



# IPCC Inventory Software

IPCC TFI Side-event  
UN Climate Change Conference

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**ipcc**

INTERGOVERNMENTAL PANEL ON climate change



# IPCC Inventory Software- Presentation Outline

## ➤ Part 1:-

- ✓ Introduction/Overview
- ✓ Key functions/features of IPCC Inventory Software

## ➤ Part 2:-

- ✓ Updates on implementation of Tier 2 methods in IPCC inventory Software



# Part 1: IPCC Inventory Software – Key Functions/Features

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# Introduction

The IPCC Inventory Software implements the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. It can also be used for reporting under the 1996 IPCC Guidelines

- ✓ it allows countries to utilise the improvements in the methodologies and default values since 1996

The IPCC launched the IPCC Inventory Software in 2012

The latest officially published version is available from:

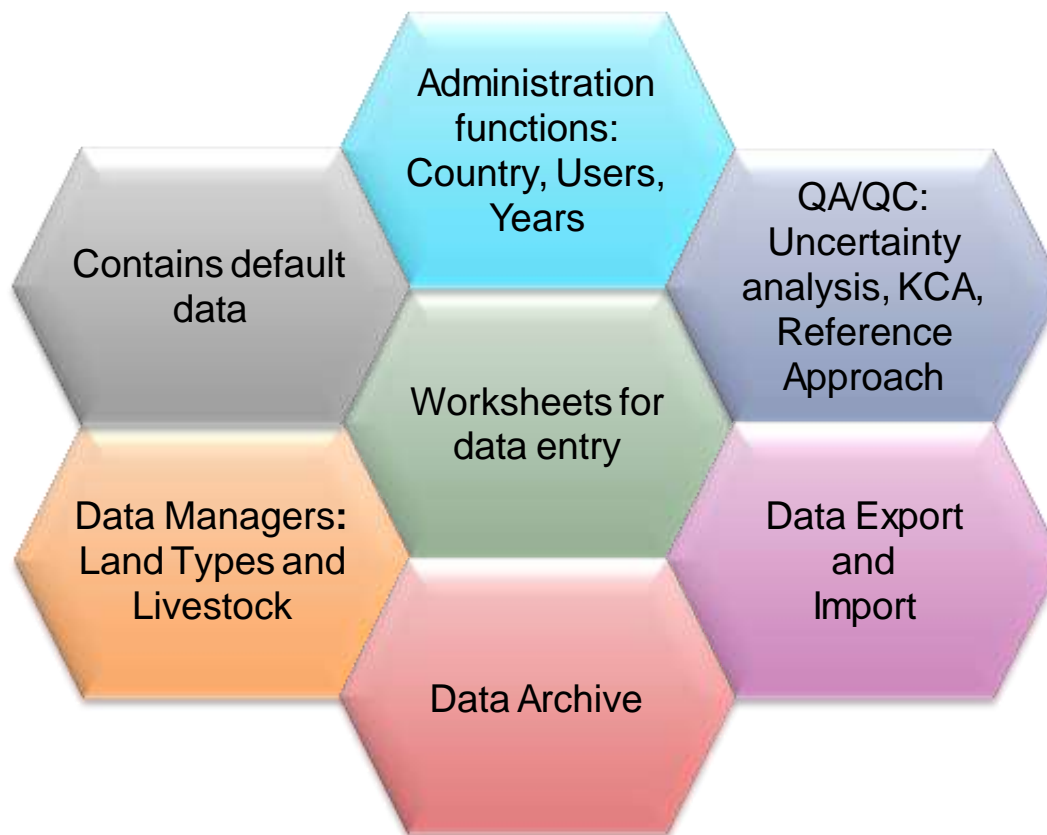
<http://www.ipcc-nggip.iges.or.jp/software/index.html>

# IPCC Inventory Software - Key features

The IPCC Inventory Software can assist inventory compilers in using the IPCC Guidelines

- Stand alone software with modest hardware requirements
- Data entry in worksheets following the 2006 IPCC Guidelines for ease-of-use
- It can be used for the whole inventory or just individual categories
- Allows different parts of the inventory to be developed simultaneously
- Can be used when reporting 1996 or 2006 Guidelines
- Provides default data from the 2006 IPCC Guidelines but gives users the flexibility to use their own country-specific information
- Tools includes Uncertainty and Key Category Analysis
- Aids QA/QC
- Outputs in non-Annex I National Communications format
- FREE!

