ADVANCE VERSION

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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

Subsidiary Body for Scientific and Technological Advice
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Item 6 (c) of the provisional agenda
Methodological issues under the Convention
Revision of the UNFCCC reporting guidelines on annual inventories for Parties included in Annex I to the Convention

Views on the revision of the UNFCCC Annex I reporting guidelines

Submissions from Parties

Addendum

1. In addition to the four submissions contained in document FCCC/SBSTA/2010/MISC.7, and one submission contained in document FCCC/SBSTA/2010/MISC.7/Add.1, one further submission has been received on 29 October 2010.

2. In accordance with the procedure for miscellaneous documents, this submission is attached and reproduced* in the language in which it was received and without formal editing.

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Submission from Australia

Additional views on revision of the UNFCCC Annex I Reporting Guidelines and CRF tables

Submission to the Subsidiary Body for Scientific and Technological Advice

October 2010

At its thirty-second session in June 2010, the Subsidiary Body for Scientific and Technological Advice (SBSTA) invited Parties to submit additional views on the revision of the UNFCCC Annex I Reporting Guidelines, including CRF tables[1], and areas in which the secretariat could initiate work on these tables. Australia welcomes the opportunity to submit our views in response to this invitation.

The content of this submission builds on the considerations outlined in Australia's submission of February 2010.[2] This submission includes both general issues for consideration and specific proposals for changes to the text of the UNFCCC Annex I Reporting Guidelines. In addition a suggestion for the mapping of the Agriculture, Forestry and Other Land Use (AFOLU) categories from the 2006 IPCC Guidelines to the existing Land Use, Land Use Change and Forestry (LULUCF) and Agriculture sectors for reporting is provided.

1. GENERAL ISSUES RELATING TO THE REVISION OF THE UNFCCC ANNEX I REPORTING GUIDELINES

Indirect emissions of CO_2

In previous submissions on the revision of the UNFCCC Annex I reporting guidelines there was some disagreement among the Parties on whether the reporting of indirect CO_2 emissions associated with atmospheric oxidation of CH_4, CO and NMVOCs should be voluntary or mandatory.

In relation to this issue Australia notes that the language used in the 2006 IPCC Guidelines indicates that reporting of these emissions is voluntary. In addition, the 2006 Guidelines no longer provide methods for estimating CO and NMVOCs. As such, with the adoption of the 2006 Guidelines there would be no agreed IPCC default methods for estimating these emissions.

Once the treatment of indirect CO_2 emissions is agreed by the Parties, the treatment should be made clear in the text of UNFCCC Annex I Reporting Guidelines and in the instructions for the CRF tables. Australia suggests that a separate CRF table be developed for the reporting (voluntary or otherwise) of these indirect emissions and that the emissions should be reported under the Other sector (old CRF sector 7) along with the indirect N_2O emissions from atmospheric deposition.

[1] FCCC/SBSTA/2010/6 paragraph 71 refer, available at http://unfccc.int/resource/docs/2010/sbsta/eng/06.pdf

[2] Australia's February 2010 submission is contained in document FCCC/SBSTA/2010/MISC.1 available at http://unfccc.int/resource/docs/2010/sbsta/eng/misc01.pdf.

Indirect N_2O emissions from the atmospheric deposition of nitrogen in NOx and NH_3

There was also disagreement in previous submissions on whether reporting of indirect N_2O emissions associated with atmospheric deposition of nitrogen in NO_x and NH_3 sourced from non-AFOLU sectors should be voluntary or mandatory.

In relation to this issue Australia notes that the language used in the 2006 IPCC Guidelines indicates that reporting of these emissions is not mandatory. In addition, the 2006 IPCC guidelines do not provide methods for estimating emissions from NO_x, NMVOCs or NH_3 in the non-AFOLU sectors. As such, with the adoption of the 2006 Guidelines there would be no agreed IPCC default methods for estimating these emissions.

