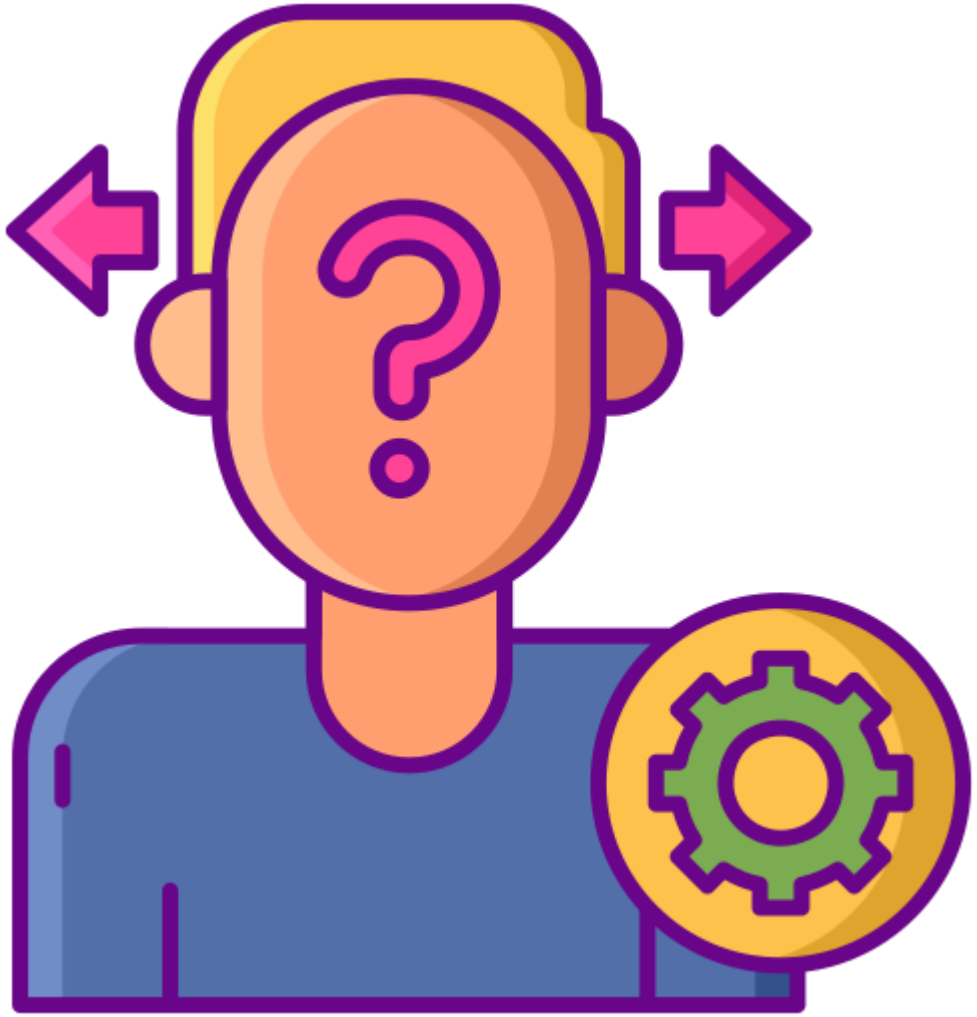


A	B	C	D	E	F	G
IPCC Category code	IPCC Category	Greenhouse gas	2000 Ex,t (Gg CO2 Eq)	|Ex,t| (Gg CO2 Eq)	Lx,t	Cumulative Total of Column F
1.A.3.b	**Road Transportation - Liquid Fuels**	**CARBON DIOXIDE (CO2)**	**20648.70638**	**20648.70638**	**0.38499**	**0.38499**
1.A.2	**Manufacturing Industries and Construction...**	**CARBON DIOXIDE (CO2)**	**6687.05797**	**6687.05797**	**0.12468**	**0.50966**
1.A.4	**Other Sectors - Liquid Fuels**	**CARBON DIOXIDE (CO2)**	**6340.22266**	**6340.22266**	**0.11821**	**0.62788**
1.A.1	**Energy Industries - Solid Fuels**	**CARBON DIOXIDE (CO2)**	**5766.05286**	**5766.05286**	**0.10751**	**0.73538**
1.A.2	**Manufacturing Industries and Construction...**	**CARBON DIOXIDE (CO2)**	**2819.37094**	**2819.37094**	**0.05257**	**0.78795**
1.A.1	**Energy Industries - Liquid Fuels**	**CARBON DIOXIDE (CO2)**	**2548.43562**	**2548.43562**	**0.04751**	**0.83546**
4.D	**Wastewater Treatment and Discharge**	**NITROUS OXIDE (N2O)**	**2273.00103**	**2273.00103**	**0.04238**	**0.87784**
1.A.4	**Other Sectors - Biomass - solid**	**METHANE (CH4)**	**2051.19351**	**2051.19351**	**0.03824**	**0.91608**
1.B.2.a	**Oil**	**CARBON DIOXIDE (CO2)**	**1988.9694**	**1988.9694**	**0.03708**	**0.95317**
1.A.3.a	Civil Aviation - Liquid Fuels	CARBON DIOXIDE (CO2)	1021.20553	1021.20553	0.01904	0.97221
4.D	Wastewater Treatment and Discharge	METHANE (CH4)	584.67411	584.67411	0.0109	0.98311
1.A.3.b	Road Transportation - Liquid Fuels	NITROUS OXIDE (N2O)	274.34671	274.34671	0.00512	0.98822
1.A.4	Other Sectors - Biomass - solid	NITROUS OXIDE (N2O)	249.16797	249.16797	0.00465	0.99287
1.A.3.b	Road Transportation - Liquid Fuels	METHANE (CH4)	125.04643	125.04643	0.00233	0.9952
4.C	Incineration and Open Burning of Waste	CARBON DIOXIDE (CO2)	73.55348	73.55348	0.00137	0.99657
1.B.1.a	Coal mining and handling	METHANE (CH4)	46.34658	46.34658	0.00086	0.99744
1.A.1	Energy Industries - Solid Fuels	NITROUS OXIDE (N2O)	23.85022	23.85022	0.00044	0.99788
1.A.4	Other Sectors - Liquid Fuels	METHANE (CH4)	18.38574	18.38574	0.00034	0.99822
		NITROUS OXIDE (N2O)	17.8693	17.8693	0.00033	0.99856
1.A.2	Manufacturing Industries and Construction -...	NITROUS OXIDE (N2O)	13.76236	13.76236	0.00026	0.99881
	Manufacturing Industries and Construction -...	NITROUS OXIDE (N2O)	11.66181	11.66181	0.00022	0.99903
		METHANE (CH4)	8.21461	8.21461	0.00015	0.99918
1.A.3.a	Civil Aviation - Liquid Fuels	NITROUS OXIDE (N2O)	7.57138	7.57138	0.00014	0.99933
1.A.2	Manufacturing Industries and Construction -...	METHANE (CH4)	7.29325	7.29325	0.00014	0.99946
1.A.1	Energy Industries - Liquid Fuels	NITROUS OXIDE (N2O)	5.25869	5.25869	0.0001	0.99956
4.C	Incineration and Open Burning of Waste	METHANE (CH4)	4.5542	4.5542	0.00008	0.99964
4.B	Biological Treatment of Solid Waste	NITROUS OXIDE (N2O)	4.452	4.452	0.00008	0.99973
1.A.3.c	Railways - Liquid Fuels	CARBON DIOXIDE (CO2)	3.97129	3.97129	0.00007	0.9998
1.A.1	Energy Industries - Gaseous Fuels	CARBON DIOXIDE (CO2)	3.4294	3.4294	0.00006	0.99987
	Energy Industries - Liquid Fuels	METHANE (CH4)	2.77818	2.77818	0.00005	0.99992
	Energy Industries - Solid Fuels	METHANE (CH4)	1.68002	1.68002	0.00003	0.99995
4.B	Biological Treatment of Solid Waste	METHANE (CH4)	1.4112	1.4112	0.00003	0.99997
4.C	Incineration and Open Burning of Waste	NITROUS OXIDE (N2O)	0.72875	0.72875	0.00001	0.99999
1.A.3.c	Railways - Liquid Fuels	NITROUS OXIDE (N2O)	0.40619	0.40619	0.00001	1
1.A.3.a	Civil Aviation - Liquid Fuels	METHANE (CH4)	0.2	0.2	0	1
4.A	Solid Waste Disposal	METHANE (CH4)	0.00882	0.00882	0	1
1.A.3.c	Railways - Liquid Fuels	METHANE (CH4)	0.00623	0.00623	0	1
1.A.1	Energy Industries - Gaseous Fuels	METHANE (CH4)	0.00171	0.00171	0	1
		NITROUS OXIDE (N2O)	0.00162	0.00162	0	1
	Energy Industries - Other Fossil Fuels	CARBON DIOXIDE (CO2)	0	0	0	1
	Energy Industries - Peat	CARBON DIOXIDE (CO2)	0	0	0	1
	Energy Industries - Biomass - solid	CARBON DIOXIDE (CO2)	0	0	0	1
	Energy Industries - Biomass - liquid	CARBON DIOXIDE (CO2)	0	0	0	1