# Software Functions





1994

Sector: Energy  
Category: Fuel Combustion Activities  
Subcategory: 1.A.1.a - Electricity Generation  
Sheet: CO2, CH4 and N2O from fuel combustion by source category

Fuel Type (All fuels)

[illegible][illegible]

Agencies

\_\_\_\_\_



Worksheet based

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

IPCC 2006 Categories

- 1.A4b - Residential
- 1.A4c - Agriculture/Forestry/Fishing/Fish F
  - 1.A4.c.i - Stationary
  - 1.A4.c.ii - Off-road Vehicles and Other
  - 1.A4.c.iii - Fishing (mobile combustion)
- 1.A5 - Non-Specified
  - 1.A5.a - Stationary
  - 1.A5.b - Mobile
    - 1.A5.b.i - Mobile (aviation component)
    - 1.A5.b.ii - Mobile (water-borne compone
    - 1.A5.b.iii - Mobile (Other)
  - 1.A5.c - Multilateral Operations
- 1.B - Fugitive emissions from fuels
  - 1.B1 - Solid Fuels
    - 1.B1.a - Coal mining and handling
      - 1.B1.a.i - Underground mines
        - 1.B1.a.i.1 - Mining
        - 1.B1.a.i.2 - Post-mining seam gas emi
        - 1.B1.a.i.3 - Abandoned underground
        - 1.B1.a.i.4 - Flaring of drained methan
      - 1.B1.a.ii - Surface mines
        - 1.B1.a.ii.1 - Mining
        - 1.B1.a.ii.2 - Post-mining seam gas em
    - 1.B1.b - Uncontrolled combustion and burnin
    - 1.B1.c - Solid fuel transformation
  - 1.B2 - Oil and Natural Gas
    - 1.B2.a - Oil
      - 1.B2.a.i - Venting
      - 1.B2.a.ii - Flaring
      - 1.B2.a.iii - All Other
        - 1.B2.a.iii.1 - Exploration
        - 1.B2.a.iii.2 - Production and Operadin
        - 1.B2.a.iii.3 - Transport
        - 1.B2.a.iii.4 - Refining
        - 1.B2.a.iii.5 - Distribution of oil produc
        - 1.B2.a.iii.6 - Other
    - 1.B2.b - Natural Gas
      - 1.B2.b.i - Venting
      - 1.B2.b.ii - Flaring
      - 1.B2.b.iii - All Other
        - 1.B2.b.iii.1 - Exploration
        - 1.B2.b.iii.2 - Production
        - 1.B2.b.iii.3 - Processing

Oil and Natural Gas

Worksheet

Sector: Energy

Category: Fugitive Emissions from Fuels - Oil and Natural Gas

Subcategory: 1.B.2.a.i - Venting

Sheet: CO2, CH4 and N2O from fugitive em

1994

Activity		CH4		N2O					
		D	E	F	O				
Industry Segment	Subcategory	Activity	Emission Factor (Gg CO2/Unit for AD)	CO2 Emissions (Gg CO2)	Emission Factor (Gg CH4/Unit for AD)	CH4 Emissions (Gg CH4)	Emission Factor (Gg N2O/Unit for AD)	N2O Emissions (Gg N2O)	
Oil Production	Conventional Oil	1000	10 <sup>-6</sup> Sm3	95E-05	0.095	0.00072	0.72	0.05	50
	Default Weighted Total	500	10 <sup>-6</sup> Sm3	0.078	0.9	0.0007	4.35	0.05	25
	Heavy Oil / Cold Bitumen	600	10 <sup>-6</sup> Sm3	0.0053	3.18	0	0	0	0
	Thermal Oil Production	400	10 <sup>-6</sup> Sm3	0.0022	0.008	0.0035	1.4	0.03	12
Oil Transport	Loading of Off-shore Production on Tanker Ships	300	10 <sup>-6</sup> Sm3	0.005	1.5	0.002	0.06	0.0002	0.06
Total					5.763				

Uncertainties

Time Series data entry...

