IPCC Inventory Software

Virtual presentation

IPCC TFI TSU

ipcc
INTERGOVERNMENTAL PANEL ON climate change

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Background

- ✓**produced**, since 2012, **by** the **IPCC Task Force on National Greenhouse Gas Inventories** (**IPCC TFI**) **to assist** inventory compilers **in using the 2006 IPCC Guidelines**

- ✓**based on MS-Access for WindowsOS**

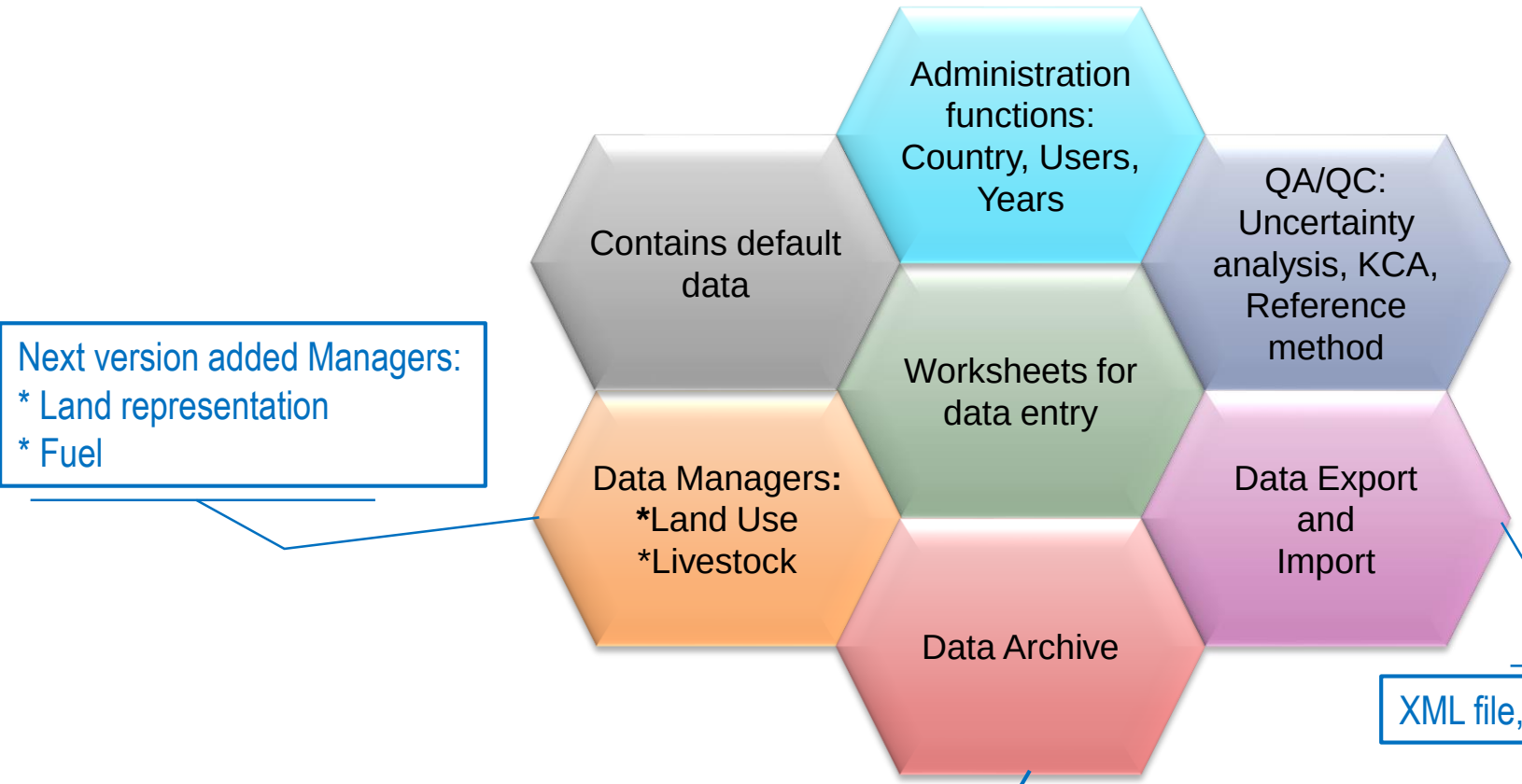
Background

- ✓ Free to use
  (download at https://www.ipcc-nggip.iges.or.jp/software/index.html)
- ✓ Support to users provided by IPCC TFI TSU
- ✓ Plan for updating to full methods/tiers/approaches within the 2006 IPCC Guidelines

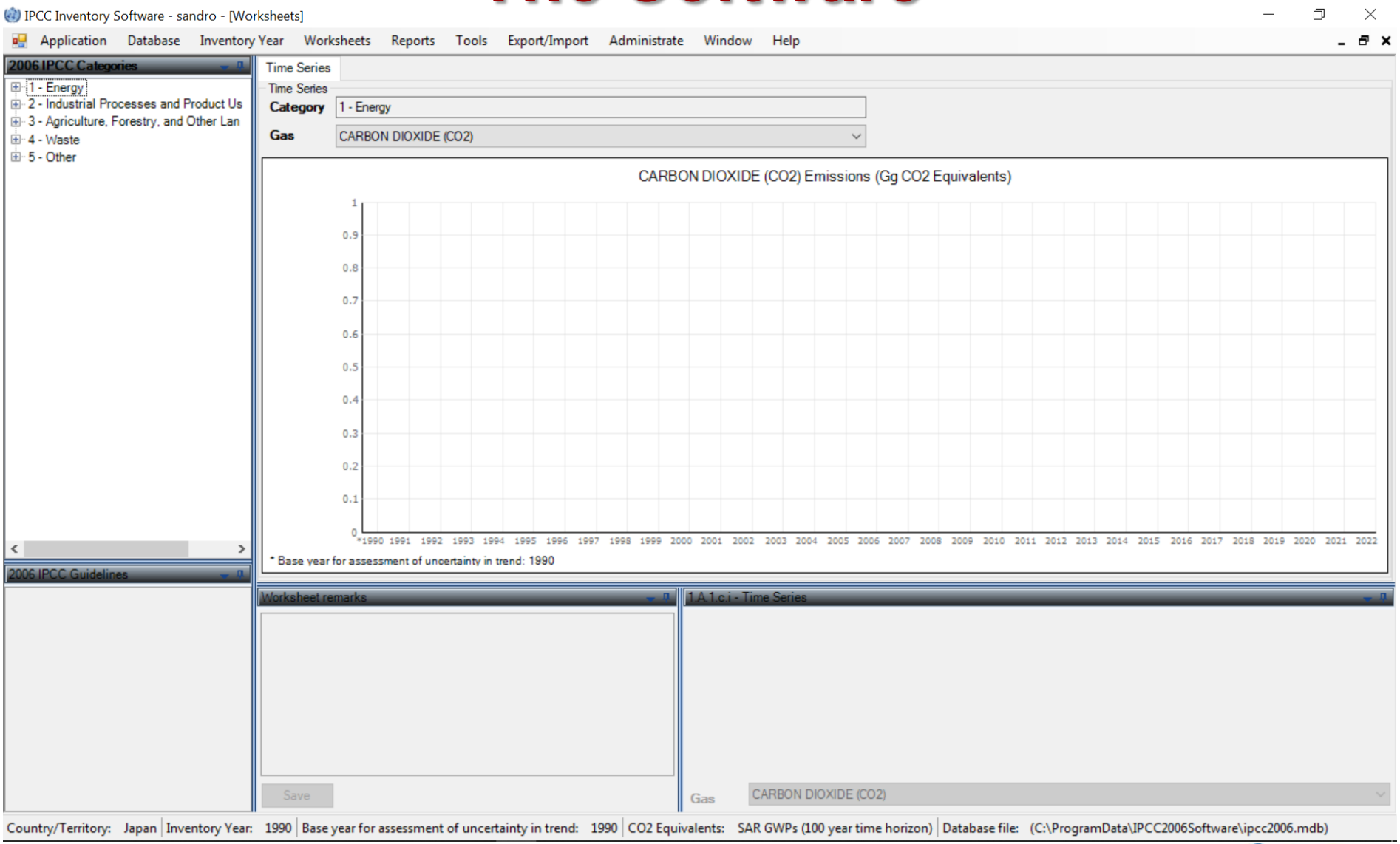
Background

- ✓ originally designed to implement Tier 1 Worksheets only **provides default data from the *2006 IPCC Guidelines***
- ✓ current **version 2.691 allows input** of **user-specific values** for **EFs** and **parameters** (**Tier 2**) for **Energy**, **IPPU**, **Agriculture**, **Waste** categories
- ✓ can be **used for** the **whole inventory or** just **individual categories**
- ✓ **allows different sectors to be developed simultaneously**
- ✓ **can report outputs in non-Annex I National Communications format** *(reporting tables, consistent with Tables 1 and 2 in Annex to Decision 17/CP.8)*