Identified Key categories: Approach1 – Level assessment

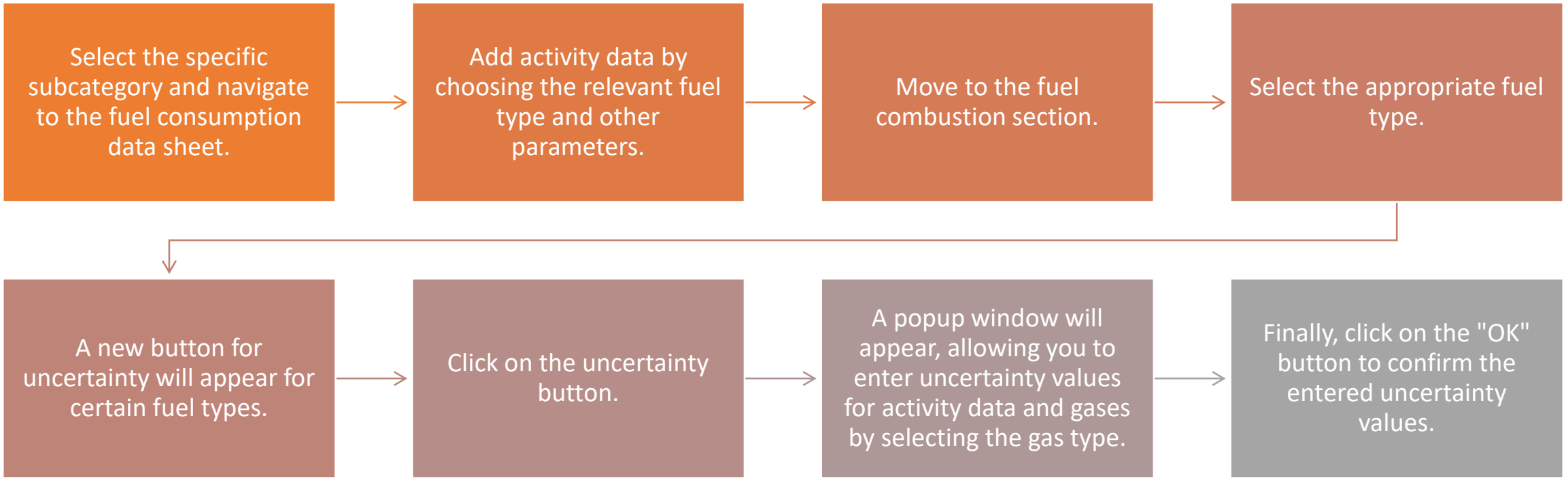
You are able to export excel file.

Uncertainty Analysis



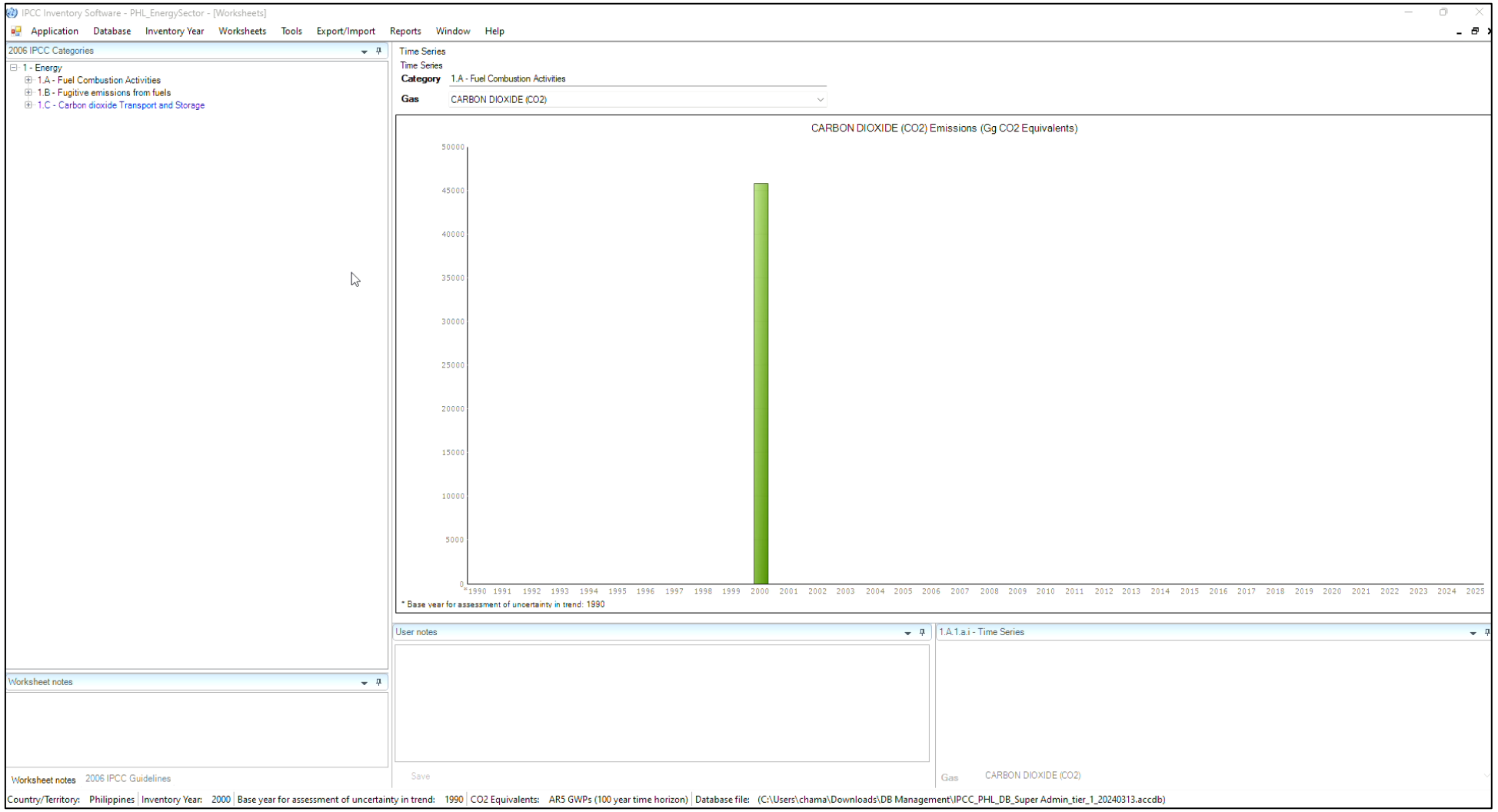
Data Entering - uncertainty analysis

- Begin by entering activity data into the IPCC software based on the sectoral approach.
- Within the software, input uncertainty values based on fuel type for each subcategory.
- For example, let's focus on the electricity generation subsector.



Data Entering - uncertainty analysis

This video illustrates the process of entering uncertainty data into the IPCC software



Proceed Uncertainty analysis using IPCC software

Steps

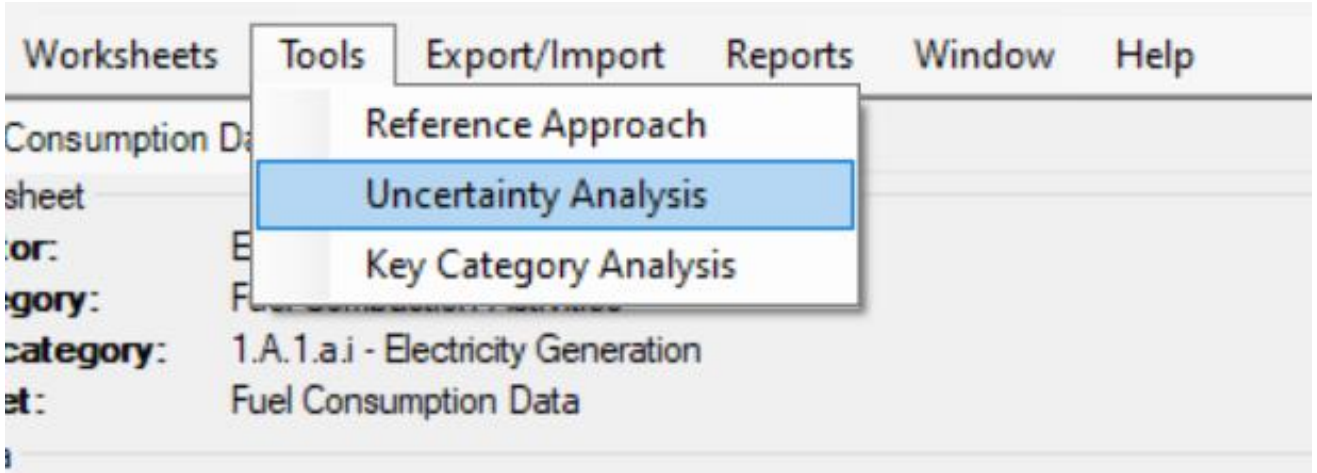
Navigate to the "Tool" section in the IPCC software.

1

Select the "Uncertainty Analysis" option.