Delete selected

IPCC 2006 Guidelines

See Table 4.27 'Guidance on obtaining the activity data values required for use in Tier 1 approach to estimate fugitive emissions from oil and gas operations' in Chapter 4, Volume 2 of the 2006 IPCC Guidelines

Worksheet remarks

1.B.2.a.i - Time Series

Emissions (CO2 Equivalents)
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Save

Gas CARBON DIOXIDE (CO2)

Country/Territory: Slovakia

Inventory Year: 1994

Base year for assessment of uncertainty in trend: 1990

CO2 Equivalents: SAR GWPs (100 year time horizon)

Database file:

Notation Keys Available

Defaults Available: can be over-written with country specific data

Uncertainties

Time Series Data Entry



# Inventory Years

The screenshot displays the IPCC Inventory Software interface. The main window shows the '2010' worksheet for 'CH4 Emissions from Enteric fermentation'. The 'Sector' is 'Agriculture, Forestry and Other Land Use', 'Category' is 'Livestock/Enteric Fermentation', and 'Subcategory' is '3.A.1.a.i - Dairy Cows'. The 'Gas' is 'METHANE (CH4)'. The 'New inventory' dialog box is open, showing 'Create new Inventory Year' with 'New Inventory Year' set to '2011'. The 'Inventory Year' dialog box is also open, showing 'Choose the inventory year from the drop-down box below and press OK or press "Create new" to create new Inventory year.' with '1990' selected in the drop-down. The 'Inventory Year' dialog box has 'OK' and 'Create new...' buttons. The 'New inventory' dialog box has 'Create' and 'Cancel' buttons. The 'Inventory Year' dialog box is titled 'Inventory Year' and the 'New inventory' dialog box is titled 'New inventory'.

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

2006 IPCC Categories

- 2.G.3.a - Medical Applications
- 2.G.3.b - Propellant for pressure aerosol products
- 2.G.3.c - Other (Please specify)
- 2.G.4 - Other (Please specify)
- 2.H - Other
- 2.H.1 - Pulp and Paper Industry
- 2.H.2 - Food and Beverages Industry
- 2.H.3 - Other (please specify)
- 3 - Agriculture, Forestry, and Other Land Use
- 3.A - Livestock
- 3.A.1.a - Camels
- 3.A.1.f - Horses
- 3.A.1.g - Mules and Asses
- 3.A.1.h - Swine
- 3.A.1.j - Other (please specify)
- 3.A.2 - Manure Management
- 3.A.2.a - Cattle
- 3.A.2.a.i - Dairy cows
- 3.A.2.a.ii - Other cattle
- 3.A.2.b - Buffalo
- 3.A.2.c - Sheep
- 3.A.2.d - Goats
- 3.A.2.e - Camels
- 3.A.2.f - Horses

CH4 Emissions from Enteric fermentation

Worksheet

Sector: Agriculture, Forestry and Other Land Use

Category: Livestock/Enteric Fermentation

Subcategory: 3.A.1.a.i - Dairy Cows

Sheet: 1 of 1

Data

Gas: METHANE (CH4)

2010

New inventory

Create new Inventory Year

New Inventory Year: 2011

☒ Create empty inventory year

☐ Copy data from inventory year: 2010

Create Cancel

CH4

CH4 Emissions (Gg CH4/yr)

$CH_4 = N(T) * EF(T) * 10^{-6}$

68 3094

3094

IPCC Inventory Software

Inventory Year

Choose the inventory year from the drop-down box below and press OK or press "Create new" to create new Inventory year.

1990

OK Create new...