Software Functions



The Software



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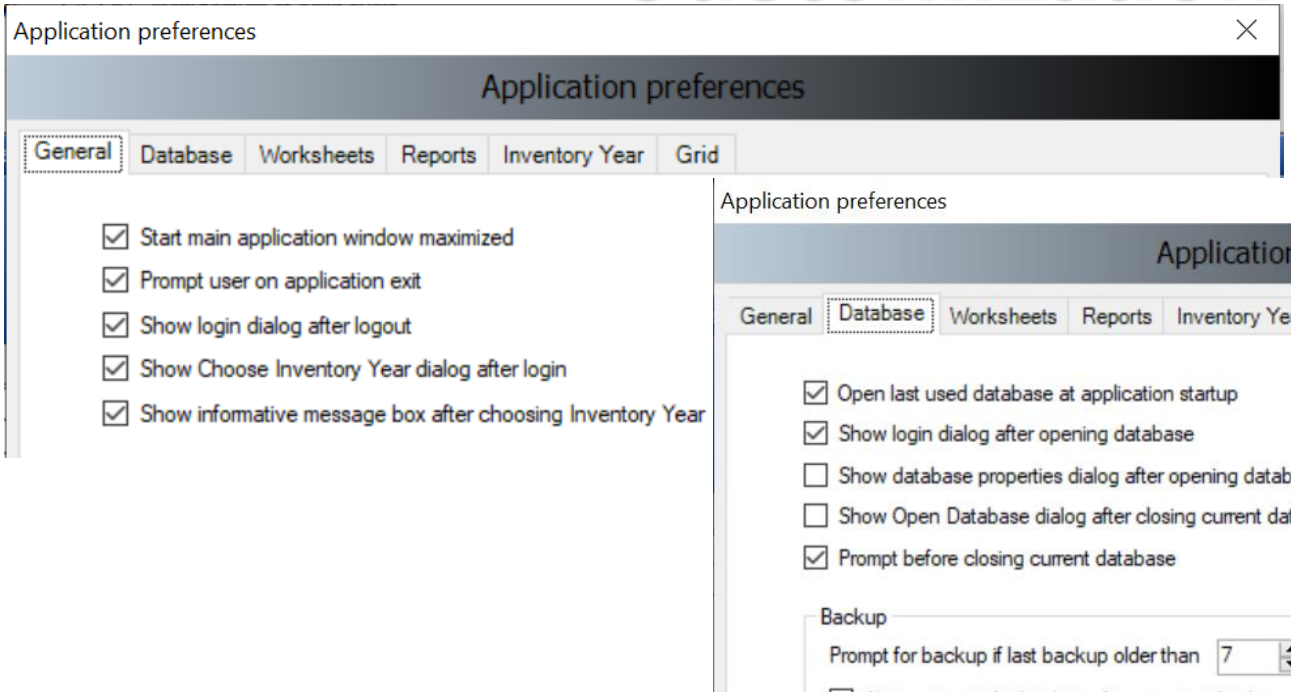
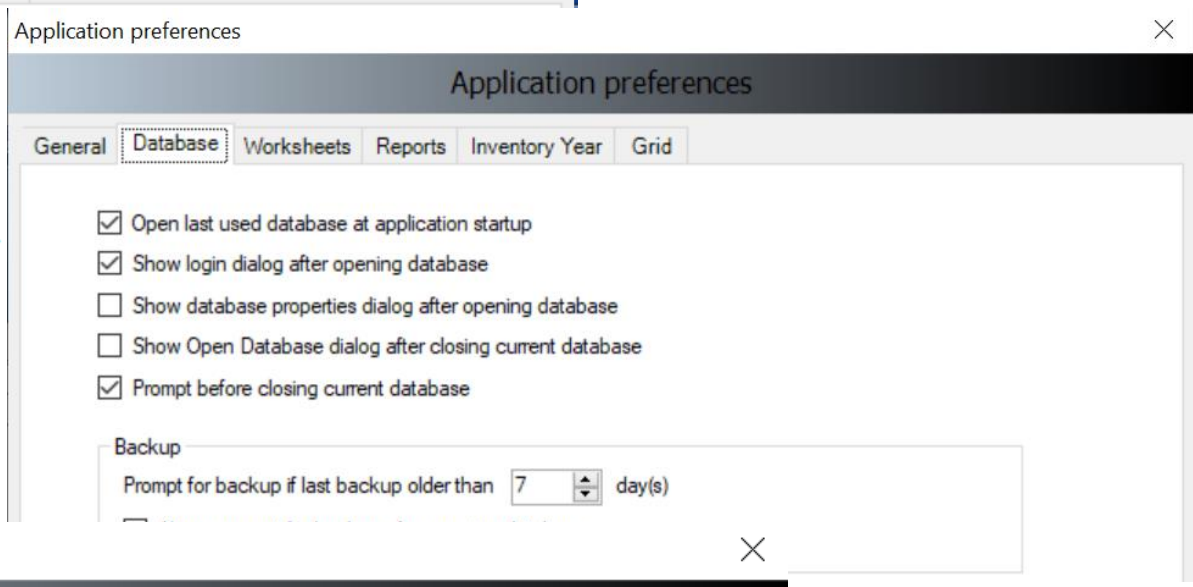
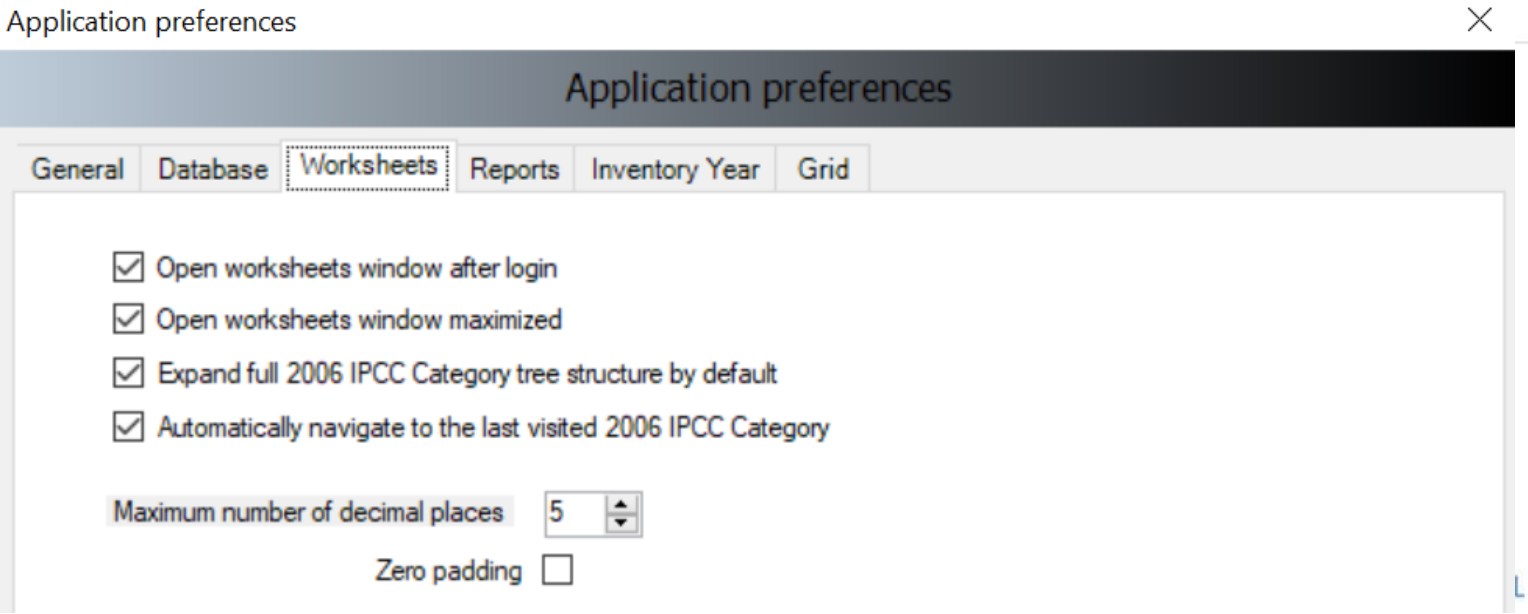
Customization







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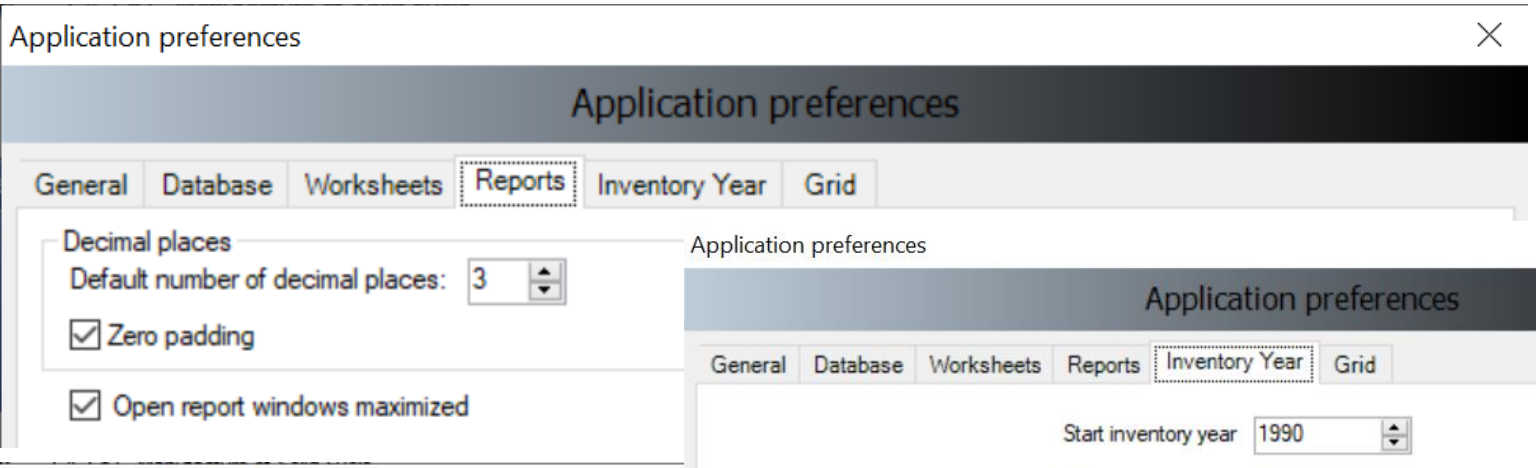
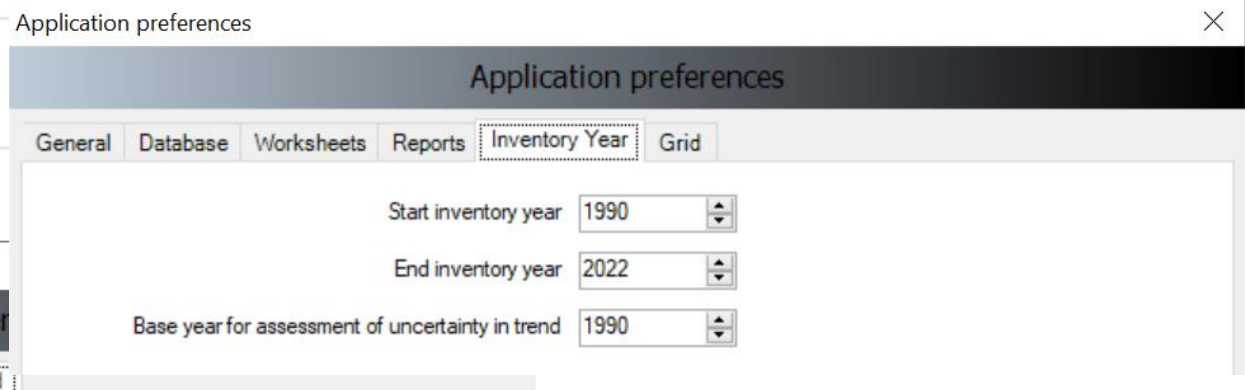
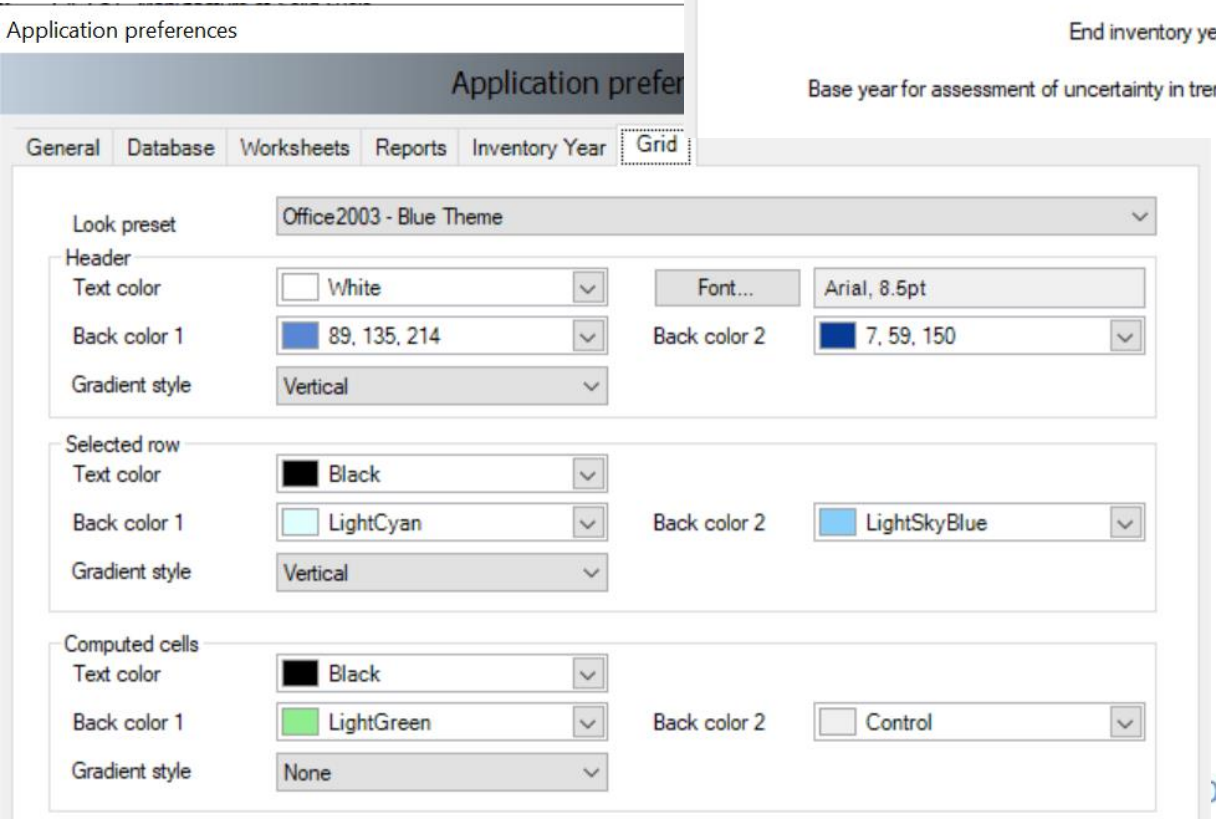
Customization