The section of the 2006 IPCC Guidelines (Volume 1 section 7.3.1) which provides methods for estimating atmospheric deposition emissions from non-AFOLU sectors states that these methods "need only be applied where data on NO_x and NH_3 emissions from these sources are available eg. from the inventories identified in section 7.2" . Section 7.2 directs users to the EMEP/CORINAIR methods.

The UNFCCC Parties are not all parties to the UNECE Convention on Long-Range Transboundary Air Pollution (to which the EMEP/CORINAIR methods relate). As such not all UNFCCC Parties will produce the required data.

In revising the UNFCCC Annex I Reporting Guidelines and CRF tables the agreed treatment for the AFOLU and non-AFOLU components of atmospheric deposition should be clearly documented. In relation to the CRF tables Australia suggests that the AFOLU related atmospheric deposition should be reported into the appropriate category in the AFOLU sector (or Agriculture and LULUCF sectors should Parties agree to separate AFOLU) consistent with existing practice. Other sources of atmospheric deposition should be reported (voluntarily or otherwise) under the Other sector (old CRF sector 7).

Reporting Checklists

To assist Parties with reporting for the Kyoto Protocol the UNFCCC Secretariat developed an annotated outline of the national inventory report. As part of this outline the secretariat developed a check list of the reporting requirements for the National system identifying mandatory and non-mandatory requirements. This check list is extremely useful and Australia would support inclusion of a similar check list into the revised UNFCCC Annex I Reporting Guidelines. Such a checklist could also be used to identify mandatory and non-mandatory reporting categories/gases.

2. SPECIFIC PROPOSALS FOR REVISIONS TO THE UNFCCC ANNEX I REPORTING GUIDELINES

Reporting of non-anthropogenic emissions

The Convention requires that Parties report on anthropogenic emissions and removals. It has been recognised by the IPCC (2010)[3] that the managed land proxy used in the 2006 IPCC Guidelines has shortcomings as a means of identifying anthropogenic emissions. For some countries, like Australia, the managed land proxy will lead to emissions and removals estimates dominated by natural effects. In addition, inter-annual variations driven by natural effects may swamp the changes in emissions due to mitigation and management.

[3] IPCC 2010, *Revisiting the Use of Managed Land as a Proxy for Estimating National Anthropogenic Emissions and Removals*, eds: Eggleston H.S., Srivastava N., Tanabe K., Baasansuren J. Meeting Report, 5 -7 May, 2009, INPE, São José dos Campos, Brazil, Pub. IGES, Japan 2010

The IPCC (2010) also recognised that, while the use of Tier 1 and Tier 2 approaches may not result in significant inter-annual variability in emission/removal estimates, moving to Tier 3 approaches can add significant variability in emission estimates as annual climatic effects and annual area disturbed are more accurately represented or measured. This makes the inventories of those parties using Tier 3 methods less comparable with those using Tier 1 and 2 methods.

Although estimates using Tier 3 methods are most affected by the application of the managed land proxy, Tier 3 methods based on accurate modelling are also the most suited to separating out these effects. It is Australia's view that the UNFCCC Annex I Reporting Guidelines should allow those Parties using Tier 3 methods, and with the capacity to do so, to remove these non-anthropogenic emissions and removals from the AFOLU sector estimates.

In addition the IPCC should be invited to further investigate tier-appropriate methods for removing non-anthropogenic emissions and removals and to develop the necessary good practice guidance for the implementation of these methods (including for para 37 below).

The following section presents some specific proposals for revisions (marked in red) to paragraph 37 of the UNFCCCC Annex I Reporting Guidelines

CorrectionsAdjustments

37. It is recognized that the use, in the 2006 IPCC Guidelines, of managed land as a proxy for determining anthropogenic emissions and removals in the Agriculture and LULUCF sectors can, for Parties using tier 3 methods, result in inventories dominated by non-anthropogenic emissions and removals and with significant inter-annual variations. To ensure comparability of estimates derived by different methodological tiers, Parties using tier 3 methods to estimate emissions and removals for these sectors may report corrected estimates (e.g. through the use of average climate data or through comparison of time-series with and without management). If Annex I Parties carry out such corrections to inventory data, these estimates should be reported in a transparent manner, with clear indications of the method followed and the impact on the reported GHGs.