Worksheet remarks

Save

Gas: METHANE (CH4)

# Reports

Report	Level	Contents
Summary	1.A.1	Emissions
Short summary	1.A	Emissions
Sectoral	1.A.1.a.ii (most disaggregated level)	Emissions
Background	1.A.1.a.ii (most disaggregated level)	Activity data Emissions

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

# Reports

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

2006 IPCC Categories

- 3 A1 a.i - Dairy Cows
- 3 A1 a.ii - Other Cattle
- 3 A1 b - Buffalo
- 3 A1 c - Sheep
- 3 A1 d - Goats
- 3 A1 e - Camels
- 3 A1 f - Horses
- 3 A1 g - Mules and Asses
- 3 A1 h - Swine
- 3 A1 j - Other (please specify)
- 3 A2 - Manure Management
  - 3 A2 a - Cattle
    - 3 A2 a.i - Dairy cows
    - 3 A2 a.ii - Other cattle
  - 3 A2 b - Buffalo
  - 3 A2 c - Sheep
  - 3 A2 d - Goats
  - 3 A2 e - Camels
  - 3 A2 f - Horses
  - 3 A2 g - Mules and Asses
  - 3 A2 h - Swine
  - 3 A2 i - Poultry
  - 3 A2 j - Other (please specify)
- 3 B - Land
  - 3 B.1 - Forest land
    - 3 B.1 a - Forest land Remaining
    - 3 B.1 b - Land Converted to Other Land-Use
      - 3 B.1 b.i - Cropland converted from forest
      - 3 B.1 b.ii - Grassland converted from forest
      - 3 B.1 b.iii - Wetlands converted from forest
      - 3 B.1 b.iv - Settlements converted from forest

CH4 Emissions from

Worksheet: CH4 Emissions from

Sector: Livestock/Enteric Fermentation

Category: 3 A.1.a.i - Dairy Cows

Subcategory: 3 A.1.a.i - Dairy Cows

Sheet: 1 of 1

Data

Gas: METHANE (CH4)

Export/Import

- Export
  - Worksheet Data
  - CO2 Equivalents
  - F-Gases Data
  - NAI Reporting Tables
- Import

T	N(T)	EF(T)	CH4
Species/Livestock Category	Number of Animals (head)	Emission Factor [kg CH4/(head yr)]	CH4 Emissions (Gg CH4/yr)
			$CH4 = N(T) * EF(T) * 10^{-6}$
Dairy cow_A	455000	68	3094
Total			3094

Time Series data entry...

2006 IPCC Guidelines

Can export to non-Annex I (NAI) reporting tables. The format of the NAI reporting tables follows the Tables 1 and 2 in Annex to Decision 17/CP.8 of the UNFCCC (Guidelines for the preparation of National Communications from Parties not included in Annex I to the Convention)

Save

Gas: METHANE (CH4)

\* Base year for assessment of uncertainty in trend: 1990

Bar chart showing CH4 emissions (Gg CH4/yr) from 1990 to 2017. The y-axis ranges from 0 to 600. The x-axis shows years from 1990 to 2017. Emissions are approximately 500 Gg CH4/yr in 1990 and 3094 Gg CH4/yr in 2010.

# Tools

Click Tools –  
Uncertainty Analysis

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

2006 IPCC Categories

- 4.A – Solid Waste Disposal
  - 4.A.1 – Managed Waste Disposal Sites
  - 4.A.2 – Unmanaged Waste Disposal Sites
  - 4.A.3 – Uncategorised Waste Disposal Site
- 4.B – Biological Treatment of Solid Waste
- 4.C – Incineration and Open Burning of Waste
  - 4.C.1 – Waste Incineration
  - 4.C.2 – Open Burning of Waste
- 4.D – Wastewater Treatment and Discharge
  - 4.D.1 – Domestic Wastewater Treatment
  - 4.D.2 – Industrial Wastewater Treatment and Discharge
- 4.E – Other (please specify)
- 5 – Other