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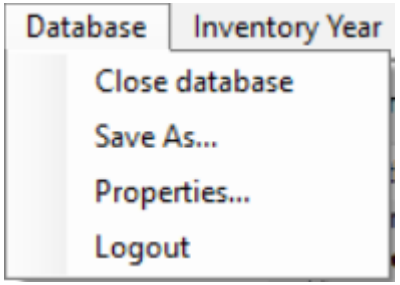
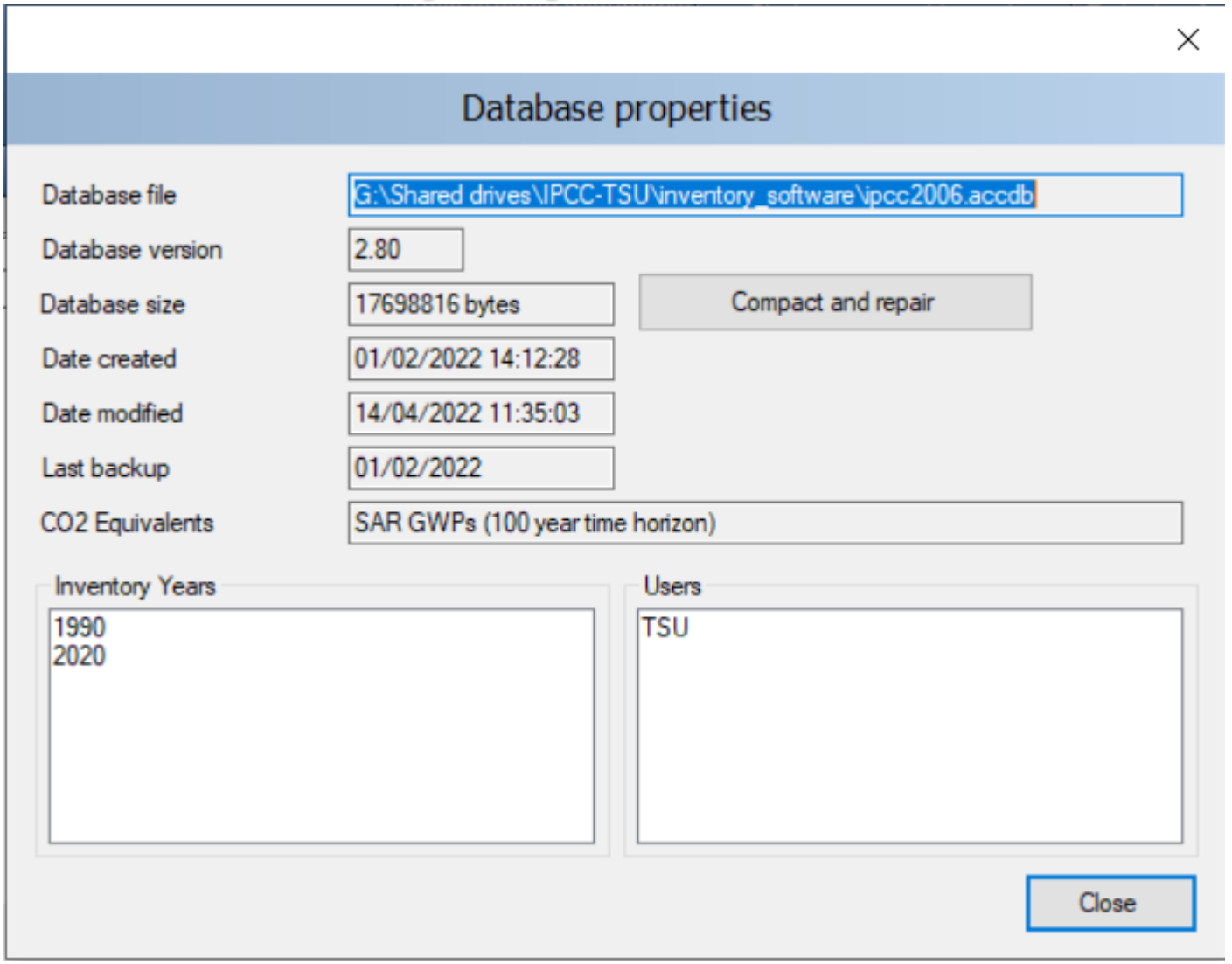
Database properties





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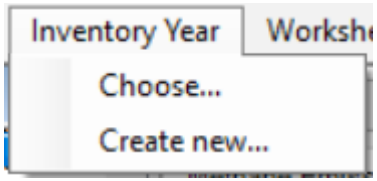
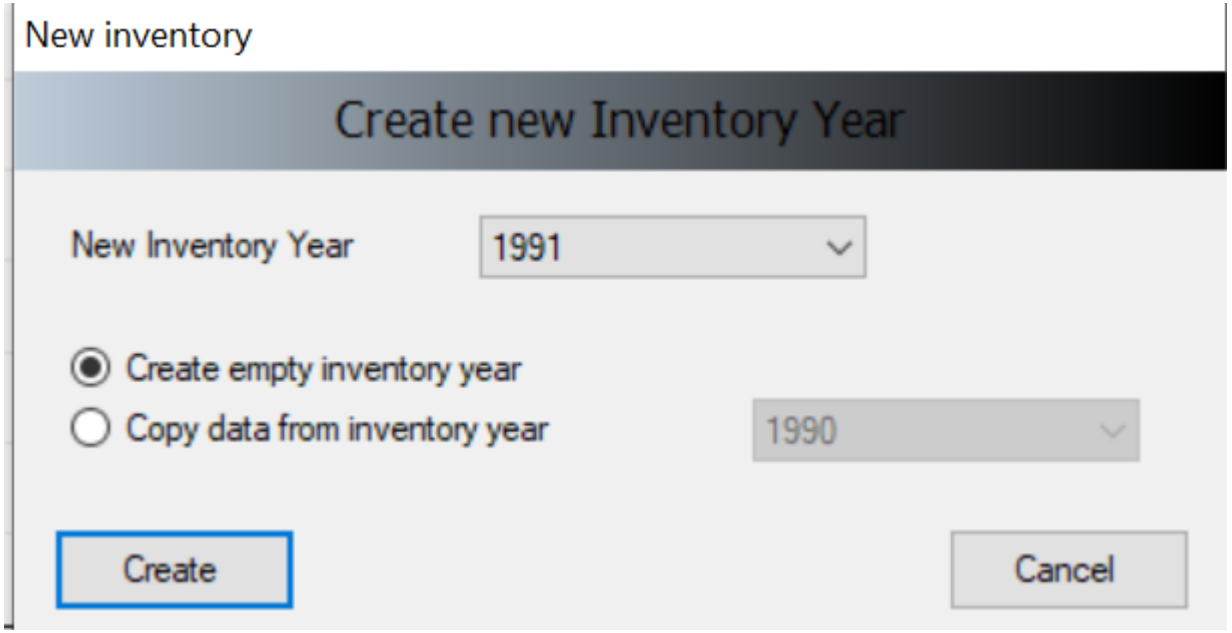
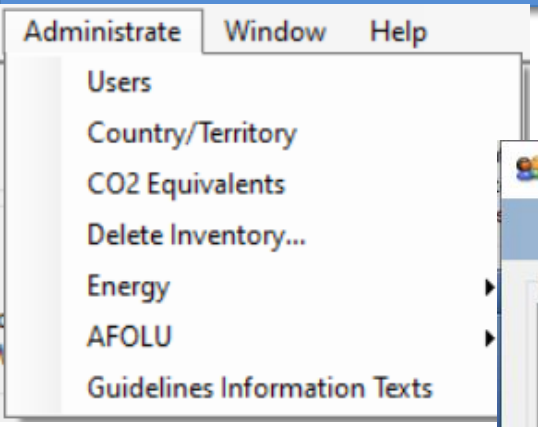
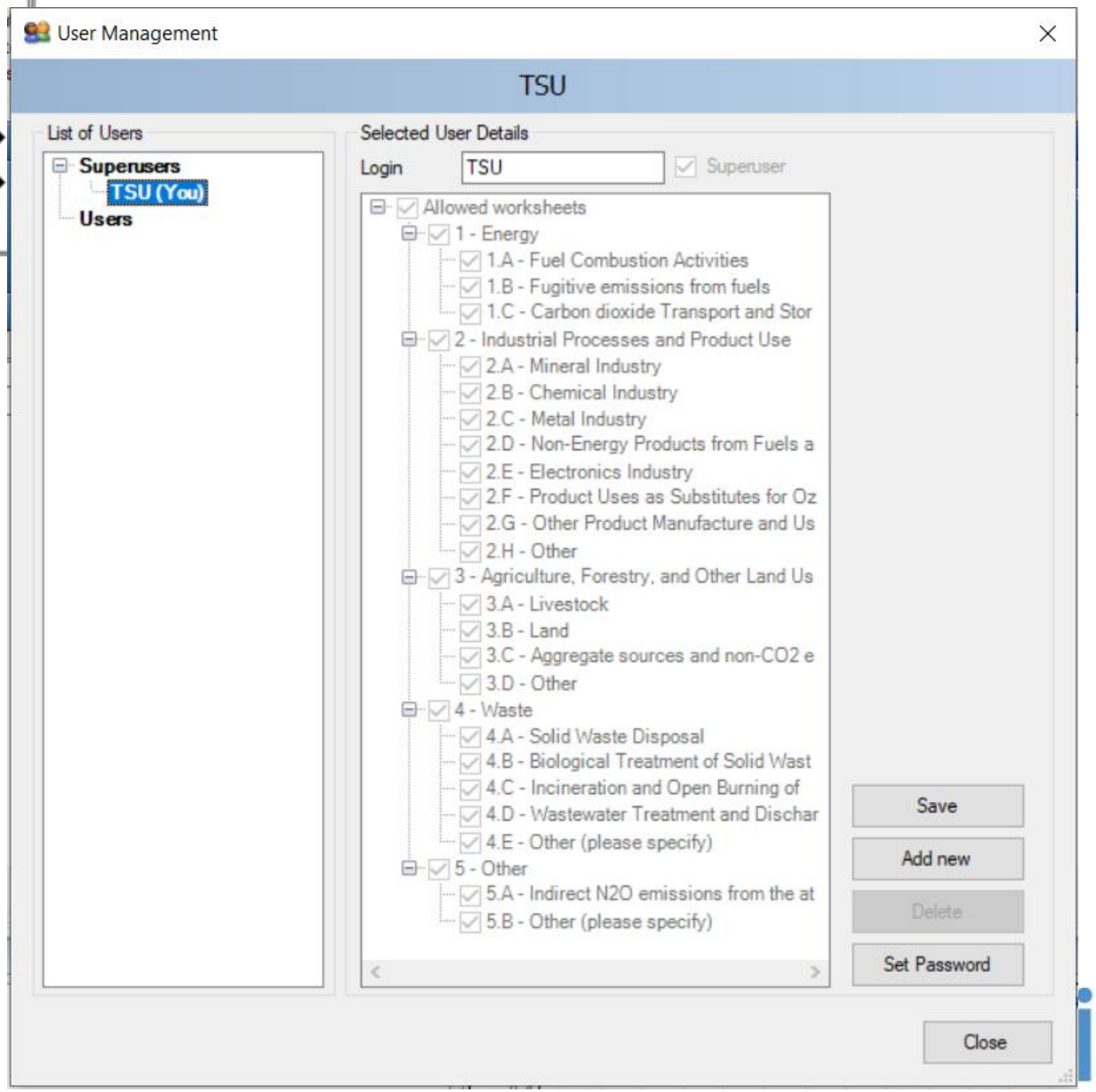
Database properties





Administrate





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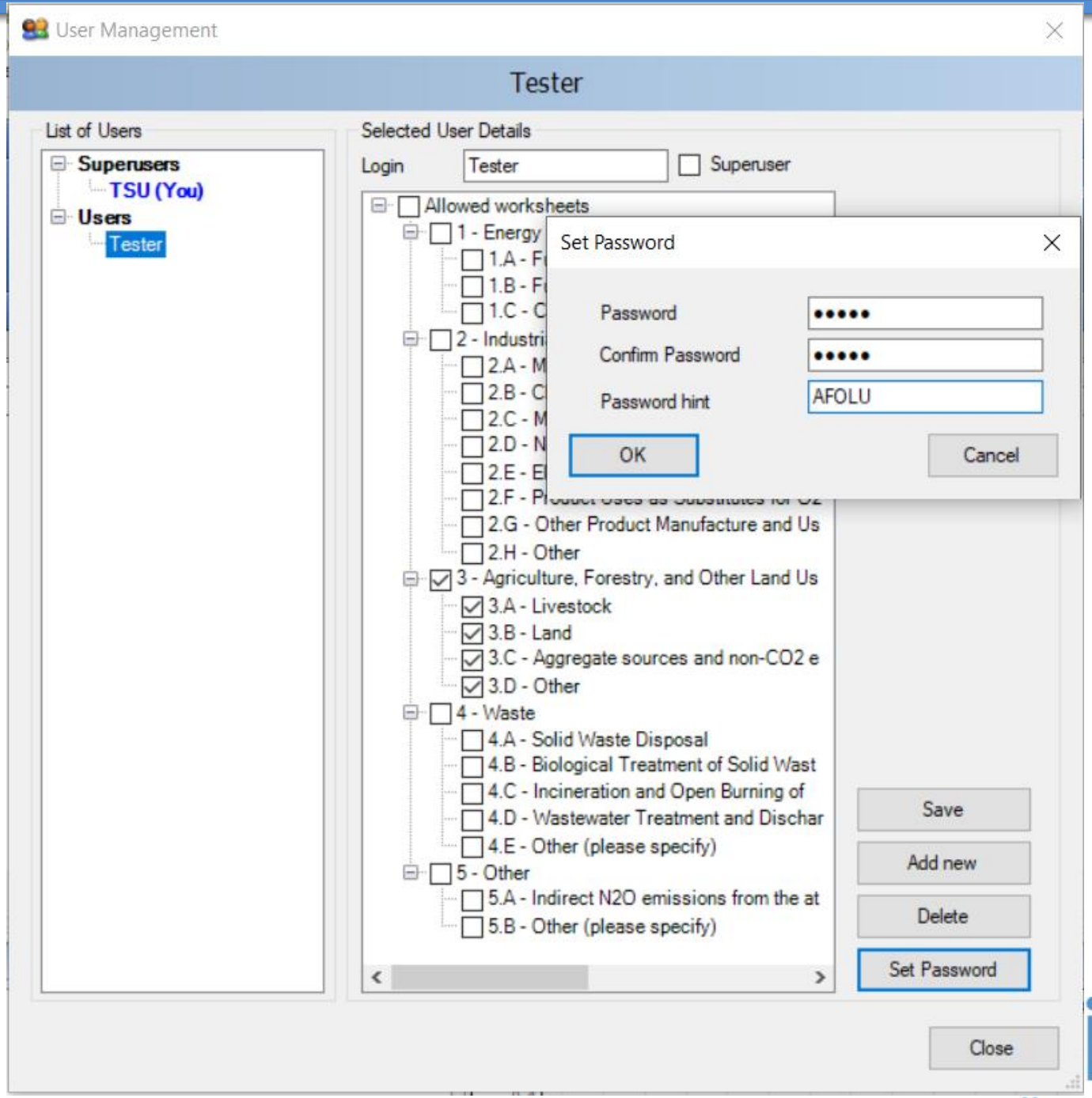