2

Once selected, the uncertainty assessment will be visible



Result- uncertainty analysis

Application Database Inventory Year Worksheets Tools Export/Import Reports Window Help

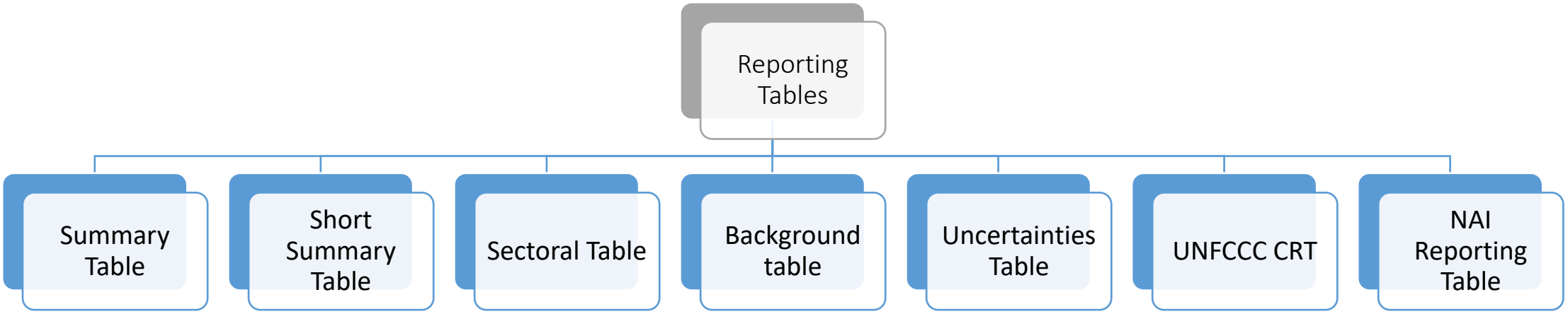
Uncertainty Analysis - Approach 1 (Table 3.2)

Base year for assessment of uncertainty in trend 2000 **Year T** 2000 Refresh Data

A	B	C	E	F	G	H
2006 IPCC Categories	Gas	Base Year emissions or removals (Gg CO2 equivalent)	Activity Data Uncertainty (%)	Emission Factor Uncertainty (%)	Combined Uncertainty (%)	Contribution to Variance by Category in Year T
1.A - Fuel Combustion Activities						
1.A.1.a.i - Electricity Generation - Liquid Fuels	CO2	2548.436	5.000	6.136	7.915	0.126
	CH4	0.099	5.000	228.788	228.843	0.000
	N2O	0.020	5.000	228.788	228.843	0.000
1.A.1.a.i - Electricity Generation - Solid Fuels	CO2	5766.053	5.000	12.460	13.426	1.856
	CH4	0.060	5.000	200.000	200.062	0.000
	N2O	0.090	5.000	222.222	222.278	0.000
1.A.1.a.i - Electricity Generation - Gaseous Fuels	CO2	3.429	5.000	3.922	6.354	0.000
	CH4	0.000	5.000	200.000	200.062	0.000
	N2O	0.000	5.000	200.000	200.062	0.000
1.A.2.a - Iron and Steel - Liquid Fuels	CO2	787.619	5.000	6.136	7.915	0.012
	CH4	0.031	5.000	228.788	228.843	0.000
	N2O	0.006	5.000	228.788	228.843	0.000
1.A.2.a - Iron and Steel - Solid Fuels	CO2	32.592	5.000	12.460	13.426	0.000
	CH4	0.003	5.000	200.000	200.062	0.000
	N2O	0.001	5.000	222.222	222.278	0.000
1.A.2.c - Chemicals - Liquid Fuels	CO2	758.172	5.000	6.136	7.915	0.011
	CH4	0.029	5.000	228.788	228.843	0.000
	N2O	0.006	5.000	228.788	228.843	0.000
1.A.2.c - Chemicals - Solid Fuels	CO2	27.844	5.000	12.460	13.426	0.000
	CH4	0.003	5.000	200.000	200.062	0.000
	N2O	0.000	5.000	222.222	222.278	0.000
1.A.2.d - Pulp, Paper and Print - Liquid Fuels	CO2	632.746	5.000	6.136	7.915	0.008
	CH4	0.025	5.000	228.788	228.843	0.000
	N2O	0.005	5.000	228.788	228.843	0.000
1.A.2.e - Food Processing, Beverages and Tobacco - Liquid Fuels	CO2	1690.608	5.000	6.136	7.915	0.055
	CH4	0.065	5.000	228.788	228.843	0.000
	N2O	0.013	5.000	228.788	228.843	0.000
1.A.2.f - Non-Metallic Minerals - Liquid Fuels	CO2	940.176	5.000	6.136	7.915	0.017
	CH4	0.036	5.000	228.788	228.843	0.000
	N2O	0.007	5.000	228.788	228.843	0.000
1.A.2.f - Non-Metallic Minerals - Solid Fuels	CO2	2758.935	5.000	12.460	13.426	0.425
	CH4	0.287	5.000	200.000	200.062	0.000

Reporting tables

Reporting table overview



Summary Table

Upon selecting "Table A Summary table" in the report section, the software will display emissions categorized by level 3 categories. These emissions include net CO2, CH4, N2O, HFCs, PFCs, SF6, and others.

Steps

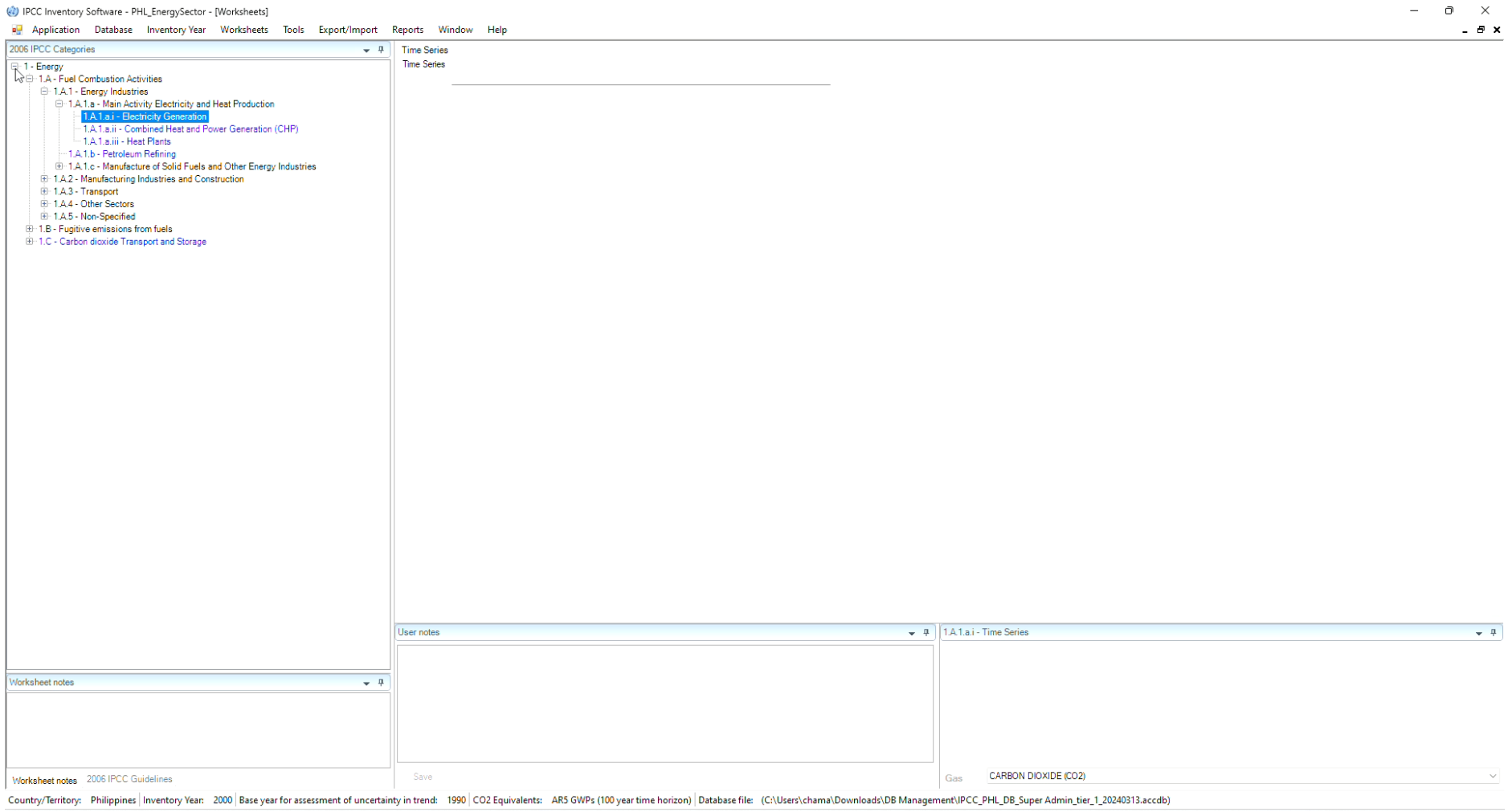
Navigate to the report section within the IPCC software.

1

Select the "Summary Table" option from the available choices.

2

Look for "Table A Summary table" in the options that appear.



