IPCC Inventory Software:
IPPU Updates

IPCC TFI Side-event

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IPPU Main Updates

o **Implementation of higher Tiers**
- Higher Tiers mean more disaggregated data are needed, i.e. technology-specific EFs and plant-specific data
- A user may use a mix of Tiers within the same category

o **Introduction of a category subdivisions (e.g. national, region, plant, etc.)**

- A user can enter a single subdivision (e.g., a national level) or many user-defined sub-divisions (e.g., prefectures or facilities)

o **More possibilities to select user-defined technologies, production processes and materials**

- Users can disaggregate each category according to its national circumstances according to country-specific technologies, production processes and input materials, and to enter country- or plant-specific values (EFs and parameters)

Example of a Worksheet

IPPU Worksheets

IPCC Category	Number of Worksheets
2 - Industrial Processes and Product Use (IPPU)	
2.A - Mineral Industry	**28**
2.B - Chemical Industry	**89**
2.C - Metal Industry	**38**
2.D - Non-Energy Products from Fuels and Solvent Use	**3**
2.E - Electronics Industry	**24**
2.F - Product Uses as Substitutes for Ozone Depleting Substances	**21**
2.G - Other Product Manufacture and Use	**42**
2.H - Other	**6**
	251

2.A Mineral Industry

IPCC Category	Number of Worksheets			
	Total	**IPCC Tiers**		
		Tier 1	**Tier 2**	**Tier 3**
2.A - Mineral Industry				
2.A.1 - Cement production	**8**	**2** (cement AD, ExIm, default EF)	**1** (clinker AD, CKD)	**4** (plant-specific AD, emissions total)
		1 (capture/reduction for all Tiers)		
2.A.2 - Lime production	**6**	**1** (default EFs)	**1** (LKD, correction)	**3** (plant-specific AD)
		1 (capture/reduction)		
2.A.3 - Glass Production	**3**	**1** (worksheet for Tier 1 and 2)		**1** (for each furnace)
		1 (capture/reduction)		
2.A.4 - Other Process Uses of Carbonates				
2.A.4.a - Ceramics	**2**	**2** (worksheets can be used for all Tiers: Tier 1 – defaults, Tier 2 – data on limestone/dolomite use, Tier 3 – carbonates AD, calcination)		
2.A.4.b - Other Uses of Soda Ash	**2**	**2** (worksheets can be used for all Tiers, same as 2A4a)		
2.A.4.c - Non Metallurgical Magnesia Production	**2**	**2** (worksheets can be used for all Tiers, same as 2A4a)		
2.A.4.d - Other (please specify)	**3**	**2** (worksheets can be used for all Tiers, same as 2A4a), **1** (for reporting issues)		
2.A.5 - Other (please specify)	**2***		**2** (1 generic worksheet AD x EF, 1 capture/reduction)	

* Implements generic equation (AD x EF). No default values are provided in the 2006 IPCC Guidelines

2.B Chemical Industry

IPCC Category	Number of Worksheets			
	Total	**IPCC Tiers**		
		Tier 1	**Tier 2**	**Tier 3**
2.B - Chemical Industry				
2.B.1 - Ammonia Production	**2**	**2** (1 for all Tiers, where Tier 3 plant-specific, 1 for capture/reduction)		
2.B.2 - Nitric Acid Production	**3**	**1** (AD x EF)	**1** (AD x EF plus abatement)	**--** (measurements)
		1 (capture/reduction)		
2.B.3 - Adipic Acid Production	**3**	**1** (same as 2.B.2)	**1** (same as 2.B.2)	**--** (measurements)
		1 (capture/reduction)		
2.B.4 - Caprolactam, Glyoxal and Glyoxylic Acid Production	**3**	**1** (same as 2.B.2)	**1** (same as 2.B.2)	**--** (measurements)
		1 (capture/reduction)		
2.B.5 - Carbide Production	**3**	**3** (for all Tiers same equation, where Tier 3 plant-specific data.1 worksheet for carbide production, 1 for carbide use in acetylene, 1 for capture/reduction)		
2.B.6 - Titanium Dioxide Production	**3**	**1** (AD x EF)	**1** (carbon content and oxidation)	**--** (no Tier 3)
		1 (capture/reduction)		
2.B.7 - Soda Ash Production	**2**	**2** (same equation for two tiers, 1 worksheet for capture/reduction)		**--** (measurements)