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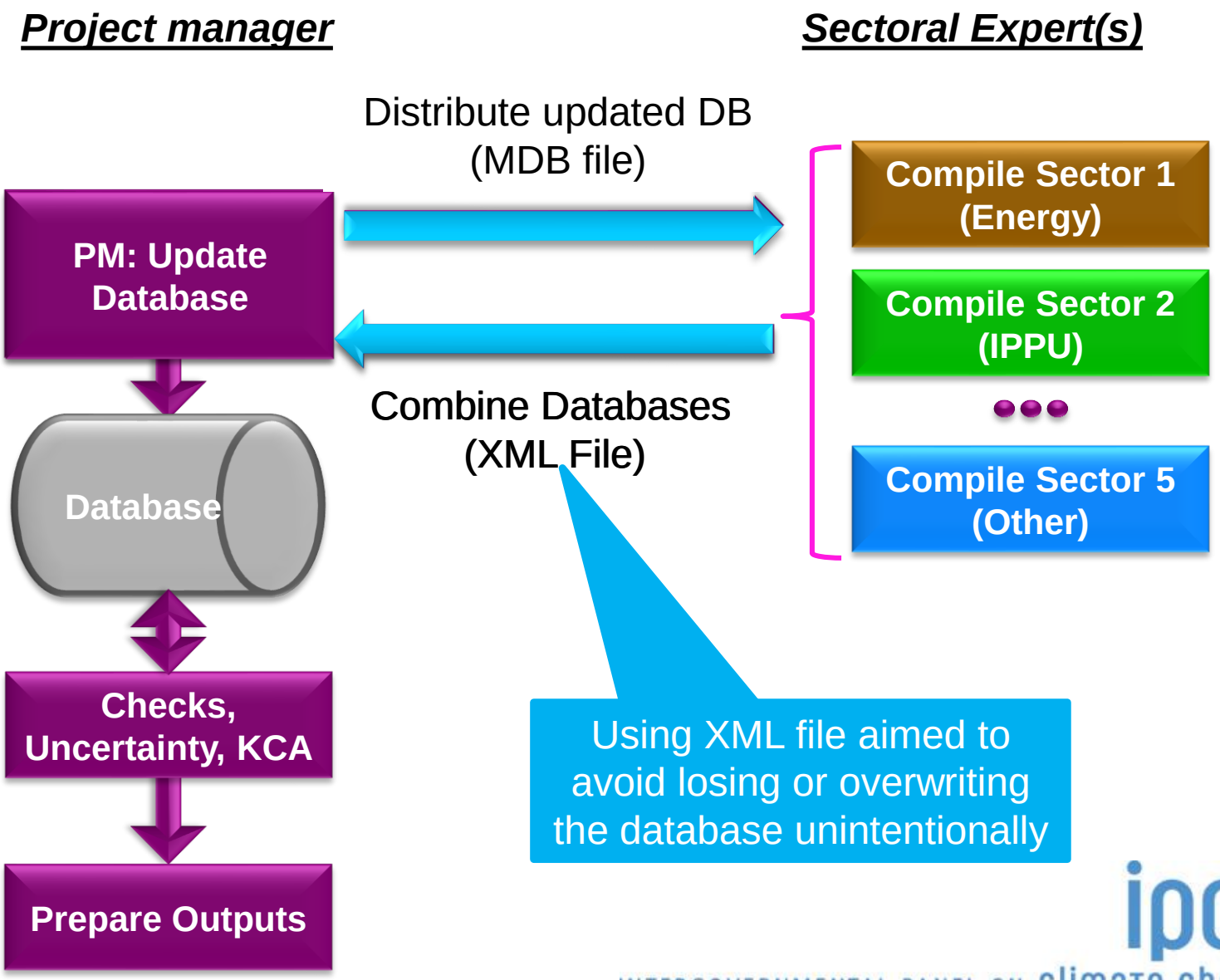
Multiple Users

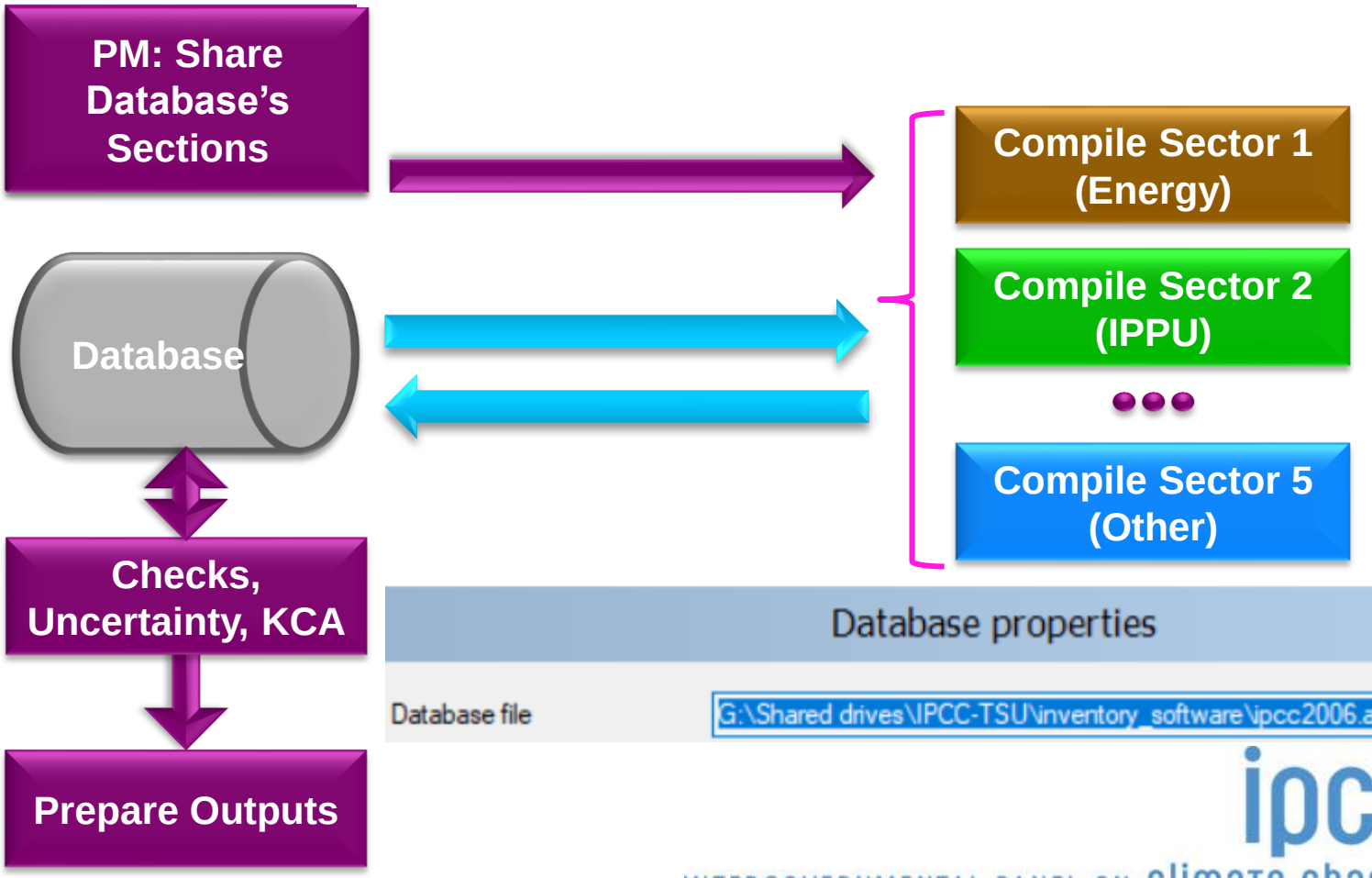


Multiple Users

Project manager

Sectoral Expert(s)

Share Database' sections



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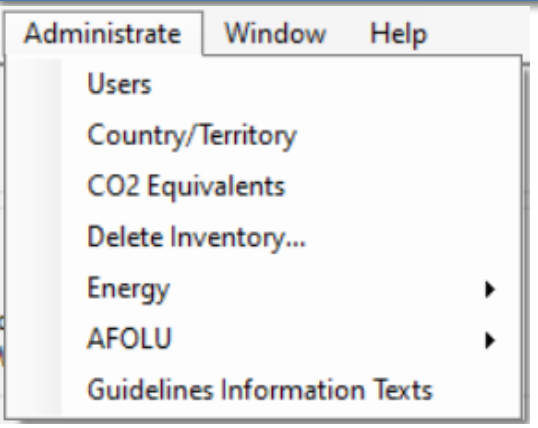
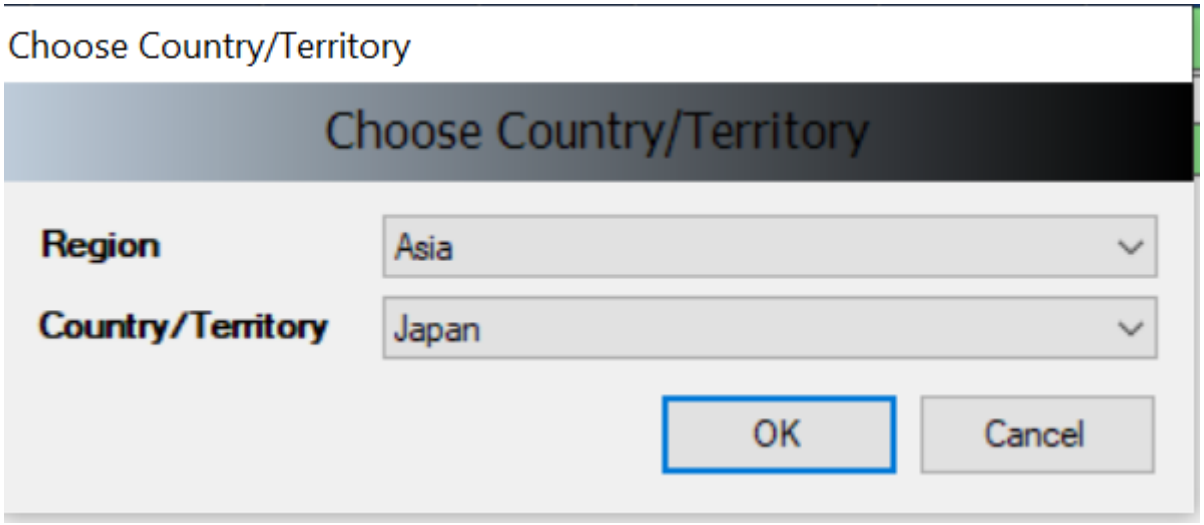
Administrate