For other sectors emission estimatesInventories are to be reported without adjustments corrections relating, for example, to climate variations or trade patterns of electricity. If Annex I Parties, in addition, carry out such adjustments to inventory data, they should be reported separately and in a transparent manner, with clear indications of the method followed.

Structure of the National Inventory Report

Australia's February 2010 submission outlined a number of areas where the structure of the national inventory report (NIR) contained in Annex 1 of the UNFCCC Annex I Reporting Guidelines could be improved. Attachment 1 presents some specific proposals for revisions (marked in red) to the structure of the NIR.

3. SUGGESTION FOR MAPPING AFOLU CATEGORIES TO THE AGRICULTURAL AND LULUCF SECTORS

In previous submissions on the revision of the UNFCCC Annex I reporting guidelines there appeared to be support among Parties for the idea of retaining the current Agriculture and LULUCF sectors for the purposes of reporting so as to maintain continuity with previous reports. To do this further consideration needs to be given to how the categories from the 2006 IPCC Guidelines, AFOLU chapter are to be allocated to be consistent with the existing Agriculture and Land Use, Land Use Change and Forestry sectors.

To aid in these considerations Attachment 2 outlines a possible mapping of the 2006 IPCC Guidelines AFOLU categories to Agriculture and LULUCF. The mapping for this approach attempts to match categories and gases as far as possible to the current coverage of these sectors.

It is Australia's view that in developing new CRF tables to accommodate the 2006 IPCC Guidelines the current CRF tables should be the starting point. Attachment 3 provides a suggestion of possible modifications to a subset of the agriculture CRF tables.

ATTACHMENT 1: SPECIFIC PROPOSALS FOR REVISIONS TO THE STRUCUTURE OF THE NIR

Annex I: Structure of the national inventory report

EXECUTIVE SUMMARY

ES.1. Background information on greenhouse gas inventories and climate change (e.g., as it pertains to the national context, to provide information to the general public)

ES.2. Summary of national emission and removal related trends

ES.3. Overview of source and sink category emission estimates and trends

ES.4. Other information (e.g., indirect greenhouse gases)

Chapter 1: INTRODUCTION

1.1. ~~1.1.~~ Background information on greenhouse gas inventories and climate change (e.g., as it pertains to the national context, to provide information to the general public)

1.2. Other information (e.g. information on the structure of the report).

Chapter 2: NATIONAL SYSTEM FOR ESTIMATING GREENHOUSE GASES

2.1.~~2~~. A description of the institutional arrangements for inventory planning and preparation, including information on the:

- agency/entity with overall responsibility for the national inventory;
- roles and responsibilities of various agencies and entities in relation to the inventory development and preparation processes;
- institutional, legal and procedural arrangements made to prepare the inventory;
- capacity for timely performance of the national system functions and the technical competence of staff; and
- process for official consideration and approval of the inventory.

2.2~~1.3~~. Brief description of the process of inventory planning, preparation and management (e.g., information on how QA/QC activities feed back into inventory planning process, information on data collection, data processing and-, data storage)

2.3~~1.4~~. Brief general description of methodologies and data sources used and treatment of confidentiality issues where relevant

2.4~~1.5~~. Brief description of key categories

~~1.6~~2.5. Information on the QA/QC plan and implementation of QA/QC procedures including verification ~~and treatment of confidentiality issues where relevant~~

~~1.7~~2.6. General uncertainty evaluation, including data on the overall uncertainty for the inventory totals

~~1.8~~2.7. General assessment of the completeness (with reference to annex ~~5~~ 2 of the structure of the national inventory report (NIR) including geographical coverage if relevant~~)~~

Chapter ~~2~~3: TRENDS IN GREENHOUSE GAS EMISSIONS

Information should be provided in this chapter that provides an overview of emission trends, but it is not necessary to repeat information that is provided in the sector chapters and in the common reporting format (CRF) trend tables.