2.B Chemical Industry - Petrochemicals

IPCC Category	Number of Worksheets			
	Total	IPCC Tiers		
		Tier 1	Tier 2	Tier 3
2.B.8 - Petrochemical and Carbon Black Production				
2.B.8.a - Methanol	9	**1** (AD, feedstock, technologies)		**4** (combustion, flares, vents + CH4 atm.measurement)
		2 (1 for CO2, 1 for CH4)	**1** (only CO2, mass-balance approach)	
		1 (capture/reduction)		
2.B.8.b - Ethylene	9	2	1	4
		1		
			1	
2.B.8.c - Ethylene Dichloride and Vinyl Chloride Monomer	9	2	1	4
		1		
			1	
2.B.8.d - Ethylene Oxide	9	2	1	4
		1		
			1	
2.B.8.e - Acrylonitrile	9	2	1	4
		1		
			1	
2.B.8.f - Carbon Black	9	2	1	4
		1		
			1	

✓ *The same guidance for all 2.B.8 sub-categories – 2.B.8. a, b, c, d, e, f*

2.B Chemical Industry - Fluorochemicals

IPCC Category	Number of Worksheets			
	Total	IPCC Tiers		
		Tier 1	Tier 2	Tier 3
2.B.9 - Fluorochemical Production				
2.B.9.a - By-product emissions	**12**	**2** (1 for HFC-23, 1 for other F-gases)	**1** (for HFC-23 based on efficiencies)	**8** (1 for HFC-23 direct method, 2 for HFC-23 proxy method, 2 HFC-23 monitoring method, 1 for other F-gases direct, 2 for others proxy method)
		1 (capture/reduction)		
2.B.9.b - Fugitive Emissions	**2**	**2** (for all others, 1 capture/reduction)	*[under development]*	
2.B.10 - Other (Please specify)	**2***		**2** (1 generic worksheet AD x EF, 1 capture/reduction)	

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2.C Metal Industry

IPCC Category	Number of Worksheets			
	Total	**IPCC Tiers**		
		Tier 1	**Tier 2**	**Tier 3**
2.C - Metal Industry				
2.C.1 - Iron and Steel Production	9	**2** (1 for Iron&Steel, 1 for Coke in Energy – CO_2, CH_4 EF)	**6** (2 for Coke in Energy, 1 for Iron&Steel, 1 for Sinter, 1 for Pellets, 1 for DRI – CO_2 mass-balance)	**--** (plant-specific data and measurements)
		1 (capture/reduction)		
2.C.2 - Ferroalloys Production	9	**1** (AD x EF)	**1** (for reducing agents EF)	**1** (for reducing agents CC)
			5 (ore, slag, products, non-products, summary)	
		1 (capture/reduction)		
2.C.3 - Aluminium production	9	**2** (1 for CO1, 1 for PFCs)	**6** (for Tier 2/3 for CO_2 for Soderberg and Prebake, and for PFCs for Slope and Overvoltage)	
		1 (capture/reduction)		
2.C.4 - Magnesium production	5	**2** (1 for CO1, 1 for SF6)	**2** (1 for CO1, 1 for SF6)	**--** (measurements)
		1 (capture/reduction)		
2.C.5 - Lead Production	2	**2** (1 AD x EF, 1 capture/reduction)	**--** (mass-balance of CC)	**--** (measurements)
2.C.6 - Zinc Production	2	**2** (same as 2.C.5)	**--** (same as 2.C.5)	**--** (same as 2.C.5)
2.C.7 - Other (please specify)	2*		**2** (1 generic worksheet AD x EF, 1 capture/reduction)	

2.D Non-Energy Products from Fuels
2.E Electronics Industry

IPCC Category	Number of Worksheets			
	Total	IPCC Tiers		
		Tier 1	Tier 2	Tier 3
2.D - Non-Energy Products from Fuels and Solvent Use				
2.D.1 - Lubricant Use	**1**	**1** (1 worksheet for default and CS EFs)		**--** (no Tier 3)
2.D.2 - Paraffin Wax Use	**1**	**1** (1 worksheet for default and CS EFs)		
2.D.3 - Solvent Use	**--** (no guidance)			
2.D.4 - Other (please specify)	**1**	**1** (generic guidance AD x EF)		
2.E - Electronics Industry				
2.E.1 - Integrated Circuit or Semiconductor	**7**	**1** (AD x EF)	**6** (2 for managers: F-gas and by-products, 2 for Tier 2a: F-gas and by-products, 2 for Tier 2b: F-gas and by-products)	**--** (plant-specific data)
2.E.2 - TFT Flat Panel Display	**7**	**1** (same as 2.E.1)	**6** (same as 2.E.1)	
2.E.3 - Photovoltaics	**7**	**1** (same as 2.E.1)	**6** (same as 2.E.1)	
2.E.4 - Heat Transfer Fluid	**2**	**1** (EF approach)	**1** (mass-balance approach)	**--** (no Tier 3)
2.E.5 - Other (please specify)	**1***		**1** (generic worksheet AD x EF)	