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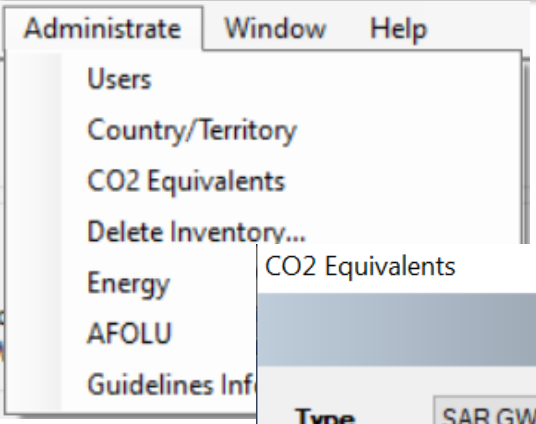
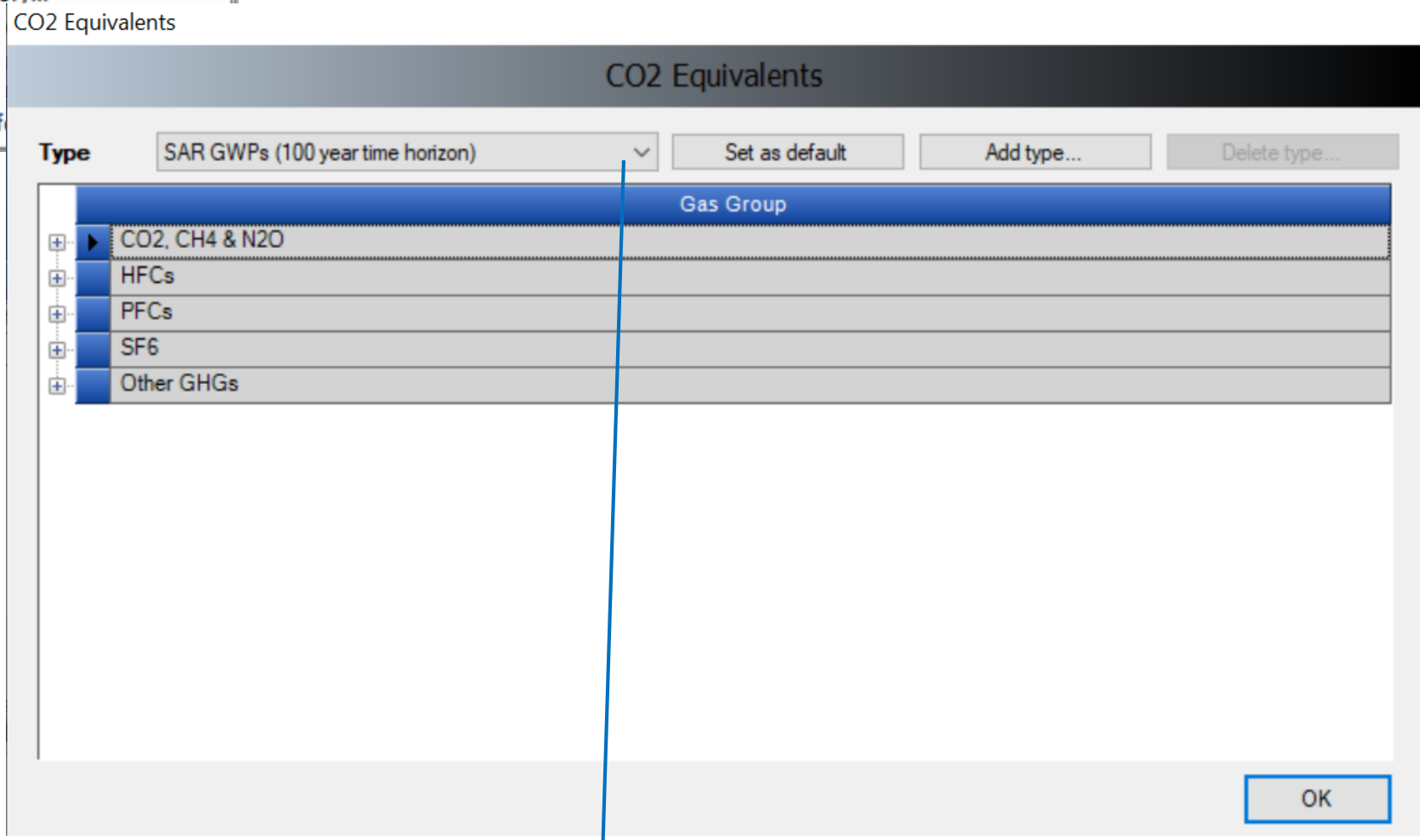
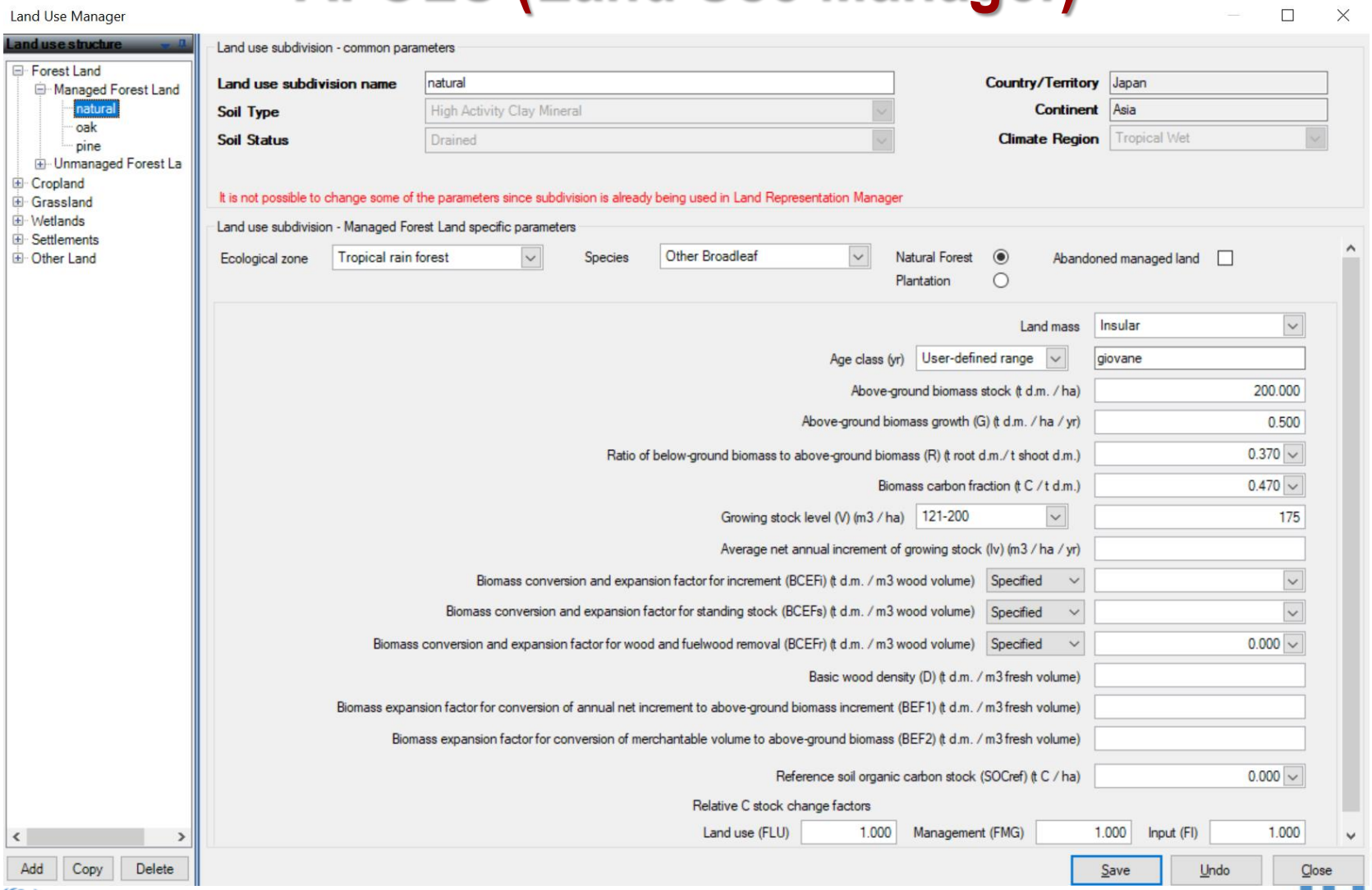




Planned to add AR5 GWP_{100}

Administrate

AFOLU (Land Use Manager)



Administrate

AFOLU (Livestock Manager)

Livestock Manager

Geographical zones | Livestock | Manure Management System

Save | Undo | Close

Geographical zone	Average annual temperature [°C]	Remark

Livestock Manager

Geographical zones | Livestock | Manure Management System

Save | Undo | Close

Category
Dairy Cows
Other Cattle
Buffalo
Sheep
Goats
Camels
Horses
Mules and Asses
Swine
Poultry

Livestock Manager

Geographical zones | Livestock | Manure Management System

Save | Undo | Close

System	Definition
Pasture/Range/Paddock	The manure from pasture and range grazing animals is allowed to lie as deposited, and is not managed.
Daily spread	Manure is routinely removed from a confinement facility and is applied to cropland or pasture within 24 hours of excretion.
Solid storage	The storage of manure, typically for a period of several months, in unconfined piles or stacks. Manure is able to be stacked due to the presence of a sufficient amount of bedding material or loss of moisture by evaporation.
Dry lot	A paved or unpaved open confinement area without any significant vegetative cover where accumulating manure may be removed periodically.
Liquid/Slurry	Manure is stored as excreted or with some minimal addition of water in either tanks or earthen ponds outside the animal housing, usually for periods less than one year.
Uncovered anaerobic lagoon	A type of liquid storage system designed and operated to combine waste stabilization and storage. Lagoon supernatant is usually used to remove manure from the associated confinement facilities to the lagoon. Anaerobic lagoons are designed with varying lengths of storage (up to a year or greater), depending on the climate region, the volatile solids loading rate, and other operational factors. The water from the lagoon may be recycled as flush water or used to irrigate and fertilise fields.
Pit storage below animal confinements	Collection and storage of manure usually with little or no added water typically below a slatted floor in an enclosed animal confinement facility, usually for periods less than one year.
Anaerobic digester	Animal excreta with or without straw are collected and anaerobically digested in a large containment vessel or covered lagoon. Digesters are designed and operated for waste stabilization by the microbial reduction of complex organic compounds to CO_2 and CH_4, which is captured and flared or used as a fuel.
Burned for fuel	The dung and urine are excreted on fields. The sun dried dung cakes are burned for fuel.
Cattle and Swine deep bedding	As manure accumulates, bedding is continually added to absorb moisture over a production cycle and possibly for as long as 6 to 12 months. This manure management system also is known as a bedded pack manure management system and may be combined with a dry lot or pasture.
Composting - invessel	Composting, typically in an enclosed channel, with forced aeration and continuous mixing.
Composting - Static pile	Composting in piles with forced aeration but no mixing.
Composting - Intensive windrow	Composting in windrows with regular (at least daily) turning for mixing and aeration.
Composting - Passive windrow	Composting in windrows with infrequent turning for mixing and aeration.
Poultry manure with litter	Similar to cattle and swine deep bedding except usually not combined with a dry lot or pasture. Typically used for all poultry breeder flocks and for the production of meat type chickens (broilers) and other fowl.
Poultry manure without litter	May be similar to open pits in enclosed animal confinement facilities or may be designed and operated to dry the manure as it accumulates. The latter is known as a high-rise manure management system and is a form of passive windrow composting when designed and operated properly.
Aerobic treatment	The biological oxidation of manure collected as a liquid with either forced or natural aeration. Natural aeration is limited to aerobic and facultative ponds and wetland systems and is due primarily to photosynthesis. Hence, these systems typically become anoxic during periods without sunlight

efined Livestock categories will show under 3.A.1.j and 3.A.2.j respectively (Other - please specify)