Summary Table - Result

Application Database Inventory Year Worksheets Tools Export/Import Reports Window Help

Table A Summary Table

Categories	Emissions (Gg)			Emissions CO2 Equivalents (Gg)					Emissions (Gg)				
	Net CO2 (1)(2)	CH4	N2O	HFCs	PFCs	SF6	NF3	Other halogenated gases with CO2 equivalent conversion factors (3)	Other halogenated gases without CO2 equivalent conversion factors (4)	NOx	CO	NMVOCs	SO2
Total National Emissions and Removals	47900.976	101.850	10.876	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1 - Energy	47827.422	80.755	2.279	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.A - Fuel Combustion Activities	45838.453	79.100	2.279	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.A.1 - Energy Industries	8317.918	0.159	0.110							0.000	0.000	0.000	0.000
1.A.2 - Manufacturing Industries and Construction	9506.429	0.554	0.096							0.000	0.000	0.000	0.000
1.A.3 - Transport	21673.883	4.473	1.065							0.000	0.000	0.000	0.000
1.A.4 - Other Sectors	6340.223	73.914	1.008							0.000	0.000	0.000	0.000
1.A.5 - Non-Specified	0.000	0.000	0.000							0.000	0.000	0.000	0.000
1.B - Fugitive emissions from fuels	1988.969	1.655	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.B.1 - Solid Fuels	0.000	1.655	0.000							0.000	0.000	0.000	0.000
1.B.2 - Oil and Natural Gas	1988.969	0.000	0.000							0.000	0.000	0.000	0.000
1.B.3 - Other emissions from Energy Production	0.000	0.000	0.000							0.000	0.000	0.000	0.000
1.C - Carbon dioxide Transport and Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.C.1 - Transport of CO2	0.000									0.000	0.000	0.000	0.000
1.C.2 - Injection and Storage	0.000									0.000	0.000	0.000	0.000
1.C.3 - Other	0.000									0.000	0.000	0.000	0.000
2 - Industrial Processes and Product Use	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.A - Mineral Industry	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.A.1 - Cement production	0.000									0.000	0.000	0.000	0.000
2.A.2 - Lime production	0.000									0.000	0.000	0.000	0.000
2.A.3 - Glass Production	0.000									0.000	0.000	0.000	0.000
2.A.4 - Other Process Uses of Carbonates	0.000									0.000	0.000	0.000	0.000
2.A.5 - Other (please specify)	0.000	0.000	0.000							0.000	0.000	0.000	0.000
2.B - Chemical Industry	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.B.1 - Ammonia Production	0.000									0.000	0.000	0.000	0.000
2.B.2 - Nitric Acid Production			0.000							0.000	0.000	0.000	0.000
2.B.3 - Adipic Acid Production			0.000							0.000	0.000	0.000	0.000
2.B.4 - Caprolactam, Glyoxal and Glyoxylic Acid Production			0.000							0.000	0.000	0.000	0.000
2.B.5 - Carbide Production	0.000	0.000								0.000	0.000	0.000	0.000
2.B.6 - Titanium Dioxide Production	0.000									0.000	0.000	0.000	0.000
2.B.7 - Soda Ash Production	0.000									0.000	0.000	0.000	0.000
2.B.8 - Petrochemical and Carbon Black Production	0.000	0.000								0.000	0.000	0.000	0.000
2.B.9 - Fluorochemical Production				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.B.10 - Other (Please specify)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.C - Metal Industry	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Short Summary Table

Upon selecting "Table A Summary table" in the report section, the software will display emissions categorized by level 2 categories. These emissions include net CO2, CH4, N2O, HFCs, PFCs, SF6, and others.

Steps

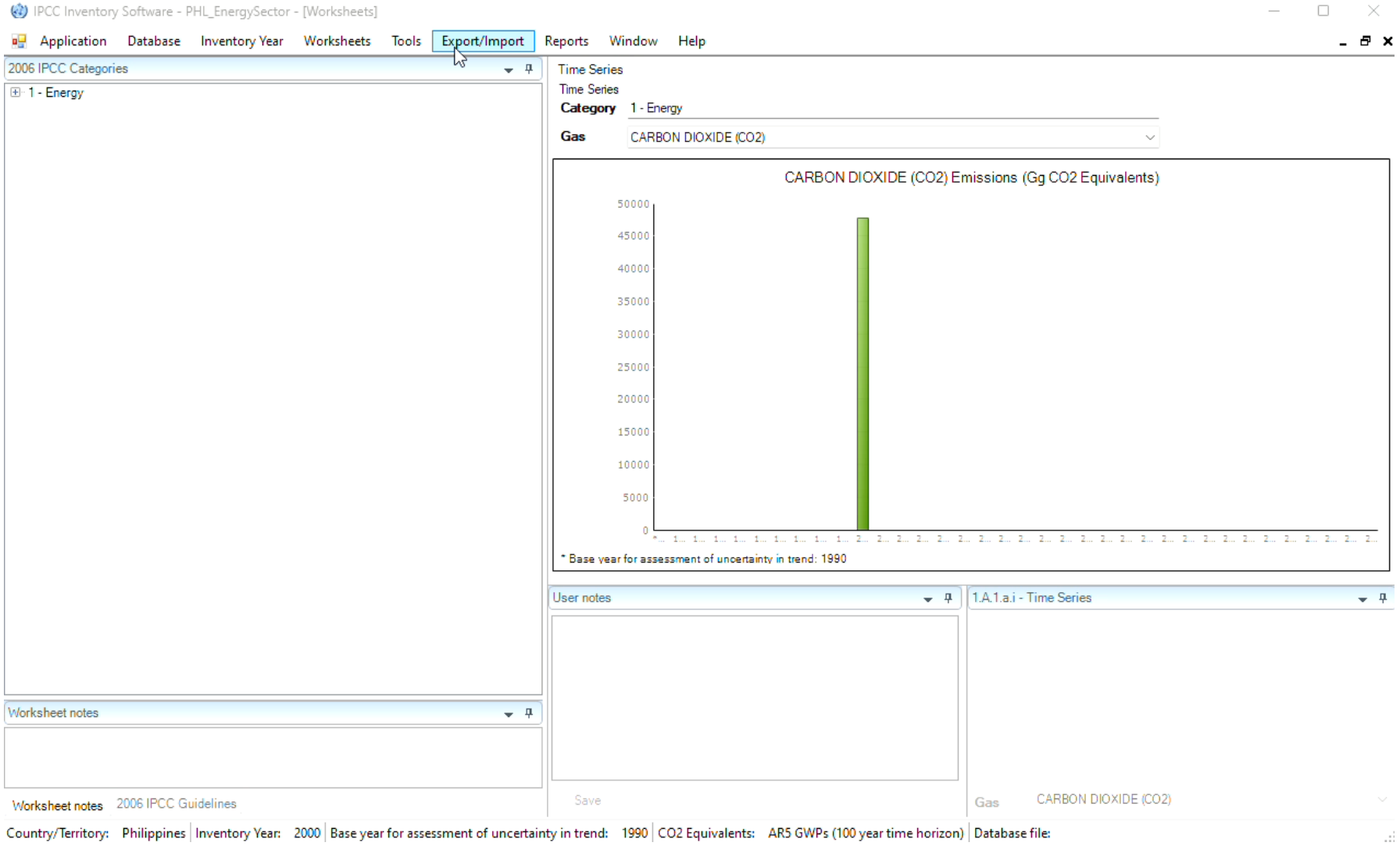
Navigate to the report section within the IPCC software.

1

Select the “Short Summary " option from the available choices.

2

Look for "Table B Short Summary table" in the options that appear.



Short Summary Table - Result

Application Database Inventory Year Worksheets Tools Export/Import Reports Window Help

Table B Short Summary Table

Categories	Emissions (Gg)			Emissions CO2 Equivalents (Gg)					Emissions (Gg)				
	Net CO2 (1)(2)	CH4	N2O	HFCs	PFCs	SF6	NF3	Other halogenated gases with CO2 equivalent conversion factors (3)	Other halogenated gases without CO2 equivalent conversion factors (4)	NOx	CO	NMVOCs	SO2
Total National Emissions and Removals	47900.976	101.850	10.876	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1 - Energy	47827.422	80.755	2.279	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.A - Fuel Combustion Activities	45838.453	79.100	2.279							0.000	0.000	0.000	0.000
1.B - Fugitive emissions from fuels	1988.969	1.655	0.000							0.000	0.000	0.000	0.000
1.C - Carbon dioxide Transport and Storage	0.000									0.000	0.000	0.000	0.000
2 - Industrial Processes and Product Use	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.A - Mineral Industry	0.000	0.000	0.000							0.000	0.000	0.000	0.000
2.B - Chemical Industry	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.C - Metal Industry	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.D - Non-Energy Products from Fuels and Solvent Use	0.000	0.000	0.000							0.000	0.000	0.000	0.000
2.E - Electronics Industry	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.F - Product Uses as Substitutes for Ozone Depleting Substances	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.G - Other Product Manufacture and Use	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.H - Other	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3 - Agriculture, Forestry, and Other Land Use	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3.A - Livestock		0.000	0.000							0.000	0.000	0.000	0.000
3.B - Land	0.000									0.000	0.000	0.000	0.000
3.C - Aggregate sources and non-CO2 emissions sources on land	0.000	0.000	0.000							0.000	0.000	0.000	0.000
3.D - Other	0.000	0.000	0.000							0.000	0.000	0.000	0.000
4 - Waste	73.553	21.095	8.597	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4.A - Solid Waste Disposal		0.000								0.000	0.000	0.000	0.000
4.B - Biological Treatment of Solid Waste		0.050	0.017							0.000	0.000	0.000	0.000
4.C - Incineration and Open Burning of Waste	73.553	0.163	0.003							0.000	0.000	0.000	0.000
4.D - Wastewater Treatment and Discharge		20.881	8.577							0.000	0.000	0.000	0.000
4.E - Other (please specify)	0.000	0.000	0.000							0.000	0.000	0.000	0.000
5 - Other	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5.A - Indirect N2O emissions from the atmospheric deposition of nitrogen in NOx and NH3			0.000							0.000	0.000	0.000	0.000
5.B - Indirect CO2 emissions from the atmospheric oxidation of CH4, CO and NMVOC	0.000									0.000	0.000	0.000	0.000
5.C - Other	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Sectoral and Background table

Steps

Navigate to the report section within the IPCC software.