~~2~~3.1. Description and interpretation of emission trends for aggregated greenhouse gas emissions

~~2~~3.2. Description and interpretation of emission trends by gas

~~2~~3.3. Description and interpretation of emission trends by category

~~2~~3.4. Description and interpretation of emission trends for indirect greenhouse gases and SO_2

Chapters ~~3~~4–9: *(e.g. SECTOR NAME (CRF sector number))*

The structure outlined below should be followed in each of the following sectoral chapters. The information should be reported following the IPCC sectors.

~~3~~4.1. Overview of sector (e.g., description and quantitative overview ~~and description~~including analysis of emissions trends)

~~3~~4.2. *Source category* (CRF source category number)

For each IPCC source category (i.e., at the level of the table Summary 1.A of the CRF, or the level at which IPCC methods are described, or at the level that the Annex I Party estimates its greenhouse gas emissions) the following information should be provided:

~~3~~4.2.1. Source category description (e.g., characteristics of sources)

~~3~~4.2.2. Methodological issues (e.g., choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

~~3~~4.2.3. Uncertainties and time-series consistency

~~3~~4.2.4. Source-specific QA/QC and verification, if applicable

~~3~~4.2.5. Source-specific recalculations, if applicable, including changes made in response to the review process.

~~3~~4.2.6. Source-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including those in response to the review process

Annex I Parties may report some of the information requested above in an aggregate form for some/several source categories if the same methodology, activity data and/or emission factors are used, in order to avoid repetition of information. For key categories, the information should be detailed in order to enable a thorough review of the inventory.

Chapter ~~3~~4: ENERGY (CRF sector 1)

In addition, the energy information should include the following:

Fuel combustion (CRF 1.A), including detailed information on:

- ~~Comparison of the sectoral approach with the reference approach~~
- International bunker fuels
- Feedstocks and non-energy use of fuels

- ~~CO_2 capture from flue gases and subsequent CO_2 storage~~
- ~~Country-specific issues~~

Fugitive emissions from solid fuels and oil and natural gas (CRF 1.B)

CO_2 transport and storage (CRF 1.C)

Chapter 45: INDUSTRIAL PROCESSES AND PRODUCT USE (CRF sector 2)

~~Chapter 5: SOLVENT AND OTHER PRODUCT USE (CRF sector 3)~~

Chapter 6: AGRICULTURE (CRF sector 43)

Chapter 7: LULUCF (CRF sector ~~5~~4)

In addition, the LULUCF information should include the following:

- *Information on approaches used for representing land areas and on land-use databases used for the inventory preparation;*
- *Land-use definitions and the classification systems used and their correspondence to the LULUCF categories.*

Chapter 8: WASTE (CRF sector ~~6~~5)

Chapter 9: OTHER (CRF sector ~~7~~6) ~~(if applicable)~~

~~*In addition, information previously included in the additional information and the documentation boxes of the CRF version for the trial period (FCCC/CP/1999/7) should be included and expanded in the NIR, where relevant, as specified in the appendix to this proposed structure*~~.*This could include the following [voluntary] reporting categories:*

Indirect N_2O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH_3

- Atmospheric deposition associated with sources of NO_x and NH_3 from sectors other than Agriculture and LULUCF [could][shall] be reported under this sector. Atmospheric deposition associated with Agriculture and LULUCF sources are to be reported under the appropriate categories in these sectors.