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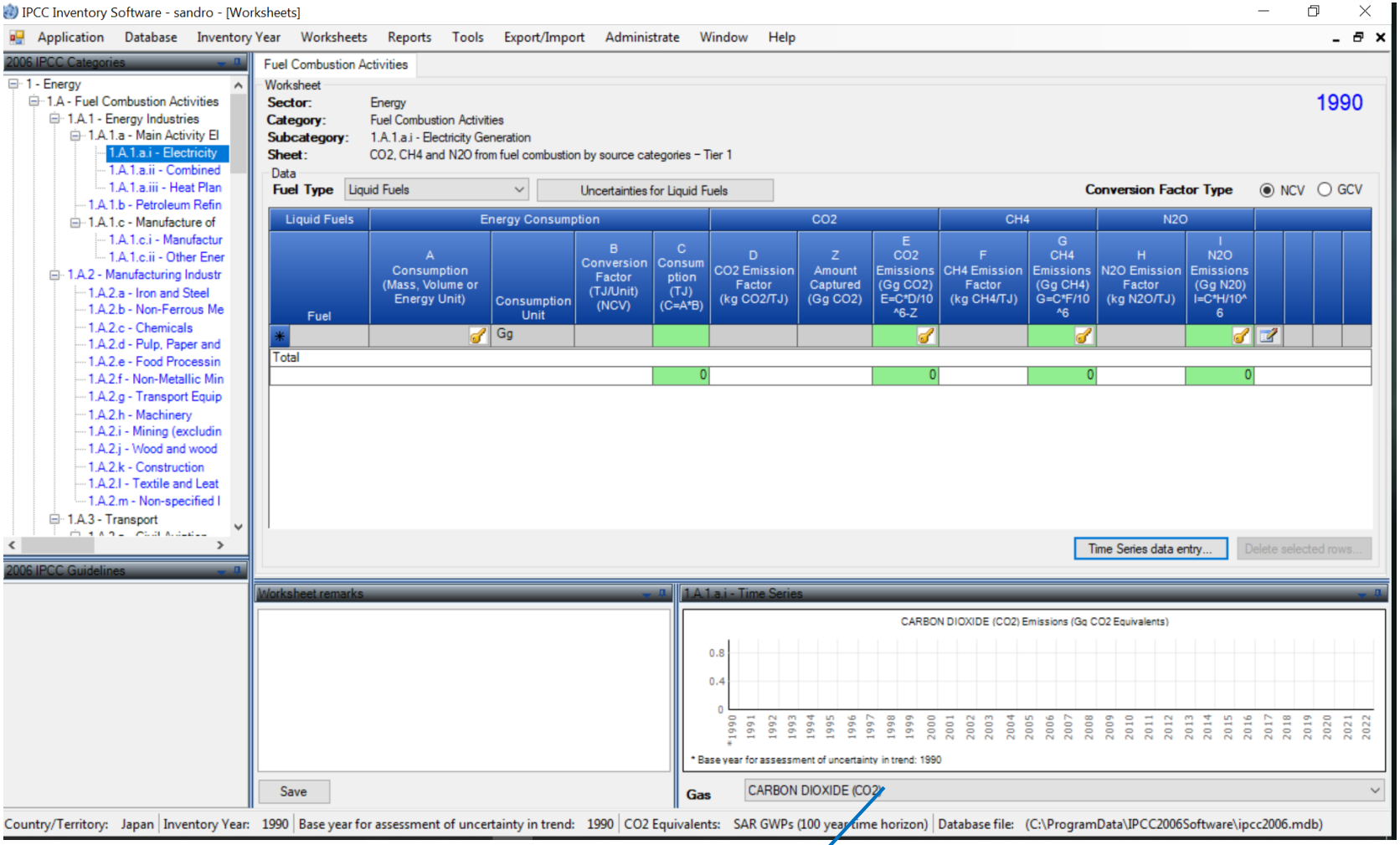
Worksheets



Planned to add an "Documentation Box"

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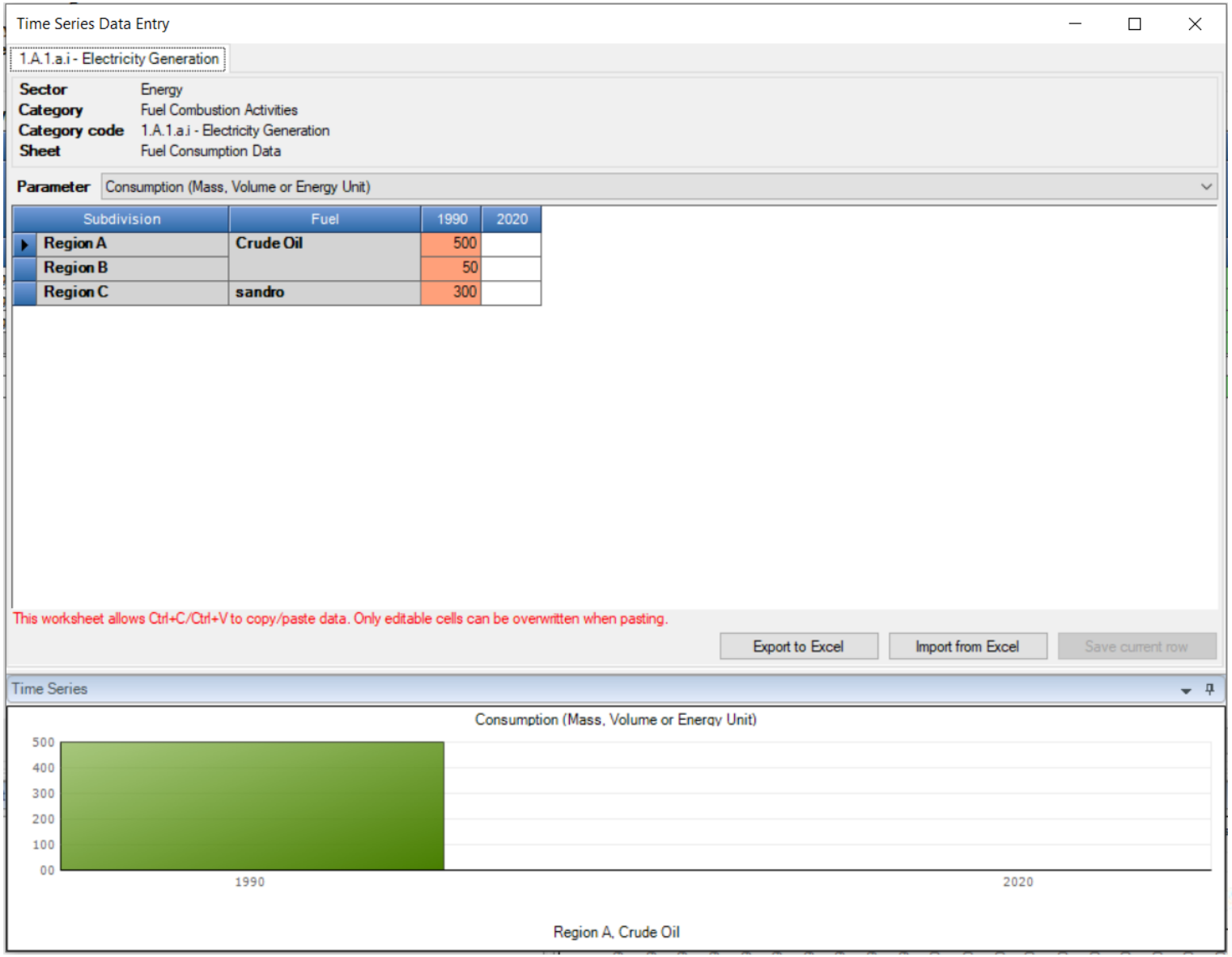
Worksheets (timeseries data entry)



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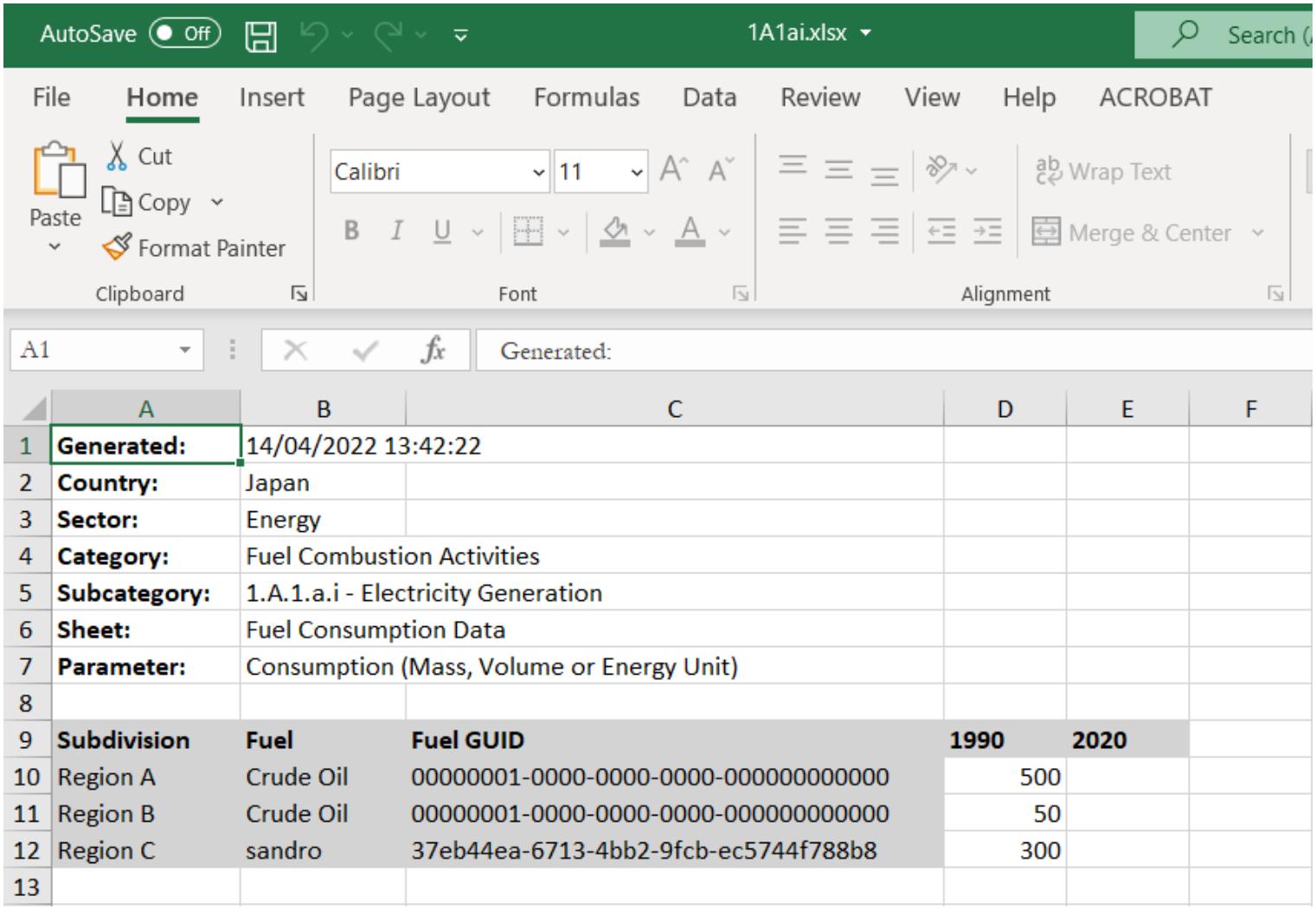
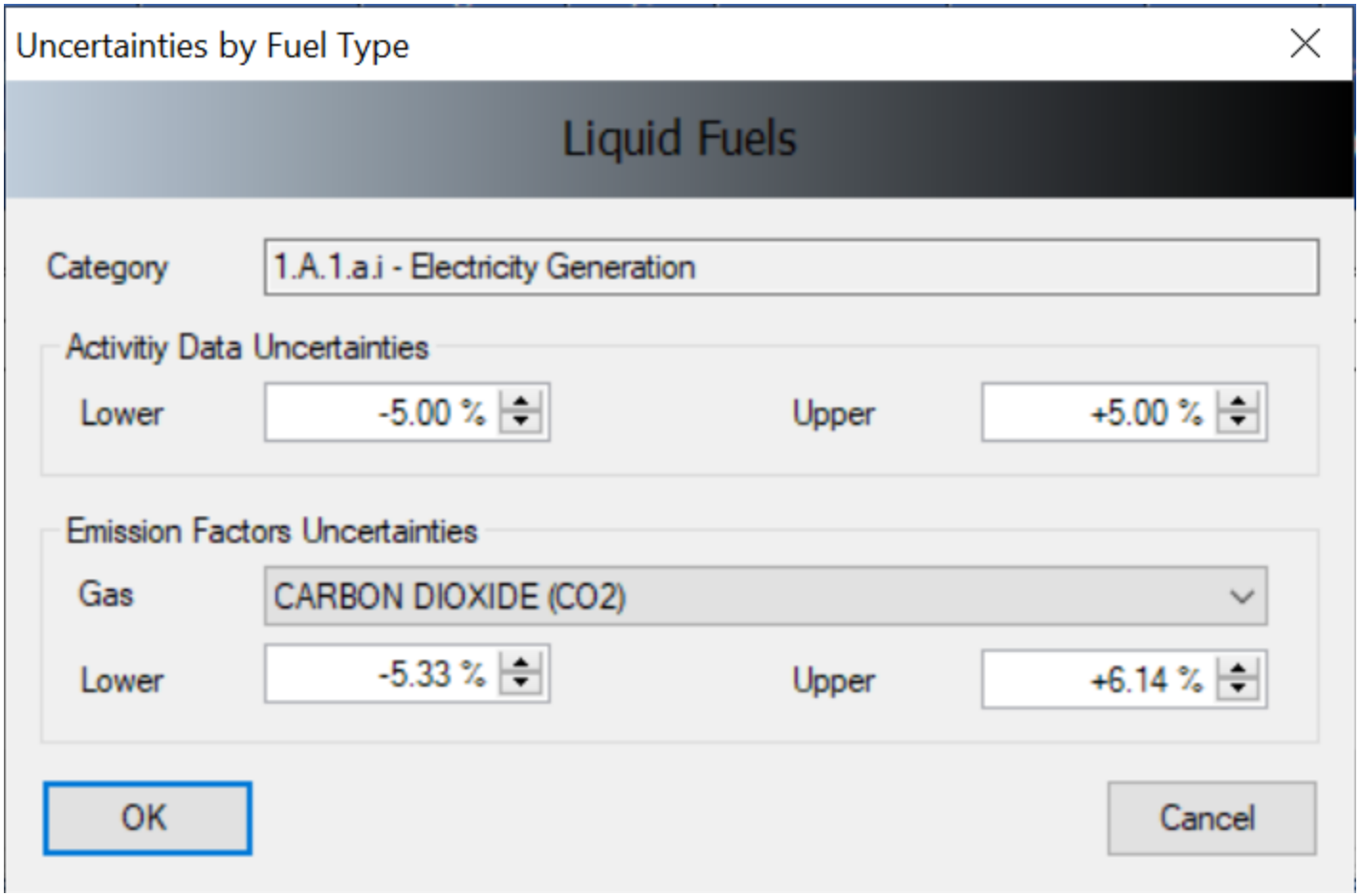
Worksheets (timeseries data entry)