1

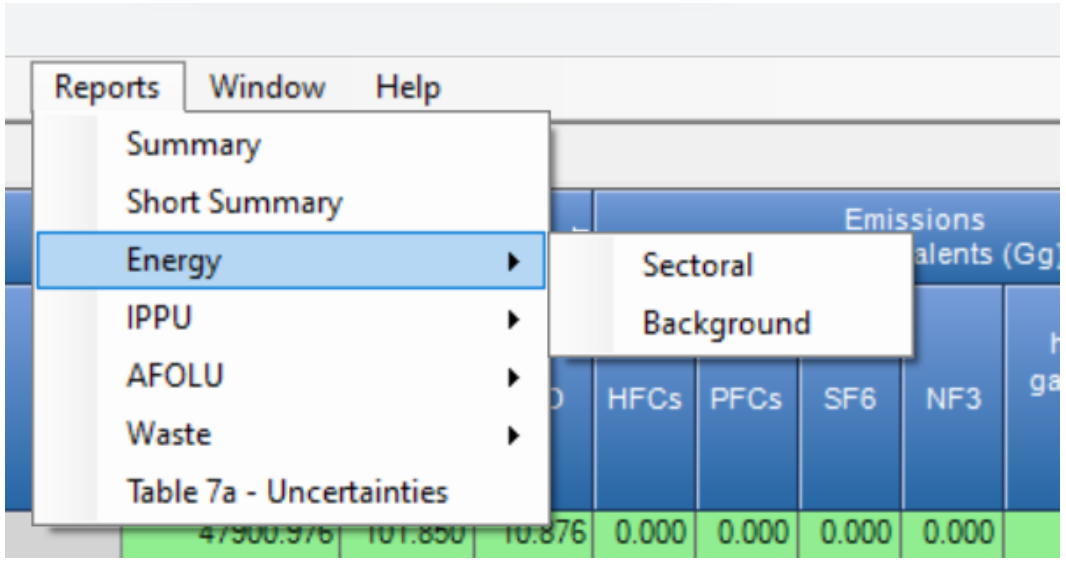
Select the sector you need, option from the available choices.

2

Then select table type, sectoral or background.

3

Look for “Sectoral and Background table" in the options that appear.



Each sector can be generated both sectoral and background table

Result - Energy sectoral table

Table 1 displays emissions categorized by gas type

Application Database Inventory Year Worksheets Tools Export/Import Reports Window Help

Table 1 Energy Sectoral Table | Memo and Information Items

Categories	Emissions (Gg) CO2	CH4	N2O	NOx	CO	NMVOCs	SO2
1 - Energy	47827.422	80.755	2.279				
1.A - Fuel Combustion Activities	45838.453	79.100	2.279				
1.A.1 - Energy Industries	8317.918	0.159	0.110				
1.A.1.a - Main Activity Electricity and Heat Production	8317.918	0.159	0.110				
1.A.1.a.i - Electricity Generation	8317.918	0.159	0.110				
1.A.1.a.ii - Combined Heat and Power Generation (CHP)							
1.A.1.a.iii - Heat Plants							
1.A.1.b - Petroleum Refining							
1.A.1.c - Manufacture of Solid Fuels and Other Energy Industries	0.000	0.000					
1.A.1.c.i - Manufacture of Solid Fuels	0.000	0.000					
1.A.1.c.ii - Other Energy Industries							
1.A.2 - Manufacturing Industries and Construction	9506.429	0.554	0.096				
1.A.2.a - Iron and Steel	820.211	0.034	0.007				
1.A.2.b - Non-Ferrous Metals							
1.A.2.c - Chemicals	786.016	0.032	0.006				
1.A.2.d - Pulp, Paper and Print	632.746	0.025	0.005				
1.A.2.e - Food Processing, Beverages and Tobacco	1690.608	0.065	0.013				
1.A.2.f - Non-Metallic Minerals	3699.110	0.323	0.050				
1.A.2.g - Transport Equipment							
1.A.2.h - Machinery	15.766	0.001	0.000				
1.A.2.i - Mining (excluding fuels) and Quarrying	249.028	0.010	0.002				
1.A.2.j - Wood and wood products	495.919	0.020	0.004				
1.A.2.k - Construction	495.976	0.020	0.004				
1.A.2.l - Textile and Leather	526.008	0.020	0.004				
1.A.2.m - Non-specified Industry	95.040	0.004	0.001				
1.A.3 - Transport	21673.883	4.473	1.065				
1.A.3.a - Civil Aviation	1021.206	0.007	0.029				
1.A.3.a.i - International Aviation (International Bunkers) (1)							
1.A.3.a.ii - Domestic Aviation	1021.206	0.007	0.029				
1.A.3.b - Road Transportation	20648.706	4.466	1.035				
1.A.3.b.i - Cars	20648.706	4.466	1.035				
1.A.3.b.i.1 - Passenger cars with 3-way catalysts	20648.706	4.466	1.035				
1.A.3.b.i.2 - Passenger cars without 3-way catalysts							
1.A.3.b.ii - Light-duty trucks							
1.A.3.b.ii.1 - Light-duty trucks with 3-way catalysts							

Memo and information items displays emissions of international bunkers other special information.

Application Database Inventory Year Worksheets Tools Export/Import Reports Window Help

Table 1 Energy Sectoral Table | Memo and Information Items

Categories	Emissions (Gg) CO2	CH4	N2O	NOx	CO	NMVOCs	SO2
Memo Items (3)							
International Bunkers	5918.214	0.415	0.158				
1.A.3.a.i - International Aviation (International Bunkers) (1)	1532.537	0.011	0.043				
1.A.3.d.i - International water-borne navigation (International bunkers) (1)	4385.677	0.404	0.115				
1.A.5.c - Multilateral Operations (1)(2)							
Information Items							
CO2 from Biomass Combustion	27528.864						
CO2 from Biomass Combustion Captured	0.000						
Biogenic CO2	0.000						

Result - Energy background table

Following tables are included in this section

- Table 1.1 Energy Background Table 1.A.1-1.A.2
- Table 1.2 Energy Background Table 1.A.3-1.A.5
- Table 1.3 Energy Background Table 1.B
- Table 1.4b Energy Background Table 1.C – Overview
- Table 1.5 Energy Background Table : Reference Approach

Activity data , emissions by fuel type and other info are shown

Result - Energy background table

Application Database Inventory Year Worksheets Tools Export/Import Reports Window Help

Table 1.1 Energy Background Table: 1.A.1 - 1.A.2 | Table 1.2 Energy Background Table: 1.A.3 - 1.A.5 | Table 1.3 Energy Background Table: 1.B | Table 1.4b Energy Background Table: 1.C - Overview | Table 1.5 Energy Background Table: Reference Approach

2006 IPCC Categories	Activity (TJ)						Emissions Solid Fuels (			Emissions Liquid Fuels (Gg)			Emissions Gaseous Fuel			Emissions Other Fossil			Emissions Peat (Gg) (1)			Emissions Biomass (G		Emissions Total (Gg)			Information Items (Gg)	
	Solid Fuels	Liquid Fuels	Gaseous Fuels	Other Fossil Fuels	Peat	Biomass	CO2	CH4	N2O	CO2	CH4	N2O	CO2	CH4	N2O	CO2	CH4	N2O	CO2	CH4	N2O	CH4	N2O	CO2	CH4	N2O	CO2 Amount Captured	Biomass CO2 emitted
1.A.3 - Transport		300456.608								21673.883	4.473	1.065												21673.883	4.473	1.065	0.000	
1.A.3.a - Civil Aviation		14285.625								1021.206	0.007	0.029												1021.206	0.007	0.029	0.000	
1.A.3.a.i - International Aviation (International Bunkers) (2) (4)																												
1.A.3.a.ii - Domestic Aviation		14285.625								1021.206	0.007	0.029												1021.206	0.007	0.029	0.000	
1.A.3.b - Road Transportation		286117.389								20648.706	4.466	1.035												20648.706	4.466	1.035	0.000	
1.A.3.b.i - Cars		286117.389								20648.706	4.466	1.035												20648.706	4.466	1.035	0.000	
1.A.3.b.i.1 - Passenger cars with 3-way catalysts		286117.389								20648.706	4.466	1.035												20648.706	4.466	1.035	0.000	
1.A.3.b.i.2 - Passenger cars without 3-way catalysts																												
1.A.3.b.ii - Light-duty trucks																												
1.A.3.b.ii.1 - Light-duty trucks with 3-way catalysts																												
1.A.3.b.ii.2 - Light-duty trucks without 3-way catalysts																												
1.A.3.b.iii - Heavy-duty trucks and buses																												
1.A.3.b.iv - Motorcycles																												
1.A.3.b.v - Evaporative emissions from vehicles																												
1.A.3.b.vi - Urea-based catalysts (3)																												
1.A.3.c - Railways		53.594								3.971	0.000	0.002												3.971	0.000	0.002	0.000	
1.A.3.d - Water-borne Navigation																												
1.A.3.d.i - International water-borne navigation (International bunkers) (2) (4)																												
1.A.3.d.ii - Domestic Water-borne Navigation																												
1.A.3.e - Other Transportation																												
1.A.3.e.i - Pipeline Transport																												