Parameters Methane Calculations Methane Recovery Results Long Term s

Worksheet

Sector: Waste  
Category: Methane  
Subcategory: 4.A - Solid Waste Disposal  
Sheet: Results

Data

Year	Methane generated									Methane recovery	Methane Emissions
	Food	Garden	Paper	Wood	Textile	Nappies	Sludge	Industrial	Total		
	A (Gg)	B (Gg)	C (Gg)	D (Gg)	E (Gg)	F (Gg)	G (Gg)	H (Gg)	I (Gg)	J (Gg)	M = (I-J) * (1 - OX) (Gg)
1950	0	0	0	0	0	0	0	0	0	0	0
1951	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1952	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1953	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1954	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1955	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1956	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1957	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1958	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1959	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1960	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1961	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1962	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1963	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1964	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1965	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1966	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1967	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1968	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1969	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1970	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1971	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1972	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1973	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1974	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1975	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1976	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1977	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1978	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1979	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1980	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1981	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1982	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1983	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1984	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1985	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1986	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1987	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1988	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1989	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1990	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1991	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1992	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1993	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1994	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1995	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1996	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1997	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1998	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1999	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2000	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2001	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2002	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2003	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2004	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2005	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2006	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2007	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2008	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2009	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2010	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2011	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2012	0.00016	0.00100	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Uncertainty Analysis – Approach 1 (Table 3.2)

Base year for assessment of uncertainty in trend 1990 Year T 1994

2006 IPCC Categories	Gas	Base Year emissions or removals (Gg CO2 equivalent)	Year T emissions or removals (Gg CO2 equivalent)	Activity Data Uncertainty (%)
4.A – Solid Waste Disposal	CH4	3598.6	3705.4	3.0
4.B – Biological Treatment of Solid Waste	CH4	81.8	0.0	0.0
	N2O	39.5	0.0	0.0
4.C – Incineration and Open Burning of Waste	CO2	1419.2	5501.4	4.0
4.C.1 – Waste Incineration	CH4	11.7	1.9	4.0
	N2O	0.0	480.1	4.0
4.C.2 – Open Burning of Waste	CO2	69.2	2203.1	4.0
	CH4	0.0	4.2	4.0
	N2O	1.0	34.1	4.0
4.D – Wastewater Treatment and Discharge	CH4	5.0	0.1	5.0
4.D.1 – Domestic Wastewater Treatment and Discharge	N2O	0.2	0.1	5.0

Number of decimal places 1 Zero padding

Refresh Data Export to Excel

Documentation box

Click “Refresh Data” to perform analysis



# Data Export and Import

The screenshot shows a software interface with a menu bar (Application, Database, Inventory Year, Worksheets, Reports, Tools, Export/Import, Administrate, Window, Help) and a toolbar. A tree view on the left lists IPCC categories, with '3.A - Livestock' expanded. A dialog box titled 'Export - Worksheet Data' is open, showing a list of categories to export. A purple callout box points to the 'Export/Import' menu and the dialog box.

**Export/Import worksheet data as XML file.**  
In this example, worksheet data for category 3A for year 1990 will be exported.