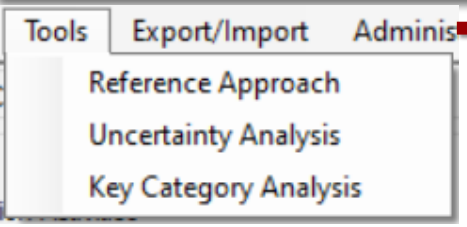


	A	B	C	D	E	F
1	**Generated:**	14/04/2022 13:42:22				
2	**Country:**	Japan				
3	**Sector:**	Energy				
4	**Category:**	Fuel Combustion Activities				
5	**Subcategory:**	1.A.1.a.i - Electricity Generation				
6	**Sheet:**	Fuel Consumption Data				
7	**Parameter:**	Consumption (Mass, Volume or Energy Unit)				
8						
9	**Subdivision**	**Fuel**	**Fuel GUID**	**1990**	**2020**	
10	Region A	Crude Oil	00000001-0000-0000-0000-000000000000	500		
11	Region B	Crude Oil	00000001-0000-0000-0000-000000000000	50		
12	Region C	sandro	37eb44ea-6713-4bb2-9fcb-ec5744f788b8	300		
13						

Worksheets (uncertainties)



Tools (Reference Approach)



IPCC Inventory Software - sandro - [1.A - Reference Approach]

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

Reference Approach Data | Estimating Excluded Carbon | Comparison

Sector Energy
Category Fuel combustion activities
Category code 1.A
Sheet 1 of 1 (CO2 from energy sources - Reference Approach)

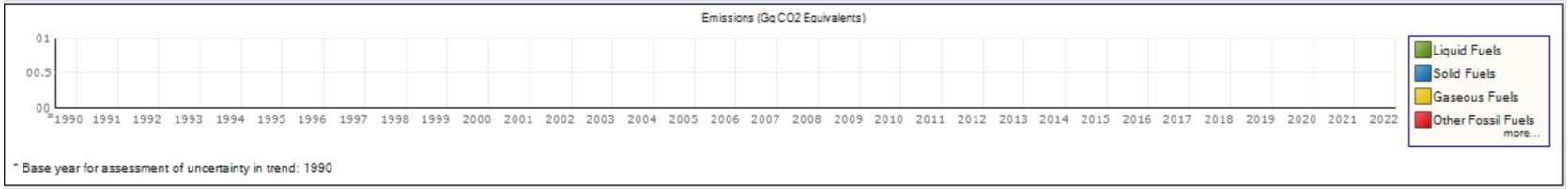
1990

		Step 1						Step 2		Step 3	
		A Production	B Imports	C Exports	D International Bunkers	E Stock change	F Apparent Consumption	G Conversion Factor (TJ/Unit)	H Apparent Consumption (TJ)	I Carbon content (t C/TJ)	J Total Carbon (Gg C)
Fuel Types	Unit						F=A+B-C-D-E		H=F*G		J=H*I/1000
Liquid Fuels: 22 item(s)									0		0
Solid Fuels: 11 item(s)									0		0
Gaseous Fuels: 1 item(s)									0		0
Other Fossil Fuels: 3 item(s)									0		0
Peat: 1 item(s)									0		0
Total									0		0

1) Values in column K are taken from column E of Estimating Excluded Carbon worksheet

Export to Excel | Import from Excel

Time Series



* Base year for assessment of uncertainty in trend: 1990

Country/Territory: Japan | Inventory Year: 1990 | Base year for assessment of uncertainty in trend: 1990 | CO2 Equivalents: SAR GWPs (100 year time horizon) | Database file: (C:\ProgramData\IPCC2006Software\ipcc2006.mdb)

Downloadable/Uploadable via excel

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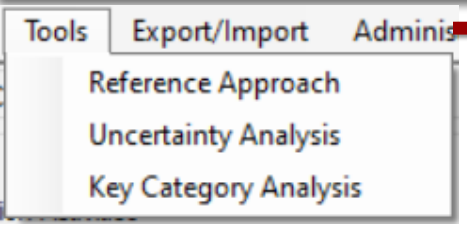
Tools (Uncertainty Analysis)



IPCC Inventory Software - sandro - [Uncertainty Analysis]

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

Uncertainty Analysis - Approach 1 (Table 3.2)

Base year for assessment of uncertainty in trend 1990 **Year T** 1990

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 in Year T
1.A - Fuel Combustion Activities						
1.A.3.b.vi - Urea-based catalysts	CO2	0.000	0.000	0.000	0.000	
1.B.1 - Fugitive Emissions from Fuels - Solid Fuels						
1.B.1.a.i.1 - Mining	CO2	0.000	0.000	0.000	0.000	
	CH4	0.000	0.000	0.000	0.000	
1.B.1.a.i.2 - Post-mining seam gas emissions	CO2	0.000	0.000	0.000	0.000	
	CH4	0.000	0.000	0.000	0.000	
1.B.1.a.i.3 - Abandoned underground mines	CH4	0.000	5.000	0.000	5.000	
1.B.1.a.i.4 - Flaring of drained methane or conversion of methane to CO2	CH4	0.000	5.000	0.000	5.000	
	CO2	0.000	5.000	0.000	5.000	
1.B.1.a.ii.1 - Mining	CO2	0.000	0.000	0.000	0.000	
	CH4	0.000	0.000	0.000	0.000	
1.B.1.a.ii.2 - Post-mining seam gas emissions	CO2	0.000	0.000	0.000	0.000	
	CH4	0.000	0.000	0.000	0.000	
1.B.2 - Fugitive Emissions from Fuels - Oil and Natural Gas						
1.C - CO2 Transport Injection and Storage						
1.C.1.a - Pipelines	CO2	0.000	0.000	0.000	0.000	
1.C.1.b - Ships	CO2	0.000	0.000	0.000	0.000	
1.C.1.c - Other (please specify)	CO2	0.000	0.000	0.000	0.000	
1.C.2.a - Injection	CO2	0.000	0.000	0.000	0.000	

Number of decimal places 3 Zero padding Refresh Data Export to Excel

Documentation box

Save

Country/Territory: Japan | Inventory Year: 1990 | Base year for assessment of uncertainty in trend: 1990 | CO2 Equivalents: SAR GWPs (100 year time horizon) | Database file: (C:\ProgramData\IPCC2006Software\ipcc2006.mdb)

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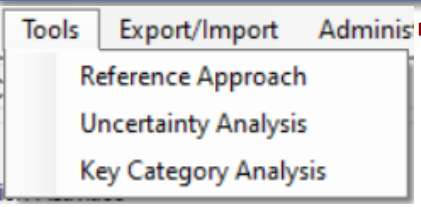

Tools (Key Category Analysis)

IPCC Inventory Software - sandro - [Key Category Analysis]

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

Approach 1: Level Assessment | Approach 1: Trend Assessment

A	B	C	D	E	F	G
IPCC Category code	IPCC Category	Greenhouse gas	1990 Ex,t (Gg CO2 Eq)	|Ex,t| (Gg CO2 Eq)	Lx,t	Cumulative Total of Column F
3.B.1.a	**Forest land Remaining Forest land**	**CARBON DIOXIDE (CO2)**	**-2.47902**	**2.47902**	**1**	**1**
1.A.1	Energy Industries - Liquid Fuels	CARBON DIOXIDE (CO2)	0	0	0	1
		METHANE (CH4)	0	0	0	1
		NITROUS OXIDE (N2O)	0	0	0	1
	Energy Industries - Solid Fuels	CARBON DIOXIDE (CO2)	0	0	0	1
		METHANE (CH4)	0	0	0	1
		NITROUS OXIDE (N2O)	0	0	0	1
	Energy Industries - Gaseous Fuels	CARBON DIOXIDE (CO2)	0	0	0	1
		METHANE (CH4)	0	0	0	1
		NITROUS OXIDE (N2O)	0	0	0	1
	Energy Industries - Other Fossil Fuels	CARBON DIOXIDE (CO2)	0	0	0	1
		METHANE (CH4)	0	0	0	1
		NITROUS OXIDE (N2O)	0	0	0	1
	Energy Industries - Peat	CARBON DIOXIDE (CO2)	0	0	0	1
		METHANE (CH4)	0	0	0	1
		NITROUS OXIDE (N2O)	0	0	0	1
	Energy Industries - Biomass	CARBON DIOXIDE (CO2)	0	0	0	1
		METHANE (CH4)	0	0	0	1
		NITROUS OXIDE (N2O)	0	0	0	1
1.A.2	Manufacturing Industries and Construction - Liquid Fuels	CARBON DIOXIDE (CO2)	0	0	0	1
		METHANE (CH4)	0	0	0	1
		NITROUS OXIDE (N2O)	0	0	0	1
	Manufacturing Industries and Construction - Solid Fuels	CARBON DIOXIDE (CO2)	0	0	0	1
		METHANE (CH4)	0	0	0	1
		NITROUS OXIDE (N2O)	0	0	0	1
	Manufacturing Industries and Construction - Gaseous Fuels	CARBON DIOXIDE (CO2)	0	0	0	1
		METHANE (CH4)	0	0	0	1
		NITROUS OXIDE (N2O)	0	0	0	1
	Manufacturing Industries and Construction - Other Fossil Fuels	CARBON DIOXIDE (CO2)	0	0	0	1
		METHANE (CH4)	0	0	0	1

Refresh Data | Export to Excel

Country/Territory: Japan | Inventory Year: 1990 | Base year for assessment of uncertainty in trend: 1990 | CO2 Equivalents: SAR GWPs (100 year time horizon) | Database file: (C:\ProgramData\IPCC2006Software\ipcc2006.mdb)

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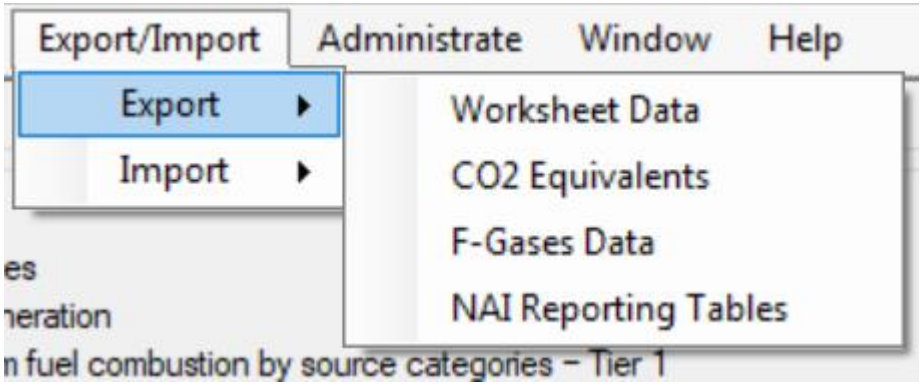
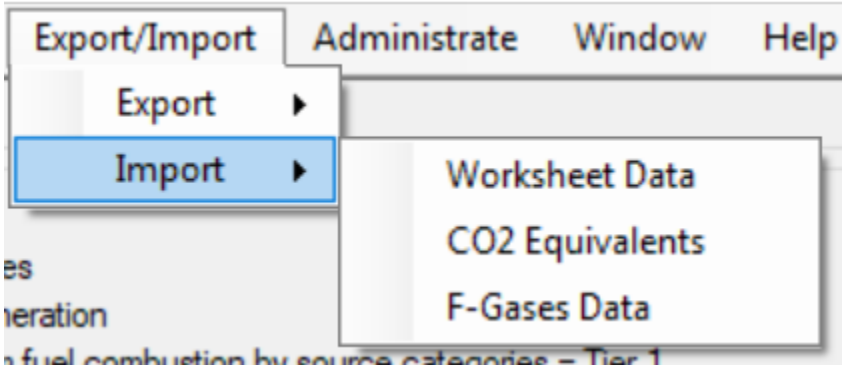
Export/Import