Indirect CO_2 emissions associated with atmospheric oxidation of CH_4, CO and NMVOCs

Chapter 10: RECALCULATIONS ~~AND IMPROVEMENTS~~

Information should be provided in this chapter that provides an overview of recalculations and improvements made to the inventory, but it is not necessary to repeat information that is provided in the sector chapters, specifically the category-specific information to be provided, and in particular, Annex I Parties should cross-reference information provided in the sector chapters.

10.1. Explanations and justifications for recalculations

10.2. Implications for emission levels

10.3. Implications for emission trends, including maintenance of time series consistency

~~10.4 Recalculations, including in response to the review process, and planned improvements to the inventory (e.g., institutional arrangements, inventory preparation)~~

Chapter 11: PLANNED IMPROVEMENTS

Information should be provided in this chapter on planned improvements (e.g. institutional arrangements, inventory preparation), including in response to the review process.

Chapter 12: REFERENCES

ANNEXES TO THE NATIONAL INVENTORY REPORT

Annex 1: Key categories

- Description of methodology used for identifying key categories
- ~~Reference to the key category tables in the CRF~~
- Information on the level of disaggregation
- Tables 4.2 and 4.3~~7.A1 – 7.A3~~ of Volume 1 of the 2006 IPCC Guidelines~~good practice guidance~~

Note: previous IPCC guidance recommended the KCA be undertaken both with and without LULUCF. With the creation of the AFOLU sector in 2006 IPCC guidelines this two step analysis is no longer required although the guidelines suggest inventory compliers may still like to assess KCA using a (unspecified) subset of categories. If the Agriculture /LULUCF split is retained the text here could specifically request parties to undertake KCA with and without LULUCF.

Annex 2: Assessment of completeness and (potential) sources and sinks of greenhouse gas emissions and removals excluded.

Annex 3: Assessment of Uncertainty

- Description of methodology used for identifying uncertainties
- Table 3.3 of Volume 1 of the 2006 IPCC Guidelines

Annex ~~2~~4: Detailed discussion of methodology and data for estimating CO_2 emissions from fossil fuel combustion

Annex ~~3~~5: Other detailed methodological descriptions for individual source or sink categories (where relevant)

Annex 4: ~~CO_2 reference approach and comparison with sectoral approach, and r~~Relevant information on the national energy balance

~~Annex 5: Assessment of completeness and (potential) sources and sinks of greenhouse gas emissions and removals excluded~~

Annex 6: Other annexes (Any a~~A~~dditional information to be considered as part of the NIR submission ~~(where relevant)~~ or other useful reference information – optional)

~~Annex 7: Tables 6.1 and 6.2 of the IPCC good practice guidance~~[2]

~~Annex 8: Other annexes – (Any other relevant information – optional).~~

ATTACHMENT 2: POSSIBLE MAPPING OF AFOLU CATEGORIES TO THE AGRICULTURAL AND LULUCF SECTORS

Table 1: Possible mapping of the AFOLU categories to the existing Agriculture categories

Reporting Category	New CRF numbering	Gases covered	2006 IPCC reporting category	IPCC numbering	Sub-components
Enteric fermentation	CRF 3.A	CH_4	Enteric fermentation	3.A	All
Manure management	CRF 3.B	CH_4, N_2O	Manure management	3.B	All (a)
Rice cultivation	CRF 3.C	CH_4	Rice cultivation	3.C.7	All
Agricultural Soils	CRF 3.D	N_2O			
Direct N_2O emissions from managed soils	CRF 3.D1	N_2O	Direct N_2O emissions from managed soils	3C4 (partial)	Includes all components related to cropland and grassland with the exception of N mineralization/immobilisation associated with loss/gain of SOM resulting from change of land use or management of mineral soils (i.e. soil disturbance) – see LULUCF 4.B4 NOTE: As per current CRFs application of fertilisers to Forest land, Settlements and Other land to be reported in LULUCF if the amounts applied can be separately identified, otherwise total to be reported in Agriculture
Indirect N_2O from managed soils	CRF 3.D2	N_2O	Indirect N_2O from managed soils	3C5 (partial)	Includes all components related to cropland and grassland with the exception of atmospheric deposition or leaching/runoff associated with N volatilization/ mineralization/immobilisation due to loss/gain of SOM resulting from change of land use or management of mineral soils (i.e. soil disturbance) – see LULUCF 4.B5 NOTE: The 2006 Guidelines reporting tables do not specify inclusion of atmospheric deposition of N volatilized through the burning of savannas or crop residues. To be consistent with current reporting this would also need to be included under agriculture.