2006 IPCC Categories	Activity (TJ)						Emissions Solid Fuels (			Emissions Liquid Fuels (Gg)			Emissions Gaseous Fuel			Emissions Other Fossil			Emissions Peat (Gg)			Emissions Biomass (Gg)			Emissions Total (Gg)		
	Solid Fuels	Liquid Fuels	Gaseous Fuels	Other Fossil Fuels	Peat	Biomass	CO2	CH4	N2O	CO2	CH4	N2O	CO2	CH4	N2O	CO2	CH4	N2O	CO2	CH4	N2O	CO2	CH4	N2O	CO2	CH4	N2O
International Bunkers		79122.576								5918.214	0.415	0.158													5918.214	0.415	0.158
1.A.3.a.i - International Aviation (International Bunkers) (2) (4)		21434.090								1532.537	0.011	0.043													1532.537	0.011	0.043
1.A.3.d.i - International water-borne navigation (International bunkers) (2) (4)		57688.486								4385.677	0.404	0.115													4385.677	0.404	0.115
1.A.5.c - Multilateral Operations (5)																											

Uncertainties Reporting Table 7a

Steps

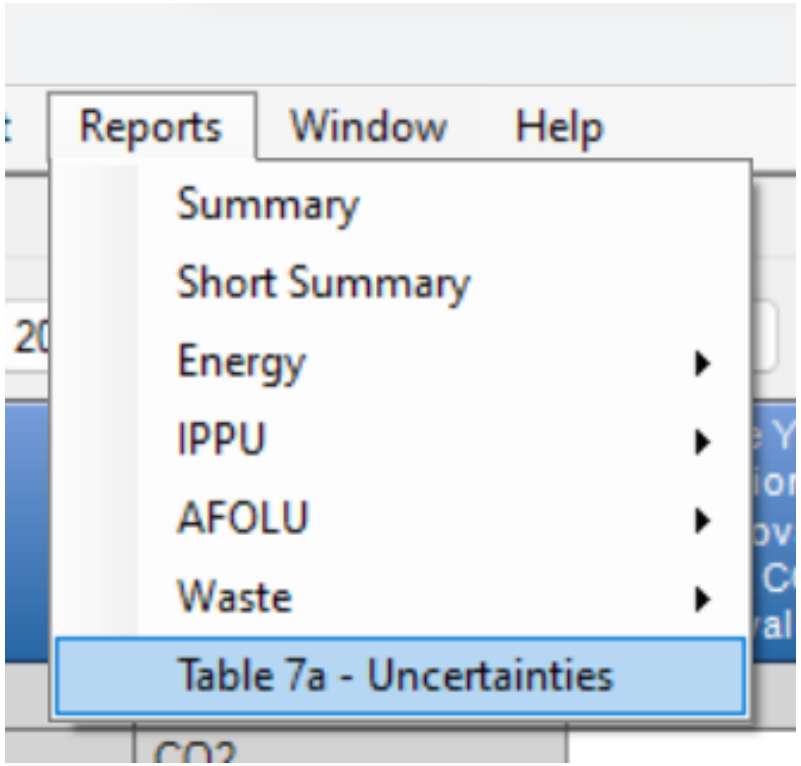
Navigate to the report section within the IPCC software.

1

Select the “Table 7a- Uncertainties” option from the available choices.

2

Look for “Table 7a- Uncertainties" in the options that appear.



Result - Uncertainties Reporting Table 7a

Reporting table 7a displays;

1. Base year emissions or removal
2. Activity data uncertainty
3. Emission factor Uncertainty
4. Combined uncertainty

for each **level 3 categories by GHG gases.**

Result - Uncertainties Reporting Table 7a

IPCC Inventory Software - PHL_EnergySector - [Reporting Table 7a - Uncertainties]

Application Database Inventory Year Worksheets Tools Export/Import Reports Window Help

Reporting Table 7a - Uncertainties

Base year for assessment of uncertainty in trend 2000 **Year T** 2000 Refresh Data

2006 IPCC Categories	Gas	Base Year emissions or removals (Gg CO2 equivalent)	Activity Data Uncertainty (%)	Emission Factor Uncertainty (%)	Combined Uncertainty (%)	Contribution to Variance by Category in Year T
1 - Energy						
1.A.1 - Energy Industries - Liquid Fuels	CO2	2548.436	5.000	6.136	7.915	0.126
	CH4	0.099	5.000	228.788	228.843	0.000
	N2O	0.020	5.000	228.788	228.843	0.000
1.A.1 - Energy Industries - Solid Fuels	CO2	5766.053	5.000	12.460	13.426	1.856
	CH4	0.060	5.000	200.000	200.062	0.000
	N2O	0.090	5.000	222.222	222.278	0.000
1.A.1 - Energy Industries - Gaseous Fuels	CO2	3.429	5.000	3.922	6.354	0.000
	CH4	0.000	5.000	200.000	200.062	0.000
	N2O	0.000	5.000	200.000	200.062	0.000
1.A.1 - Energy Industries	CO2	0.000	5.000	5.000	7.071	0.000
	CH4	0.000	5.000	5.000	7.071	0.000
	N2O	0.000	5.000	5.000	7.071	0.000
1.A.2 - Manufacturing Industries and Construction - Liquid Fuels	CO2	6687.058	16.583	20.351	26.252	0.120
	CH4	0.260	16.583	758.804	758.985	0.000
	N2O	0.052	16.583	758.804	758.985	0.000
1.A.2 - Manufacturing Industries and Construction - Solid Fuels	CO2	2819.371	8.660	21.581	23.254	0.425
	CH4	0.293	8.660	346.410	346.518	0.000
	N2O	0.044	8.660	384.900	384.998	0.000
1.A.3.a - Civil Aviation - Liquid Fuels	CO2	2553.743	7.071	5.953	9.243	0.045
	CH4	0.018	7.071	141.421	141.598	0.000
	N2O	0.071	7.071	212.132	212.250	0.000
1.A.3.b - Road Transportation - Liquid Fuels	CO2	20648.706	5.000	3.068	5.866	4.545
	CH4	4.466	5.000	244.693	244.744	0.000
	N2O	1.035	5.000	209.938	209.997	0.000
1.A.3.b - Road Transportation	CO2	0.000	0.000	0.000	0.000	0.000
1.A.3.c - Railways - Liquid Fuels	CO2	3.971	5.000	2.024	5.394	0.000
	CH4	0.000	5.000	150.602	150.685	0.000
	N2O	0.002	5.000	200.000	200.062	0.000
1.A.3.d - Water-borne Navigation - Liquid Fuels	CO2	4385.677	5.000	4.301	6.596	0.259
	CH4	0.404	5.000	50.000	50.249	0.000
	N2O	0.115	5.000	140.000	140.089	0.000
1.A.4 - Other Sectors - Liquid Fuels	CO2	6340.223	10.000	10.432	14.451	0.364
	CH4	0.657	10.000	324.138	324.293	0.000
	N2O	0.067	10.000	409.648	409.770	0.000

Uncertainties Reporting Table 7a

Steps

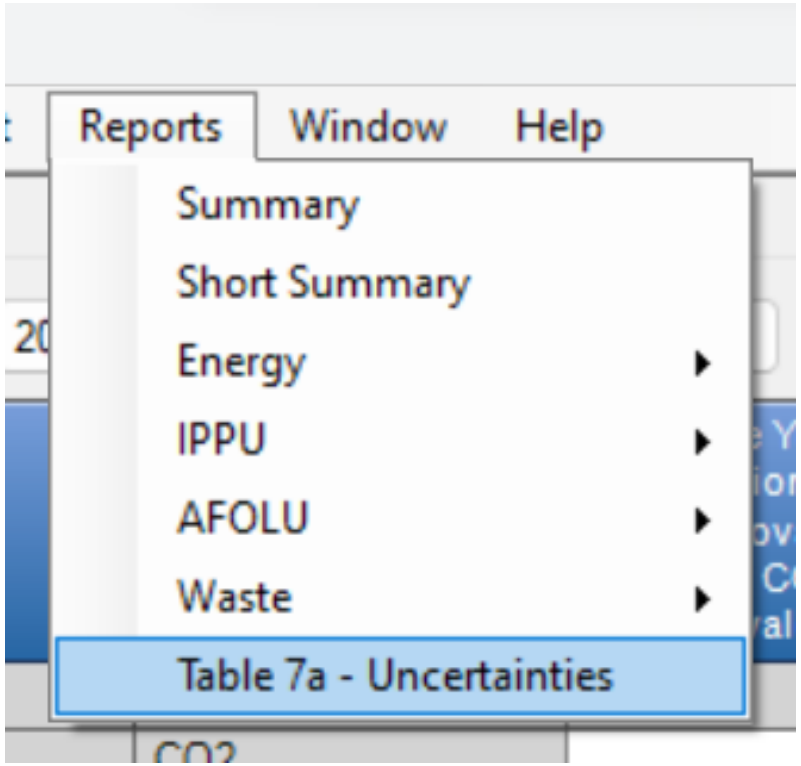
Navigate to the report section within the IPCC software.