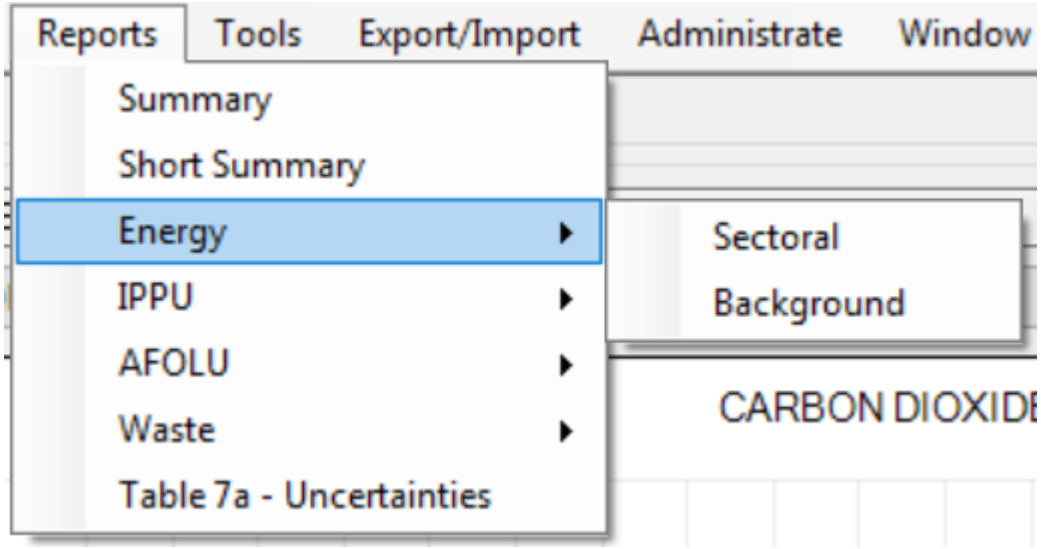




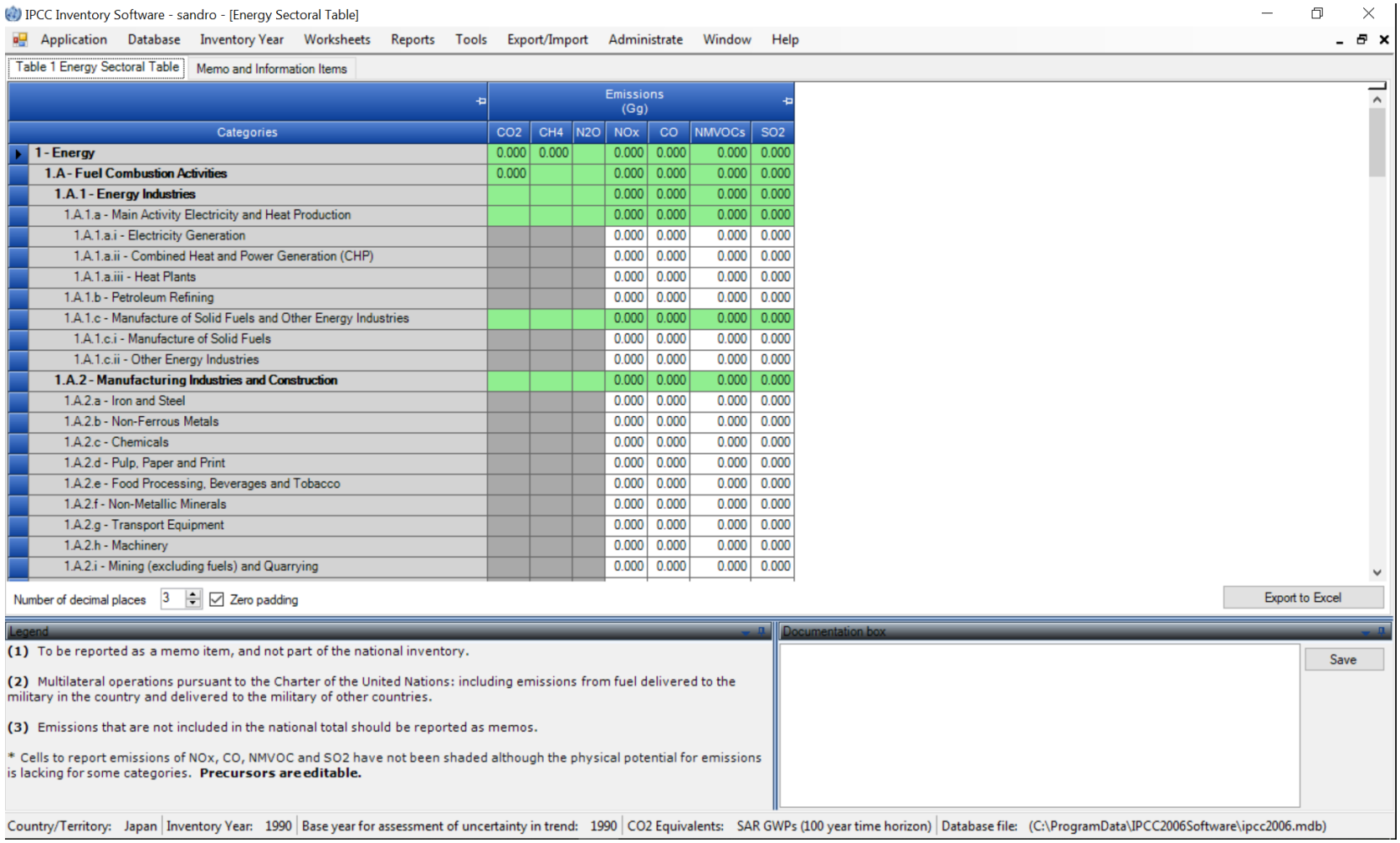
as XML files

but NAI excel file

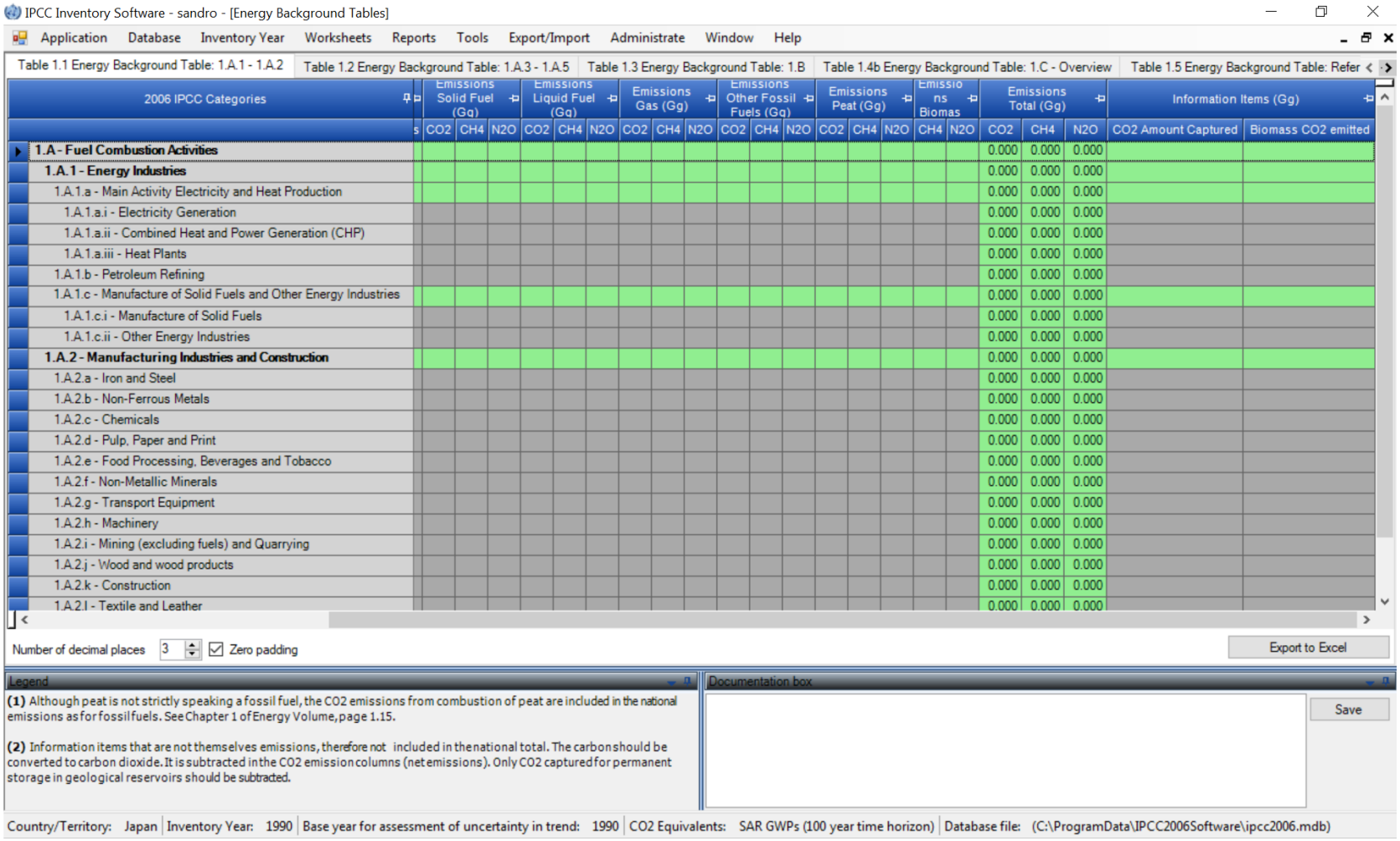
Reporting


Reports
Tools
Export/Import
Administrate
Window
Summary
Short Summary
Energy
IPPU
AFOLU
Waste
Table 7a - Uncertainties
Sectoral
Background
CARBON DIOXIDE

Reporting (sectoral)



Reporting (background)



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Reporting

Main Menu

→ Report

Report	Level	Contents
Summary (IPCC)	1.A.1	Emissions/Removals
Short summary (IPCC)	1.A	Emissions/Removals
Sectoral (IPCC)	1.A.1.a.ii (most disaggregated level)	Emissions/Removals
Background (IPCC)	1.A.1.a.ii (most disaggregated level)	AD, Emissions/Removals

Main Menu

→ Export

Report	Level	Contents
NAI 1 & 2 (UNFCCC 17/CP.8)	1.A.1	Emissions/Removals

Note: *All reports can be exported as MS Excel file*

Upgrades

- **Implementation** of all **IPCC Tiers and Approaches** provided in the **2006 IPCC Guidelines** and its **Wetlands Supplement**
  - ✓ **AFOLU & ENERGY sectors**:
  - ✓ **IPPU & WASTE sectors**:
  - ✓ **Uncertainty Analysis**:
  - ✓ **Key Category Analysis**:
  - ✓ **Subnational disaggregation of categories** (e.g. federal states inventories):

    AFOLU & ENERGY

    IPPU and WASTE
  - ✓ **Indirect CO_2 & N_2O emissions**:

Upgrades

- Other Upgrades
  - ✓ AR5 GWP_{100}:
  - ✓ Time series export/import:
  - ✓ Interoperability with the UNFCCC CRT Reporter
  - ✓ Multi-users at category level:
  - ✓ New version check button:
  - ✓ Translation into the 5 non-English UN languages

COP26 - 5/CMA3 decision

Interoperability between the IPCC Inventory Software and the UNFCCC Common Reporting Tables (CRT) reporting software:

- requests the secretariat to provide training and advice to developing country Parties on the use of the reporting tools and to provide technical support to these countries, including those that use the Intergovernmental Panel on Climate Change inventory software, to the extent possible, on integrating the reporting tools into their national greenhouse gas inventory arrangements [paragraph 16]
- requests the secretariat to facilitate interoperability between the reporting tools and the Intergovernmental Panel on Climate Change inventory software [paragraph 19]
- invites the Intergovernmental Panel on Climate Change to engage in the work referred to in paragraph 19 above [paragraph 20]

Supporting Tools

Excel-based tool:

- HWP excel-based tool for data retrieval from FAOSTAT website and upload to the IPCC Inventory Software
- Data compilation of land representation and upload to the IPCC Inventory Software

Guidebook for inventory compilers

- ✓ To be produced sector by sector
- ✓ All UN languages
- ✓ Simulating the use of the software for each inventory category, providing most relevant references to good practice from the 2006 IPCC Guidelines and its Supplements

Supporting Tools

Add-ons for Land Representation:

- **based on wall-to-wall data collection and analysis (maps),**
  Under development by FAO SEPAL Team

  based on sampling data collection and analysis (inventories)
  Under development through FAO-COLLECT EARTH customization

Connection with the IPCC Emission Factors DataBase

Support

TSU is supporting the IPCC Inventory Software

- ✓ **User Manual**
- ✓ **Help Desk E-mail** ipcc-software@iges.or.jp
- ✓ **Pool of voluntary testers, to support software development and use**
- ✓ **Annual meeting on feedbacks** from software users, including **issues where support is needed or a software improvements is envisaged**

Thank you

https://www.ipcc-nggip.iges.or.jp/index.html

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