**Export - Worksheet Data**

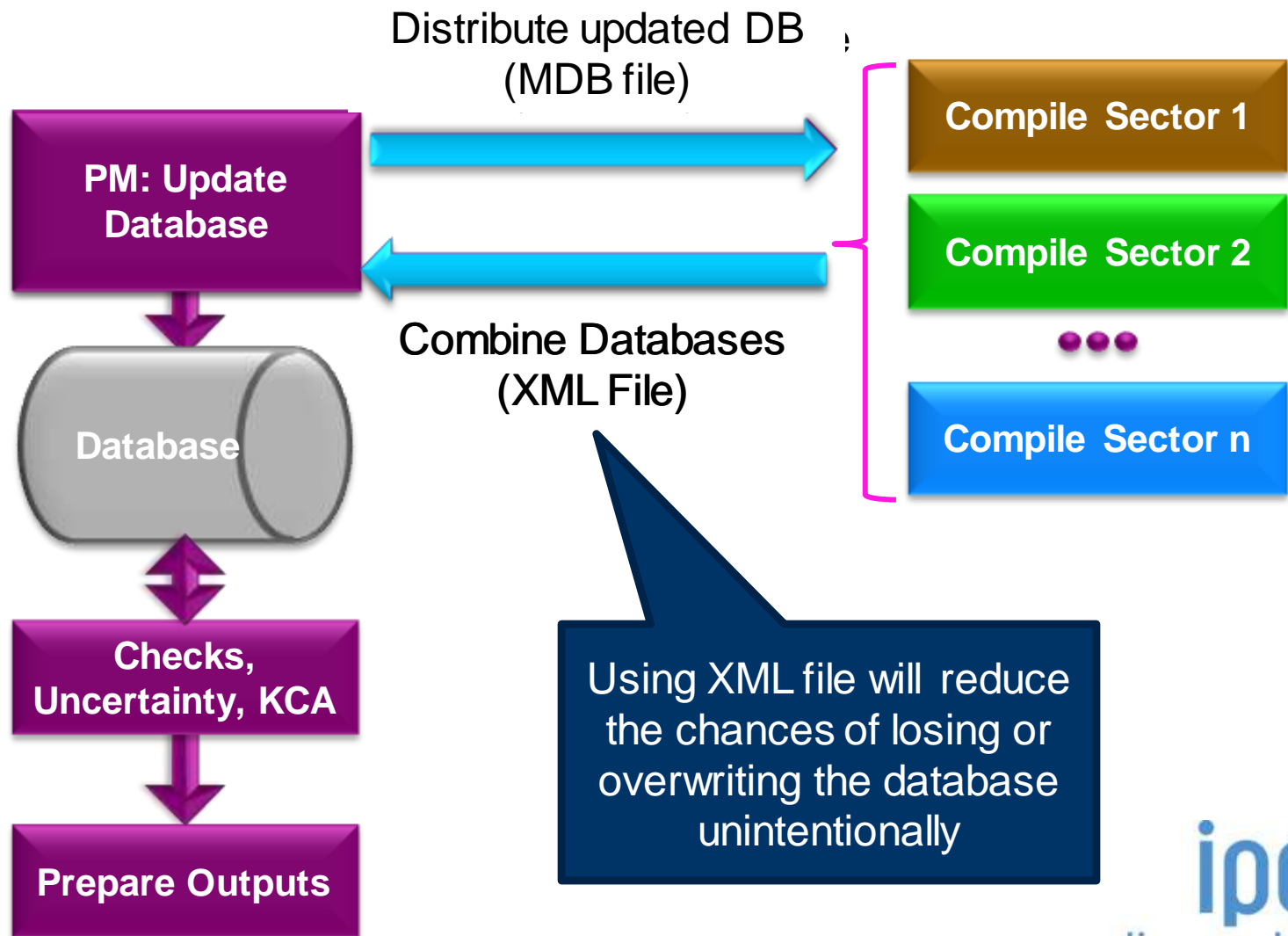
2006 IPCC Categories to export:

- ☒ 3 - Agriculture, Forestry, and Other Land Use
  - ☒ 3.A - Livestock
    - ☒ 3.A.1 - Enteric Fermentation
      - ☒ 3.A.1.a - Cattle
        - ☒ 3.A.1.a.i - Dairy Cows
        - ☒ 3.A.1.a.ii - Other Cattle
      - ☒ 3.A.1.b - Buffalo
      - ☒ 3.A.1.c - Sheep
      - ☒ 3.A.1.d - Goats
      - ☒ 3.A.1.e - Camels
      - ☒ 3.A.1.f - Horses
      - ☒ 3.A.1.g - Mules and Asses
      - ☒ 3.A.1.h - Swine
      - ☒ 3.A.1.j - Other (please specify)
    - ☒ 3.A.2 - Manure Management
      - ☒ 3.A.2.a - Cattle
        - ☒ 3.A.2.a.i - Dairy cows
        - ☒ 3.A.2.a.ii - Other cattle
      - ☒ 3.A.2.b - Buffalo
      - ☒ 3.A.2.c - Sheep
      - ☒ 3.A.2.d - Goats
      - ☒ 3.A.2.e - Camels
      - ☒ 3.A.2.f - Horses
      - ☒ 3.A.2.g - Mules and Asses
      - ☒ 3.A.2.h - Swine
      - ☒ 3.A.2.i - Poultry
      - ☒ 3.A.2.j - Other (please specify)
  - ☒ 3.B - Land
    - ☒ 3.B.1 - Forest land
      - ☒ 3.B.1.a - Forest land Remaining Forest land
      - ☒ 3.B.1.b - Land Converted to Forest land
        - ☒ 3.B.1.b.i - Cropland converted to Forest Land
        - ☒ 3.B.1.b.ii - Grassland converted to Forest Land
        - ☒ 3.B.1.b.iii - Wetlands converted to Forest Land
        - ☒ 3.B.1.b.iv - Settlements converted to Forest Land

# Multiple Users

Project manager

Sectoral Experts(s)



# Support

- The TSU is supporting the IPCC Inventory Software:
  - Help Desk E-mail: [ipcc-software@iges.or.jp](mailto:ipcc-software@iges.or.jp)
  - Web Forum: <https://discussions.zoho.com/ipccinventorysoftware/>  
✓ *please, read the User Manual*
- TSU will maintain the IPCC Inventory Software and is planning to implement the following:
  - Tier 2 methods
  - Wetlands Supplement

# Implementation of Tier 2 Methodology for the IPCC Inventory Software



# Tier 2 Implementation

- TFI-TSU has adopted a phased approach in implementing tier 2 work:
- Work on Tier 2 methods in the 2006 IPCC Guidelines for most categories under Energy , IPPU and Waste Sectors has been completed and are implemented in version 2.54
- Details on Tier 2 coverage maybe found at:  
<http://www.ipcc-nggip.iges.or.jp/software/index.html>

# Categories (non-AFOLU) with adjustments or with new worksheets to perform Tier 2 estimates

For the other categories no new Tier 2 worksheets are included, either because the Tier 1 worksheets are already suitable for Tier 2 (Energy) or because it was not possible to include them since significant elaboration is required (just a few, Iron and Steel, Ferroalloys, Petrochemicals, Aluminium-CO2).

#	Category	Gas							
	1 - Energy	CO2	CH4	N2O	HFCs	PFCs	SF6	NF3	Other
	1.A - Fuel Combustion Activities								
	1.A.3 - Transport								
	1.A.3.a - Civil Aviation								
1	1.A.3.a.i - International Aviation (International bunkers)	x	x	x					
2	1.A.3.a.ii - Domestic Aviation	x	x	x					
	2 - Industrial Processes and Product Use								
	2.A - Mineral Industry								
3	2.A.1 - Cement production	x							
4	2.A.2 - Lime production	x							
	2.B - Chemical Industry								
5	2.B.2 - Nitric Acid Production			x					
6	2.B.3 - Adipic Acid Production			x					
7	2.B.4 - Caprolactam, Glyoxal/Glyoxylic Acid Production			x					
8	2.B.6 - Titanium Dioxide Production	x							
	2.B.9 - Fluorochemical Production								
9	2.B.9.a - By-product emissions				x	x	x		x
	2.C - Metal Industry								
10	2.C.3 - Aluminium production	x				x			
11	2.C.4 - Magnesium production	x					x		
	2.D - Non-Energy Products from Fuels and Solvent Use								
12	2.D.1 - Lubricant Use	x							
13	2.D.2 - Paraffin Wax Use	x							
	2.E - Electronics Industry								
14	2.E.1 - Integrated Circuit or Semiconductor				x	x	x	x	x
15	2.E.2 - TFT Flat Panel Display				x	x	x	x	x
16	2.E.3 - Photovoltaics				x	x	x	x	x
17	2.E.4 - Heat Transfer Fluid					x			
	2.G - Other Product Manufacture and Use								
18	2.G.1.c - Disposal of Electrical Equipment					x	x		
	2.G.2 - SF6 and PFCs from Other Product Uses								
19	2.G.2.a - Military Applications						x		
20	2.G.2.b - Accelerators						x		
	4 - Waste								
	4.C - Incineration and Open Burning of Waste								
21	4.C.1 - Waste Incineration	x	x	x					
22	4.C.2 - Open Burning of Waste	x	x	x					
	4.D - Wastewater Treatment and Discharge								
23	4.D.1 - Domestic Wastewater Treatment and Discharge		x						
24	4.D.2 - Industrial Wastewater Treatment and Discharge		x						