Indirect N_2O emissions from manure management	CRF 3.D3	N_2O	Indirect N_2O emissions form manure managements	3C6	All
Prescribed Burning of Savannas	CRF 3.E	CH_4, N_2O	Biomass burning - Forest land and grassland	3C1a, 3C1c (partial)	Only includes components relating to forest land and grasslands which are savannas
Field burning of agricultural residues	CRF 3.F	CH_4, N_2O	Biomass burning - Cropland	3C1b	All (b)

NOTES RELATING TO CRF TABLE ISSUES:

(a) Sectoral background table for N2O emissions from manure management (table 4.B(b)) is currently based on reporting by manure management system. The 2006 guidelines report these emissions by animal types. Consideration needs to be given to how this table can be restructured to provide useful data for review.

(b) The previous IPCC methods for Field Burning of Agricultural Residues were based on total crop production, the ratio of residue to crop and the fraction of the residue burnt in order to estimate the dry matter burnt. The 2006 IPCC default method is based on area burnt and dry matter per ha. Careful consideration needs to be given to the presentation of the CRF tables for this category as not all parties will have data on the area burnt. In addition the information contained in the old CRF table 4.F was extremely useful for reviewing both the emissions from Field Burning of Agricultural Residues and the N retained in crop residues for Agricultural soils

Table 2: Possible mapping of the AFOLU categories to the existing LULUCF categories

Reporting Category	New CRF numbering	Gases covered	2006 IPCC reporting category	IPCC numbering	Sub-components
Land	CRF 4.A	CO_2	Land	3B	All
Forest land	CRF 4.A1	CO_2	Forest land	3B1	All
Cropland	CRF 4.A2	CO_2	Cropland	3B2	All
Grassland	CRF 4.A3	CO_2	Grassland	3B3	All
Wetland	CRF 4.A4	CO_2	Wetland	3B4	All
Settlements	CRF 4.A5	CO_2	Settlements	3B5	All
Other Land	CRF 4.A6	CO_2	Other Land	3B6	All
Aggregate sources and non-CO2 emission sources	CRF 4.B		Aggregate sources and non-CO2 emission sources	3.C	
Biomass burning	CRF 4.B1	CO_2, CH_4 and N_2O	Biomass burning	3.C1(partial)	Excludes non-co2 emissions from savanna fires.
Liming	CRF 4.B2	CO_2	Liming	3.C2	All
Urea application	CRF 4.B3	CO_2	Urea application	3.C3	All
Direct N2O emissions from managed soils :	CRF 4.B4	N_2O	Direct N2O emissions from managed soils	3C4 (partial)	Includes direct emissions from: – drainage/management of organic soils (excluding cropland and grassland) – N mineralization associated with loss of soil organic matter resulting form change of land use or management of mineral soils (all land categories) – inorganic and organic N fertiliser application (excluding cropland and

					grassland applications)
Indirect N2O emissions from managed soils	CRF 4.B5	N_2O	Indirect N2O emissions from managed soils	3.C5 (partial)	Includes indirect emissions from: – atmospheric deposition of N volatilised (excluding cropland and grassland) – leaching/runoff associated with N mineralization/immobilisation due to loss/gain of SOM resulting from change of land use or management of mineral soils (all land categories)
Other	CRF 4.B6		Other	3.C8	
Other	CRF 4.C		Other	3.D	
Harvested wood products	CRF 4.C1	CO_2	*Harvested wood products*	3.D1	All
Other	CRF 4.C2		*Other*	3.D2	