1

Select the “Table 7a- Uncertainties” option from the available choices.

2

Look for “Table 7a- Uncertainties" in the options that appear.



Result - Uncertainties Reporting Table 7a

IPCC Inventory Software - PHL_EnergySector - [Reporting Table 7a - Uncertainties]

Application Database Inventory Year Worksheets Tools Export/Import Reports Window Help

Reporting Table 7a - Uncertainties

Base year for assessment of uncertainty in trend 2000 **Year T** 2000 Refresh Data

2006 IPCC Categories	Gas	Base Year emissions or removals (Gg CO2 equivalent)	Activity Data Uncertainty (%)	Emission Factor Uncertainty (%)	Combined Uncertainty (%)	Contribution to Variance by Category in Year T
1 - Energy						
1.A.1 - Energy Industries - Liquid Fuels	CO2	2548.436	5.000	6.136	7.915	0.126
	CH4	0.099	5.000	228.788	228.843	0.000
	N2O	0.020	5.000	228.788	228.843	0.000
1.A.1 - Energy Industries - Solid Fuels	CO2	5766.053	5.000	12.460	13.426	1.856
	CH4	0.060	5.000	200.000	200.062	0.000
	N2O	0.090	5.000	222.222	222.278	0.000
1.A.1 - Energy Industries - Gaseous Fuels	CO2	3.429	5.000	3.922	6.354	0.000
	CH4	0.000	5.000	200.000	200.062	0.000
	N2O	0.000	5.000	200.000	200.062	0.000
1.A.1 - Energy Industries	CO2	0.000	5.000	5.000	7.071	0.000
	CH4	0.000	5.000	5.000	7.071	0.000
	N2O	0.000	5.000	5.000	7.071	0.000
1.A.2 - Manufacturing Industries and Construction - Liquid Fuels	CO2	6687.058	16.583	20.351	26.252	0.120
	CH4	0.260	16.583	758.804	758.985	0.000
	N2O	0.052	16.583	758.804	758.985	0.000
1.A.2 - Manufacturing Industries and Construction - Solid Fuels	CO2	2819.371	8.660	21.581	23.254	0.425
	CH4	0.293	8.660	346.410	346.518	0.000
	N2O	0.044	8.660	384.900	384.998	0.000
1.A.3.a - Civil Aviation - Liquid Fuels	CO2	2553.743	7.071	5.953	9.243	0.045
	CH4	0.018	7.071	141.421	141.598	0.000
	N2O	0.071	7.071	212.132	212.250	0.000
1.A.3.b - Road Transportation - Liquid Fuels	CO2	20648.706	5.000	3.068	5.866	4.545
	CH4	4.466	5.000	244.693	244.744	0.000
	N2O	1.035	5.000	209.938	209.997	0.000
1.A.3.b - Road Transportation	CO2	0.000	0.000	0.000	0.000	0.000
1.A.3.c - Railways - Liquid Fuels	CO2	3.971	5.000	2.024	5.394	0.000
	CH4	0.000	5.000	150.602	150.685	0.000
	N2O	0.002	5.000	200.000	200.062	0.000
1.A.3.d - Water-borne Navigation - Liquid Fuels	CO2	4385.677	5.000	4.301	6.596	0.259
	CH4	0.404	5.000	50.000	50.249	0.000
	N2O	0.115	5.000	140.000	140.089	0.000
1.A.4 - Other Sectors - Liquid Fuels	CO2	6340.223	10.000	10.432	14.451	0.364
	CH4	0.657	10.000	324.138	324.293	0.000
	N2O	0.067	10.000	409.648	409.770	0.000

CRT Table

This step shows , How to create CRT table and move to it

Start by moving to the "Export and Import" section.

Select the "Export" option.

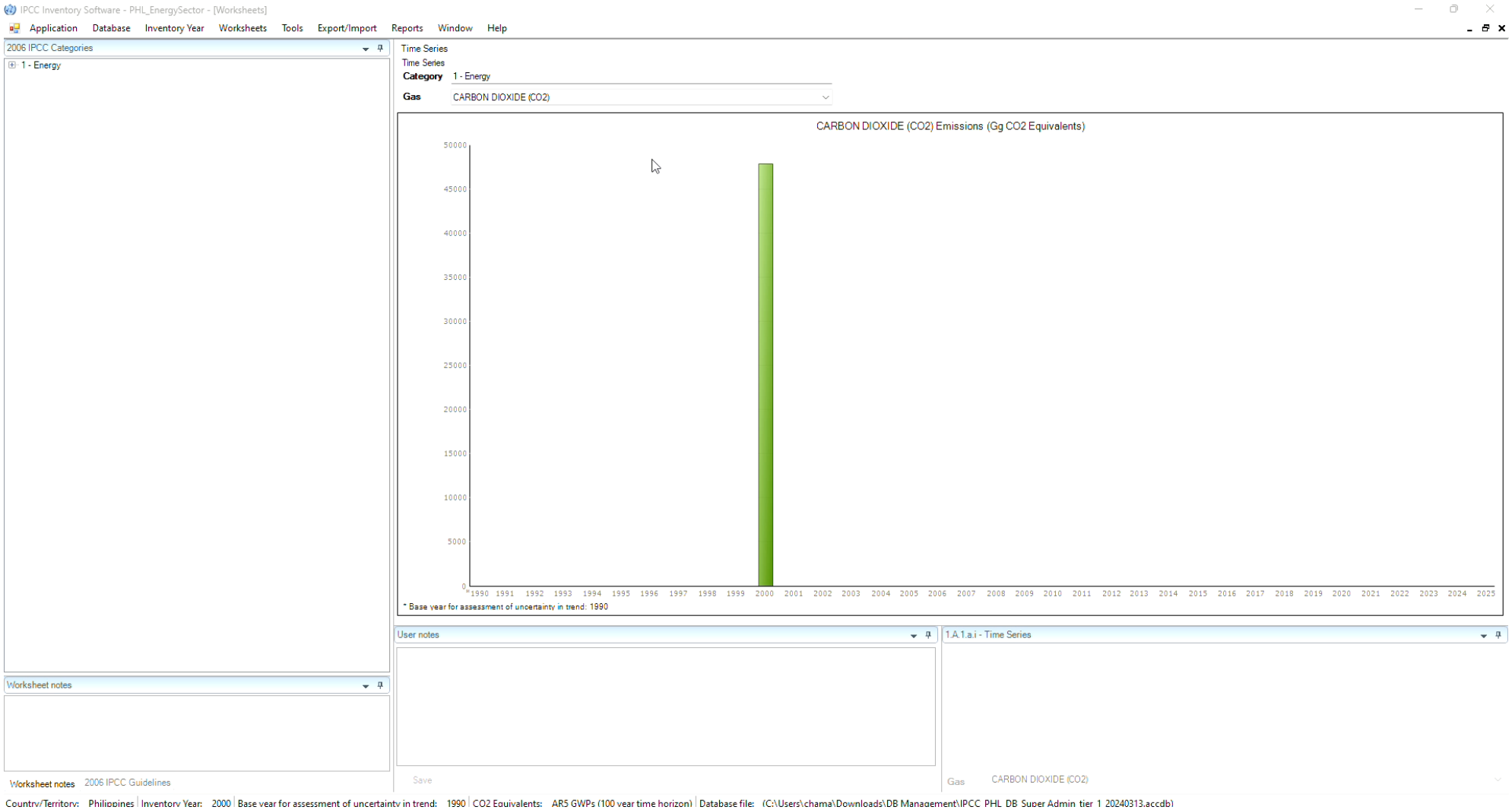
Choose the "UNFCCC CRT" option from the available list.

In the popup window, locate the button labeled "NEW CRT table" and click on it.

Another popup window will appear; here, enter the CRT table name and select the required years.