# Tier 1/ Tier 2

IPCC Inventory Software - [shermanau - Worksheets]

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

2006 IPCC Categories

- 2.A.4.b - Other Uses of S
- 2.A.4.c - Non Metallurgical
- 2.A.4.d - Other (please specify)
- 2.A.5 - Other (please specify)
- 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
  - 2.B.5 - Carbide Production
  - 2.B.6 - Titanium Dioxide Pro
  - 2.B.7 - Soda Ash Production
  - 2.B.8 - Petrochemical and C
    - 2.B.8.a - Methanol
    - 2.B.8.b - Ethylene
    - 2.B.8.c - Ethylene Dichloride
    - 2.B.8.d - Ethylene Oxide
    - 2.B.8.e - Acrylonitrile
    - 2.B.8.f - Carbon Black
  - 2.B.9 - Fluorochemical Prod
    - 2.B.9.a - By-product emis
    - 2.B.9.b - Fugitive Emissio
  - 2.B.10 - Other (Please specify)
- 2.C - Metal Industry
  - 2.C.1 - Iron and Steel Produ
  - 2.C.2 - Ferroalloys Productio
  - 2.C.3 - Aluminium productio
  - 2.C.4 - Magnesium productio
  - 2.C.5 - Lead Production
  - 2.C.6 - Zinc Production
  - 2.C.7 - Other (please specify)
- 2.D - Non-Energy Products from

2006 IPCC Guidelines

Tier: Tier 2

Worksheet: Nitric Acid Production - Tier 2

Sector: Industrial Processes and Product Use

Category: Chemical Industry

Subcategory: 2.B.2 - Nitric Acid Production

Sheet: 1 of 1

Date:

A	B	C	D	E
nitric acid production from technology i (tonnes)	N2O emission factor for technology type i (kg N2O/tonne nitric acid produced)	Destruction factor for abatement technology type j (Fraction)	Abatement system utilisation factor for abatement technology type j (Fraction)	N2O Emissions (Gg)
1500	9	0.925	0.89	$E = A \cdot B \cdot (1 - C \cdot D) \cdot 10^{-6}$
Total	1500			0.00239

1990

Uncertainties Time Series data entry... Delete selected rows

Worksheet remarks

2.B.2 - Time Series

NITROUS OXIDE (N2O) Emissions (Gg CO2 Equivalent)

1 0.5 0

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

\* Base year for assessment of uncertainty in trend: 1990

Gas: NITROUS OXIDE (N2O)

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)

# Implementation of Tier 2 methods - AFOLU Sector.

- At present (IPCC) software implements the 2006 IPCC Guidelines for National Greenhouse Gas Inventories at Tier 1 for the entire AFOLU sector.
- Development to implement tier 2 methods for the AFOLU sector is underway and includes Wetland Supplement (at Tier 1)
- Agriculture sector - Tier 2 implementation for livestock categories was completed in 2018, new version of software with Tier 2 for livestock categories is expected first quarter of 2019.
- Work on implementation of Tier 2 for LULUCF categories is due to start (December –January)
- Implementation of Wetlands Supplement, is an extension to 2006 IPCC Guidelines dealing with new methodologies for calculating and reporting emissions for inland/coastal, drained/rewetted lands under Land Use sector (at Tier 1)





Thank you for your attention!  
Any questions?