ATTACHMENT 3: POSSIBLE MODIFICATIONS TO THE AGRICULTURE CRF TABLES

TABLE 3 SECTORAL REPORT FOR AGRICULTURE
(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
Total Agriculture					
A. Enteric Fermentation					
1. Cattle [(1)]					
Option A:					
Dairy Cattle					
Non-Dairy Cattle					
Option B:					
Mature Dairy Cattle					
Mature Non-Dairy Cattle					
Young Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					
10. Other *(as specified in table 3.A)*					
B. Manure Management					
1. Cattle [(1)]					
Option A:					
Dairy Cattle					
Non-Dairy Cattle					
Option B:					
Mature Dairy Cattle					
Mature Non-Dairy Cattle					

Young Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					
10. Other livestock *(as specified in table 3.B(a))*					

Note: All footnotes for this table are given at the end of the table on sheet 2.

TABLE 3 SECTORAL REPORT FOR AGRICULTURE
(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
C. Rice Cultivation					
1. Irrigated					
2. Rainfed					
3. Deep Water					
4. Other *(as specified in table 3.C)*					
D. Agricultural Soils					
1. Direct N2O Emissions from Managed Soils[(2)]					
2. Indirect N2O Emissions from Managed Soils					
3. Indirect N2O Emissions from Manure Management					
4. Other *(as specified in table 3.D)*					
E. Prescribed Burning of Savannas					
F. Field Burning of Agricultural Residues					
1 . Cereals					
2. Pulses					
3 . Tubers and Roots					
4 . Sugar Cane					
5 . Other *(as specified in table 3.F)*					
G. Other *(please specify)*					

[(1)] The sum for cattle would be calculated on the basis of entries made under either option A (dairy and non-dairy cattle) or option B (mature dairy cattle, mature non-dairy cattle and young cattle).

[(2)] Direct N_2O emissions from pasture, range and paddock manure are to be reported in the "3.D Agricultural Soils" category. All other direct N_2O emissions from animal manure are to be reported in the "3.B Manure Management" category.

Documentation box:

• Parties should provide detailed explanations on the agriculture sector in Chapter 5: Agriculture (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• If estimates are reported under "3.G Other", use this documentation box to provide information regarding activities covered under this category and to provide reference to the section in the NIR where background information can be found.

TABLE 3.D SECTORAL BACKGROUND DATA FOR AGRICULTURE
Agricultural Soils
(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS	EMISSIONS
	Description	Value		N_2O
		kg N/yr	kg N_2O-N/kg N [(1)(2)]	(Gg)
1. Direct N2O Emissions From Managed Soils	**N input to soils**			
1. Inorganic N Fertilizers[(4)]	Nitrogen input from application of synthetic fertilizers			
2. Organic N Fertilizers[(4)]	Total Nitrogen input from organic N fertilizers			
a. Animal Manure Applied to Soils	Nitrogen input from manure applied to soils			
b. Sewerage Sludge Applied to Soils	Nitrogen input from sewerage sludge applied to soils			
c. Other Organic Fertilzer Applied to Soils	Nitrogen input from application of organic fertilizers			
4. Urine and Dung Deposited by Grazing Animals	Nitrogen excretion on pasture, range and paddock			
5. Crop Residue	Nitrogen in crop residues returned to soils			
6. Cultivation of organic soils (i.e. Histosols) [(2)]	Area of cultivated organic soils (ha/yr)			
2. Indirect N2O Emissions From Managed Soils				
1. Atmospheric Deposition [(3)]	Volatized N from agricultural inputs of N including			
2. Nitrogen Leaching and Run-off	N from fertilizers, animal manures and other that is lost through leaching and run-off			
3. Indirect N2O Emissions From Manure Management				
1. Atmospheric Deposition	Volatized N from manure management systems			
2. Nitrogen Leaching and Run-off	N from manure management systems that is lost through leaching and run-off			

To improve tranparency it is suggested that these organic fertiliser categories be reported seperatelly

The green highlighted cells in Table 3.F are very helpful information for review of Crop residue N. Need to consider whether these are included as an additional background table

4. Other *(please specify)*				NA

(1) To convert from N_2O-N to N_2O emissions, multiply by 44/28.