2.F Product Uses as Substitutes for ODS

IPCC Category	Number of Worksheets			
	Total	**IPCC Tiers**		
		Tier 1	**Tier 2**	**Tier 3**
2.F - Product Uses as Substitutes for Ozone Depleting Substances (ODS)				
2.F.1 - Refrigeration and Air Conditioning				
2.F.1.a - Refrigeration and Stationary Air Conditioning	**4**	**1** (default/spreadsheet model, Tier 1a/b)	**3** (1 for parameters, 1 for Tier 2a EF-approach, 1 for Tier 2b mass-balance)	**--** (no Tier 3)
2.F.1.b - Mobile Air Conditioning	**4**	**1** (same as 2.F.1a)	**3** (same as 2.F.1a)	
2.F.2 - Foam Blowing Agents	**6**	**2** (default/spreadsheet, 1 for closed cells, 1 for open cells)	**4** (2 for open cell parameters and Tier 2 estimation, 2 for closed cell parameters and estimation)	
2.F.3 - Fire Protection	**1**	**1** (default/spreadsheet)	**--** (no Tier 2 and Tier 3)	
2.F.4 - Aerosols	**1**	**1** (default and CS application and data)		**--** (no Tier 3)
2.F.5 - Solvents	**3**	**1** (default)	**2** (1 for parameters, 1 for estimation)	
2.F.6 - Other Applications (please specify)	**2**	**2** (1 for emissive applications, 1 for contained applications)	**--** (no Tier 2 and Tier 3)	

2.G Other Product Manufacture and Use (1)

IPCC Category	Number of Worksheets			
	Total	**IPCC Tiers**		
		Tier 1	**Tier 2**	**Tier 3**
2.G - Other Product Manufacture and Use				
2.G.1 - Electrical Equipment	1	-- (at the level of category 2.G.1 only Tier 3 method can be used which is mass-balance for utility level)		1
2.G.1.a - Manufacture of Electrical Equipment	9	**1** (default and country-specific)		**7** (3 for mass-balance, 4 for EF approach)
		1 (capture/reduction)		
2.G.1.b - Use of Electrical Equipment	4	**1** (default and country-specific)		**2** (1 for mass-balance, 1 for EF approach)
		1 (capture/reduction)		
2.G.1.c - Disposal of Electrical Equipment	9	**1** (default)	**1** (specific for disposal)	**6** (3 for mass-balance, 3 for EF approach)
		1 (capture/reduction)		
2.G.2 - SF6 and PFCs from Other Product Uses				
2.G.2.a - Military Applications	3	**1** (AD x EF)	**1** (mass-balance)	-- (no Tier 3)
		1 (capture/reduction)		
2.G.2.b - Accelerators	4	**1** (default)	**1** (by accelerator)	**1** (mass-balance)
		1 (capture/reduction)		
2.G.2.c - Other (please specify)	4	**4** (1 for adiabatic uses, 1 for sound-proof glazing, 1 for other applications, 1 for capture/reduction)	-- (no Tier 2 and Tier 3)	

2.G Other Product Manufacture and Use (2)

IPCC Category	Number of Worksheets			
	Total	**IPCC Tiers**		
		Tier 1	**Tier 2**	**Tier 3**
2.G - Other Product Manufacture and Use				
2.G.3 - N2O from Product Uses				
2.G.3.a - Medical Applications	2	**2** (1 for estimation based on quantities in Years T and T-1, 1 for capture/reduction)	**--** (no Tier 2 and Tier 3)	
2.G.3.b - Propellant for pressure and aerosol products	2	**2** (same as 2.G.3.a)		
2.G.3.c - Other (Please specify)	2	**2** (same as 2.G.3.a)		
2.G.4 - Other (Please specify)	2*		**2** (1 generic worksheet AD x EF, 1 capture/reduction)	

2.H Other

IPCC Category	Number of Worksheets			
	Total	IPCC Tiers		
		Tier 1	Tier 2	Tier 3
2.H - Other				
2.H.1 - Pulp and Paper Industry	2*		**2** (1 generic worksheet AD x EF, 1 capture/reduction)	
2.H.2 - Food and Beverages Industry	2*		same as 2.H.1	
2.H.3 - Other (please specify)	2*		same as 2.H.1	

Implements generic equation (AD x EF). No default values are provided in the 2006 IPCC Guidelines

(NMVOCs emissions from Pulp and Paper Industry and Food and Beverage Industry in the Revised 1996 IPCC Guidelines)

Summary

o **All IPPU methods provided in the 2006 IPCC Guidelines are implemented in the IPCC Inventory Software** (i.e. all equations in Volume 3 of the 2006 IPCC Guidelines)

o **Flexibility of the IPCC Inventory Software to meet national circumstances is ensured** (as per a Tiered approach)

o **Sub-national reporting allows tracking specific activities/emissions within a national GHG inventory**

o **The Guidebook for IPPU sector to guide users in implementing each and every IPCC method in IPPU is under preparation**

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Thank you

Users' feedback is most welcome!
Please provide it at: *ipcc-software@iges.or.jp*

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