CRT Table

This video shows , How to create CRT table and move to it

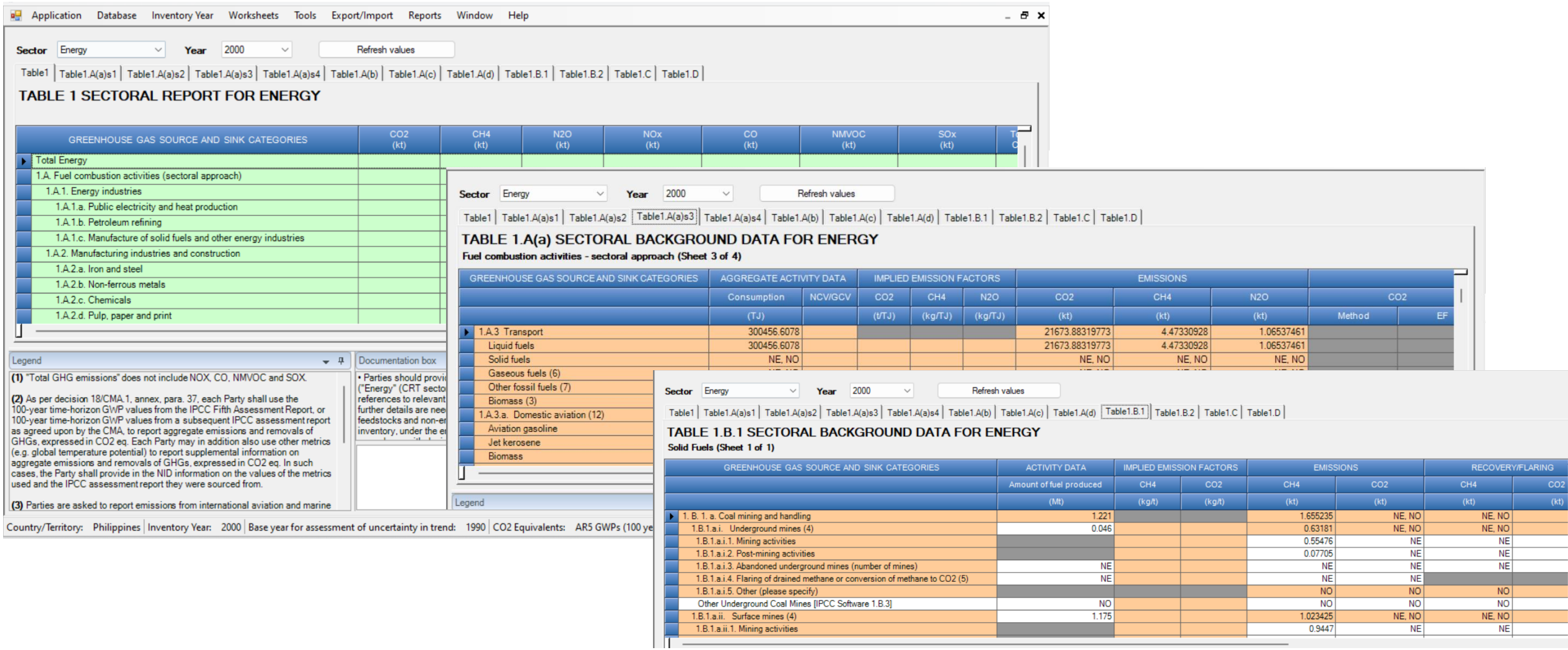


Result - CRT Table

CRT section includes 12 tables as bellow;

1. Table 1 : Sectoral Report for Energy
2. Table 1 A(a)s1 Sectoral Background data for Energy, Fuel combustion activities- sectoral approach sheet -1
3. Table 1 A(a)s2 Sectoral Background data for Energy, Fuel combustion activities- sectoral approach sheet -2
4. Table 1 A(a)s3 Sectoral Background data for Energy, Fuel combustion activities- sectoral approach sheet -3
5. Table 1 A(a)s4 Sectoral Background data for Energy, Fuel combustion activities- sectoral approach sheet -4
6. Table 1 A(b) Sectoral Background data for Energy, Fuel combustion activities- reference approach
7. Table 1 A(c) Compression of CO2 emission from fuel combustion
8. Table 1 A(d) Sectoral Background data for Energy, Feedstocks, reductant and other non energy use of fuels
9. Table 1 B 1 Sectoral Background data for Energy- solid fuels
10. Table 1 B 2 Sectoral Background data for Energy- Oil, natural gas and other emission from energy production.
11. Table 1 C Sectoral Background data for Energy- CO2 Transport and storage
12. Table 1 D Sectoral Background data for Energy- International aviation and international navigation) international bunkers) and multilateral operations

Result - CRT Table



NAI Reporting Table

Steps

Navigate to the “Export/Import” section within the IPCC software.

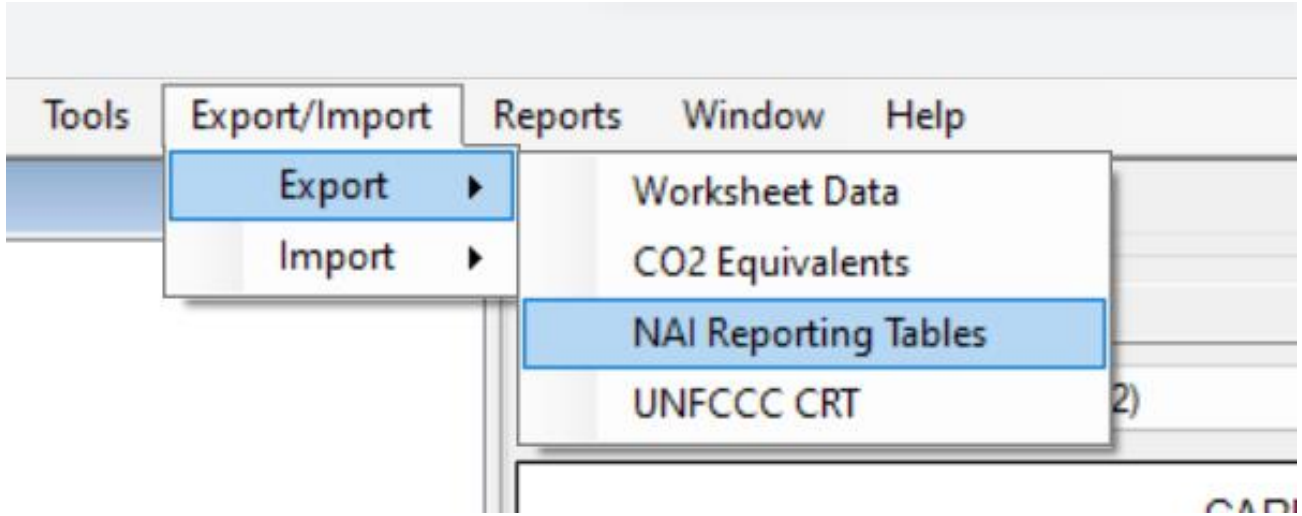
1

Select “ Export” section.

2

Then select NAI Reporting table

Look for “NAI Reporting table" in the options that appear.



Result - NAI Reporting Table

Upon selecting “NAI Reporting table" in the report section, the software will display emissions categorized by level 2 & 3 categories. These Table 1 & 2 include emissions net CO2, CH4, N2O, HFCs, PFCs, SF6, and others.

Application Database Inventory Year Worksheets Tools Export/Import Reports Window Help

NAI Reporting Table 1 | NAI Reporting Table 2

Greenhouse gas source and sink categories	Net CO2 (Gg)	CH4 (Gg)	N2O (Gg)	CO Gg	NOx (Gg)	NMVOCs (Gg)	SOx (Gg)
Total National Emissions and Removals	47900.976	101.850	10.876	0.000	0.000	0.000	0.000
1 - Energy	47827.422	80.755	2.279	0.000	0.000	0.000	0.000
1A - Fuel Combustion Activities	45838.453	79.100	2.279	0.000	0.000	0.000	0.000
1A1 - Energy Industries	8317.918	0.159	0.110	0.000	0.000	0.000	0.000
1A2 - Manufacturing Industries and Construction (ISIC)	9506.429	0.554	0.096	0.000	0.000	0.000	0.000
1A3 - Transport	21673.883	4.473	1.065	0.000	0.000	0.000	0.000
1A4 - Other Sectors	6340.223	73.914	1.008	0.000	0.000	0.000	0.000
1A5 - Other	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1B - Fugitive Emissions from Fuels	1988.969	1.655	0.000	0.000	0.000	0.000	0.000
1B1 - Solid Fuels	0.000	1.655	0.000	0.000	0.000	0.000	0.000
1B2 - Oil and Natural Gas	1988.969	0.000	0.000	0.000	0.000	0.000	0.000
2 - Industrial Processes	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2A - Mineral Products	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2B - Chemical Industry	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2C - Metal Production	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2D - Other Production	0.000	0.000		0.000	0.000	0.000	0.000
2E - Production of Halocarbons and Sulphur Hexafluoride				0.000	0.000	0.000	0.000

Application Database Inventory Year Worksheets Tools Export/Import Reports Window Help

NAI Reporting Table 1 | NAI Reporting Table 2

Greenhouse gas source and sink categories	HFC			PFC			SF6
	HFC-23 (Gg)	HFC-134 (Gg)	Other (Gg-CO2)	CF4 (Gg)	C2F6 (Gg)	Other (Gg-CO2)	SF6 (Gg)
Total National Emissions and Removals	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1 - Energy							
1A - Fuel Combustion Activities							
1A1 - Energy Industries							
1A2 - Manufacturing Industries and Construction (ISIC)							
1A3 - Transport							
1A4 - Other Sectors							
1A5 - Other							
1B - Fugitive Emissions from Fuels							
1B1 - Solid Fuels							
1B2 - Oil and Natural Gas							
2 - Industrial Processes	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2A - Mineral Products							
2B - Chemical Industry							
2C - Metal Production	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2D - Other Production							
2E - Production of Halocarbons and Sulphur Hexafluoride	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2F - Consumption of Halocarbons and Sulphur Hexafluoride	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Q&A

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