(2) Note that for cultivation of organic soils the unit of the IEF is kg N2O-N/ha.

(3) Only atmospheric deposition of N volatilized from agricultural input of N are to be reported here (include NOx associated with burning of savannas and crop residues).

(4) Include in 4.D.1 applications of fertilizers on cropland and grassland. If applications to other land categories cannot be seperately identified they to should be included here.

Documentation box:

• Parties should provide detailed explanations on the Agriculture sector in Chapter 5: Agriculture (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• Provide a reference to the relevant section in the NIR, in particular with regard to:

(a) Background information on CH_4 emissions from agricultural soils, if accounted for under the Agriculture sector;

(b) Disaggregated values for $Frac_{GRAZ}$ according to animal type, and for $Frac_{BURN}$ according to crop types;

(c) Full list of assumptions and fractions used.

TABLE 3.E SECTORAL BACKGROUND DATA FOR AGRICULTURE
Prescribed Burning of Savannas
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION					IMPLIED EMISSION FACTORS		EMISSIONS	
	Area of savanna burned (k ha/yr)	Average above-ground biomass density (t dm/ha)	Fraction of savanna burned	Biomass burned (Gg dm)	Nitrogen fraction in biomass	CH_4 (kg/t dm)	N_2O (kg/t dm)	CH_4 (Gg)	N_2O (Gg)
Forest land (specify ecological zone)(1)									
Grassland (specify ecological zone)(1)									

(1) If possible fires on forest land and grassland defined as savanna should be seperately identified and reported here. If it is not possible to seperate these fires from other forest land and grassland fires reported under 4.B1 Biomass Burning this should be clearly documented

Additional information

	Living Biomass	Dead Biomass
Fraction of above-ground biomass	0.00	0.00
Fraction oxidized	0.00	0.00
Carbon fraction	0.00	0.46

Documentation box:

Parties should provide detailed explanations on the Agriculture sector in Chapter 5: Agriculture (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 4.F SECTORAL BACKGROUND DATA FOR AGRICULTURE

Field Burning of Agricultural Residues

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION										IMPLIED EMISSION FACTORS		EMISSIONS	
	Area Burnt (ha/year)	Biomass burnt (Gg dm)	Crop production (t)	Residue/ Crop ratio	Dry matter (dm) fraction of residue	Fraction burned in fields	Fraction oxidized	Total biomass burned (Gg dm)	C fraction of residue	N-C ratio in biomass residues	CH_4 (kg/t dm)	N_2O (kg/t dm)	CH_4 (Gg)	N_2O (Gg)
1. Cereals														
Wheat														
Barley														
Maize														
Oats														
Rye														
Rice														
Other *(please specify)*														
2. Pulses														
Dry bean														
Peas														
Soybeans														
Other *(please specify)*														
3 Tubers and Roots														
Potatoes														
Other *(please specify)*														

4 Sugar Cane														
5 Other *(please specify)*														

Documentation box:
Parties should provide detailed explanations on the Agriculture sector in Chapter 5: Agriculture (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

The 2006 IPCC default emissions factors are based on g/kg dm burnt - as such these highlights columns are not required if parties use the default EF. However retaining info on crop production, residue to crop ratio , dry matter fraction, N-C ratio remains useful for the estimation and review of the amout of N in crop residues reported in the Table 3.D. This data is also likely to reflect the methods parties continue to use for estimating the biomass burnt (particuarly where area data is not available). May need to consider keep this info in a background table.